SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of U.S. patent application Ser. No. 18/508,686, now pending, which is a continuation of U.S. patent application Ser. No. 17/496,237, issued as U.S. Pat. No. 11,813,373, which is a continuation of U.S. patent application Ser. No. 17/032,187, issued as U.S. Pat. No. 11,400,174 which is a continuation of U.S. patent application Ser. No. 15/831,043, issued as U.S. Pat. No. 10,792,380, which is a continuation of U.S. patent application Ser. No. 14/299,815, issued as U.S. Pat. No. 9,833,525, which is a continuation-in-part of U.S. patent application Ser. No. 14/252,294, now abandoned, which is a continuation of U.S. patent application Ser. No. 13/070,044, issued as U.S. Pat. No. 8,698,100, all of which are hereby incorporated by reference in their entireties.

BACKGROUND

a. Technical Field

[0002] The present disclosure relates to a system and apparatus for sanitizing a point of contact for multiple persons. More specifically, this disclosure relates to a system and apparatus for sanitizing a surface of a door opening device, an elevator control panel, an automatic teller machine, or another point of contact.

b. Background Art

[0003] Doorknobs, other door opening devices, and other points of contact for large groups of people, such as automatic teller machines (ATMs) and elevator buttons or control panels, can be involved in the spread of communicable germs. In hospitals, germs communicated through points of contact can lead to increased patient sickness. In an office environment, germs communicated through points of contact can lead to sick employees and lost productivity. In public spaces, germs communicated through points of contact can lead to a sick populace and spread of disease.

[0004] The effect of germs spread through points of contact can be significantly reduced by sterilizing or sanitizing the surface of the point of contact periodically, such as after each use

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of the point of contact. There is therefore a need for a system and apparatus to sanitize point-of-contact surfaces to eliminate one or more of the problems described above.

BRIEF SUMMARY

[0005] An apparatus for sanitizing a point-of-contact surface, such as, for example, a doorknob, other door opening device, automatic teller machine, or elevator buttons or control panels, may include a housing configured to be affixed about at least a portion of the point-of-contact surface. The housing may have an interior in or through which the point-of-contact surface may be accessed and an anterior opening for access to the interior. The apparatus may further include one or more sources of a sanitizing agent configured to direct the sanitizing agent toward the point-of-contact surface. At least one of the one or more sources of a sanitizing agent may be a source of germicidal ultraviolet (UV) light.

[0006] Another embodiment of an apparatus for sanitizing a point-of-contact surface may include a housing having an interior in or through which a point-of-contact surface may be accessed, a posterior opening through which at least a portion of the point-of-contact surface may extend into the interior, and an anterior opening for access to the interior. The apparatus may further include one or more sources of germicidal light configured to direct the germicidal light toward a location where at least a portion of the point-of-contact surface may be disposed. The apparatus may further include an anterior structure, affixed to or integral with the housing, configured to reflect the germicidal light toward a location where at least a portion of the point-of-contact surface may be disposed, the anterior structure defining the anterior opening through which the interior may be accessed, wherein at least a portion of the anterior structure extends in an anterior direction beyond an anterior-most portion of the point-of-contact surface, such that the apparatus is configured to sanitize the anterior-most portion of the point-of-contact surface.

[0007] Another embodiment of an apparatus for sanitizing a point-of-contact surface may include one or more sources of germicidal light configured to direct the germicidal light toward a location where at least a portion of the point-of-contact surface may be disposed. The apparatus may further include a housing in which the one or more sources of germicidal light are disposed, the housing configured to be affixed about at least a portion of the point-of-contact surface. The housing may include an interior in or through which the point-of-contact surface may be accessed, a posterior surface defining a posterior opening through which at least a portion of the

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point-of-contact surface may extend into the interior, the posterior surface configured to reflect light from the one or more sources of germicidal light towards a portion of the point-of-contact surface, and an anterior opening for access to the interior. A portion of the housing may extend in an anterior direction beyond an anterior-most portion of the point-of-contact surface.

[0008] Another embodiment of an apparatus for sanitizing a point-of-contact surface may include a housing having an interior in or through which a point-of-contact surface may be accessed, a posterior opening through which at least a portion of the point-of-contact surface may extend into the interior, and an anterior opening for access to the interior. The apparatus may further include one or more sources of germicidal light configured to direct the germicidal light toward a location where at least a portion of the point-of-contact surface may be disposed, wherein at least a portion of at least one of the one or more sources of germicidal light extends in the anterior direction beyond an anterior-most portion of the point-of-contact surface.

[0009] A system for sanitizing a point-of-contact surface may include an apparatus configured to be affixed about at least a portion of the point-of-contact surface. The apparatus may include one or more sources of a sanitizing agent and may have at least a first operating state in which the apparatus is configured to direct a first amount of the sanitizing agent toward the point-of-contact surface and a second operating state in which the apparatus is configured to direct a second amount of the sanitizing agent toward the point-of-contact surface. The system may further include a switch configured to change the operating state of the apparatus. The switch may comprise one or more of a manual switch, a motion sensor, a timer, and a remote activation system.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Figure 1 is an isometric view of a first embodiment of a sanitizing apparatus for a point-of-contact surface.

[0011] Figure 2 is an anterior view of the first apparatus embodiment.

[0012] Figure 3 is a first side view of the first apparatus embodiment.

[0013] Figure 4 is a second side view of the first apparatus embodiment.

[0014] Figure 5 is a cross-sectional view of the first apparatus embodiment, taken substantially along line 5-5 in Figure 3, with an exemplary point of contact shown in phantom.

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[0015] Figure 6 is an isometric view of a second embodiment of a sanitizing apparatus for a point-of-contact surface.

[0016] Figure 7 is an anterior view of the second apparatus embodiment.

[0017] Figure 8 is a posterior view of the second apparatus embodiment.

[0018] Figure 9 is a schematic view of a first embodiment of a system for sanitizing a point-of-contact surface.

[0019] Figure 10 is a schematic view of a second embodiment of a system for sanitizing a point-of-contact surface.

[0020] Figure 11 is a schematic view of a third embodiment of a system for sanitizing a point-of-contact surface.

[0021] Figure 12 is a schematic view of a fourth embodiment of a system for sanitizing a point-of-contact surface.

[0022] Figure 13 is a cross-sectional view of a third embodiment of a sanitizing apparatus for a point-of-contact surface.

[0023] Figure 14 is a cross-sectional view of a fourth embodiment of a sanitizing apparatus for a point-of-contact surface.

DETAILED DESCRIPTION

[0024] It is known in the art that certain sanitizing agents may be used to sanitize objects and surfaces, such as doorknobs, other door opening devices, automatic teller machines (ATMs), or elevator buttons and control panels. One type of sanitizing agent is electromagnetic energy of a particular frequency in the ultraviolet (UV) light spectrum. Ultraviolet light with a wavelength in the range of about 100 nanometers (nm) to about 280 nanometers (referred to herein as germicidal UV) is known to be deadly to bacteria and other micro-organisms, killing the micro-organisms, rendering them harmless, or eliminating their ability to reproduce. Germicidal UV with a wavelength of about 254 nanometers (a frequency of about 1.18 petahertz (PHz)) or about 185 nm is known to be particularly effective. In one embodiment of the present invention, germicidal UV may be used as an effective agent for sterilizing or sanitizing doorknobs, other door opening devices, automatic teller machines (ATMs), elevator buttons and control panels,

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and other devices and apparatus that may be points of contact for a large volume of people, referred to herein as "points of contact." Similarly, as used herein, a "point-of-contact surface" refers to any surface of a point of contact. A system and apparatus for sanitizing such point-of-contact surfaces may involve germicidal UV or other sanitizing agents.

[0025] In addition to germicidal UV, additional or alternative types of germicidal radiation may be used. For example, but without limitation, high-intensity, narrow-spectrum (HINS) radiation (*e.g.*, in the visible light spectrum with a wavelength of or similar to, for example, 405 nm), blue light (*e.g.*, having a wavelength of or similar to 415 nm), or another wavelength of radiation that is particularly well-suited to germicidal or antimicrobial applications.

[0026] Referring now to the drawings wherein like reference numerals are used to identify identical components in the various views, Figure 1 is an isometric view of an embodiment 10 of a sanitizing apparatus for a point-of-contact surface. Apparatus 10 may include a housing 12 and one or more attachment structures 18. Housing 12 may include an anterior opening 14 and an interior 16. As used herein, "posterior" refers generally to the end of an apparatus or system, such as apparatus 10, proximate to a point of contact or to a structure to which the point of contact is attached (*e.g.*, a wall or door). "Anterior" refers generally to the end of the apparatus or system through or by which a human user may access the point of contact, such as by extension of a hand through anterior opening 14. Housing 12 may contain one or more sources of a sanitizing agent, one or more surfaces to focus and reflect the sanitizing agent toward a point-of-contact surface, and wiring and circuitry enabling the one or more sanitizing agent sources to function. An anterior dome 20 or other anterior structure may be provided at the anterior end of housing 12 and may be configured to reflect or direct the sanitizing agent toward a location where the point-of-contact surface is to be disposed when apparatus 10 is installed. At least a portion of the point of contact may extend into interior 16—*i.e.*, the point of contact may be accessed in or through interior 16. Anterior opening 14 may provide user access to interior 16—*i.e.*, human access to the point of contact sanitized by apparatus 10. Attachment structures 18 may be provided to attach housing 12 to a door, door frame, wall, or other structure to allow interior 16 to be disposed about a point-of-contact surface. Attachment structures 18 may be brackets and screws, as shown, or other functional attachment structures or devices.

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[0027] Figure 2 is an anterior view of apparatus 10 looking through anterior opening 14 and through interior 16 to a posterior opening 22. A protective screen 30 (best shown in Figure 5) has been omitted for clarity. Interior 16 may be defined as the area within housing 12 between anterior opening 14 and posterior opening 22. Posterior opening 22 may be provided for a portion of a doorknob, other door opening device, or other point of contact to extend into interior 16. In an embodiment in which no point-of-contact surface extends into interior 16, such as, for example, an ATM interface or a set of elevator buttons, posterior opening 22 may be the opening through which a sanitizing agent passes to reach the point-of-contact surface from interior 16.

[0028] Interior 16 may contain one or more sources of a sanitizing agent. In apparatus 10, the sources may be three ultraviolet (UV) light bulbs 24. Bulbs 24 may operate at the germicidal range of the ultraviolet light spectrum and/or have a germicidal coating. In embodiments where bulbs 24 apply germicidal UV as a sanitizing agent, bulbs 24 may operate within a wide range of powers and exposure times, such as, for example, power in the range of about 4–65 watts and exposure times of about 2–10 seconds. However, it should be understood that less power may be used in conjunction with a longer exposure time, or more power in conjunction with a shorter exposure time. Bulbs 24 are not limited to germicidal UV as a sanitizing agent. Bulbs 24 may sanitize surfaces based on one or more of: (1) a particular characteristic of the agent or energy applied (*e.g.*, germicidal UV); (2) the heat resulting from the application of the sanitizing agent or energy, or (3) the interaction of the agent with a particular characteristic of the surface or another substance applied to the surface.

[0029] In addition to or instead of germicidal UV, the light bulbs 24 may emit radiation of some other portion of the spectrum. For example, but without limitation, the light bulbs 24 may output high-intensity, narrow-spectrum (HINS) radiation (*e.g.*, in the visible light spectrum with a wavelength of or similar to, for example, 405 nm), blue light (*e.g.*, having a wavelength of or similar to 415 nm), or another wavelength of radiation that is particularly well-suited to germicidal or antimicrobial applications.

[0030] An inner surface 26 may be configured in shape and material to reflect or direct the sanitizing agent toward a location where the point-of-contact surface is to be disposed when apparatus 10 is installed, thereby increasing the exposure of the surface to the sanitizing agent.

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In an embodiment where the point of contact does not extend into interior 16 (*i.e.*, no point-of-contact surface is within interior 16), inner surface 26 may be configured to direct or reflect the sanitizing agent toward the posterior end of interior 16. Inner surface 26 is shown as a cylinder, but inner surface 26 may have another shape adapted to a particular application. Inner surface 26 may comprise aluminum, glass, or another reflective material, and/or may be coated with a reflective layer. Inner surface 26 may be configured to support bulbs 24 or otherwise be coupled with bulbs 24. Additionally, inner surface 26 may be a unitary surface or structure, as shown, or may comprise multiple pieces or surfaces.

[0031] A posterior surface 28 may also be provided and may be configured to reflect or direct the sanitizing agent toward a location where the point-of-contact surface is to be disposed once apparatus 10 is installed. Posterior surface 28 may be one or more plates or other insert placed at posterior opening 22, as shown in Figure 2, and may be configured to conform to the geometry of the point of contact. A two-segment posterior surface 28 with a circular opening, as shown, may be appropriate for use with a point of contact having a cylindrical extension portion, such as a doorknob. Although shown as a separate piece from housing 12, posterior surface 28 may also be integral with housing 12 and may have a hole or other cut-out portion forming posterior opening 22. Posterior surface 28 may comprise aluminum, glass, or another reflective material, or may be non-reflective if reflection from the posterior end of apparatus 10 is not desired.

[0032] Figures 3 and 4 are side views of apparatus 10. Apparatus 10 may have a "longer" side, as shown in Figure 3, and a "shorter" side, as shown in Figure 4. However, it should be understood that the geometry of apparatus 10 may be adapted to particular points of contact and particular manufacturing restraints. Additionally, the size of housing 12 (and the rest of apparatus 10) may be adapted to a particular application or particular manufacturing constraints.

[0033] Figure 5 is a cross-sectional view of apparatus 10, taken substantially along line 5-5 in Figure 3. Figure 5 includes an exemplary point-of-contact (shown as a doorknob) in phantom. Although a gap is shown between apparatus 10 and the phantom door, apparatus 10 may be configured to be flush with such a door or other structure or surface. Figure 5 also includes a protective screen 30 not shown in Figures 1 and 2. Protective screen 30 may be

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provided to separate bulbs 24 (or another source of a sanitizing agent) from anterior opening 14 and posterior opening 22—*i.e.*, screen 30 may be disposed between bulbs 24 and a central portion of interior 16. In effect, protective screen 30 may divide interior 16 into two compartments—a first compartment containing bulbs 24 and a second compartment providing human access from anterior opening 14 to the point of contact. Protective screen 30 may be provided for many purposes. For example, one purpose may be to prevent irritating contact between a user of the point of contact and bulbs 24, which may reach high temperatures and/or may be coated with a substance that may irritate human skin. Another exemplary purpose may be to prevent user contact with bulbs 24, which may be fragile. Protective screen 30 may be of any suitable shape, material, and geometry configured to allow the sanitizing agent to pass from sources 24 to the point-of-contact surface (*i.e.*, the protective screen 30 may be transparent or translucent to the sanitizing agent). For example only, screen 30 may be a relatively rigid plastic cylinder having the same diameter as anterior opening 14, as shown. Screen 30 may include gaps, slits, or vents, or may be solid. Protective screen 30 also may be a unitary structure, or may comprise several segments and/or surfaces.

[0034] Figure 6 is an isometric view of a second embodiment 34 of an apparatus for sanitizing a point-of-contact surface. Apparatus 34 is nearly identical to apparatus 10, but apparatus 34 lacks an anterior dome. Apparatus 34 may extend less in the anterior direction from the point-of-contact surface than apparatus 10, but apparatus 34 may still effectively sanitize the point-of-contact surface.

[0035] Figure 7 is an anterior view of apparatus 34. Lacking a anterior dome, housing 12 and interior 16 may be configured to extend no further in the anterior direction than do bulbs 24. Bulbs 24 may also be configured in size, shape, and orientation in apparatus 34 or apparatus 10 for a particular point of contact. For example, rather than extending axially, as shown (*i.e.*, substantially parallel to an axis of the apparatus extending from anterior opening 14 to posterior opening 22), bulbs 24 may extend circumferentially, or otherwise normal to the apparatus axis.

[0036] Figure 8 is a posterior view of apparatus 34 with posterior surface 28 removed. Apparatus 10 may appear substantially the same from the posterior perspective, except the interior of anterior dome 20 would be visible. Posterior opening 22 may be configured in size and shape to accommodate a particular point of contact.

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[0037] Figure 13 is a cross-sectional view of a third embodiment 60 of an apparatus for sanitizing a point-of-contact surface. The third apparatus 60 is substantially identical to the first apparatus 10, but the dome 62 of the third apparatus may include a conical or frustoconical inner surface (*i.e*, as opposed to the hemispherical inner surface of the dome 20 of the first apparatus 10) that is angled so as to reflect germicidal radiation towards the point-of-contact surface. Stated another way, the dome 62 may include a portion having a linear cross-section (*i.e.*, as opposed to a curved cross-section, as in the dome 20 of the first apparatus 10).

[0038] Figure 14 is a cross-sectional view of a fourth embodiment 64 of an apparatus for sanitizing a point-of-contact surface. The fourth apparatus 64 is substantially identical to the first apparatus 10, but the housing 66 of the fourth apparatus may include a reflective wall 68 that is disposed at an angle other than perpendicular to the posterior surface 28 so as to reflect germicidal radiation towards the point-of-contact surface. In an embodiment, the wall 68 may form a frustoconical housing portion. Such a frustoconical housing portion may have a narrower diameter at the anterior end of the portion, as shown in Figure 14. Alternatively, the frustoconical housing portion may have a narrower diameter at the posterior end of the portion, in an embodiment. The wall 68 may be substantially flat in cross-section (*e.g.*, may extend in a substantially linear manner between its anterior and posterior ends, as shown in Figure 14), or may be curved in cross-section. The angled wall 68 may extend to meet the screen 30, in an embodiment. In such an embodiment, or in another embodiment, the angled wall (*e.g.*, the frustoconical housing portion) may define the anterior opening 14 of the housing. Alternatively, and as shown in Figure 14, the angled wall 68 may be coupled with a structure or surface 70 (*e.g.*, a dome or a flat surface) configured to reflect sanitizing radiation towards the point-of-contact surface.

[0039] The first, third, and fourth sanitizing apparatus embodiments 10, 60, 64 all may include an anterior structure that is configured to be disposed anterior of the point-of-contact surface and to reflect germicidal radiation in a posterior direction towards the point-of-contact surface. The first apparatus 10 may include a dome 20 comprising a hemispherical portion, the third apparatus may include a dome 62 comprising a frustoconical portion, and the fourth apparatus 64 may include an angled wall that may form, for example, a frustoconical reflective housing portion.

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[0040] Figure 9 is a schematic view of a first embodiment of a system for sanitizing a point-of-contact surface, designated system 36. System 36 may include an apparatus 38 for sanitizing a point-of-contact surface and a manual switch 40. Apparatus 38 may be apparatus 10, apparatus 34, apparatus 60, apparatus 64, or another apparatus configured to sanitize a point-of-contact surface. Apparatus 38 includes an electrical circuit configured to control sanitizing agent sources 24, shown again as bulbs or lamps. The electrical circuit may include one or more power supplies (shown as three 6-volt battery packs) and one or more circuit boards configured to electrically couple the power supplies with the sanitizing agent sources 24, such as, for example, through a socket affixed to apparatus 38 into which lamp 24 may be removably placed. The power supply for the electrical circuit may also be an external source, such as, for example, from a wall socket through an appropriate cord. Additionally or alternatively, apparatus 38 or system 36 may include a generator to recharge batteries or battery packs within the circuit. The generator may be coupled to a door, door opening device, or other device such that the batteries are charged when the door is opened or closed, the door opening device is turned, or energy is otherwise imparted to the generator. Switch 40 may control the current flowing through the electrical circuit, thereby controlling the power applied to sanitizing agent sources 24 and thus controlling the amount of the sanitizing agent emitted by sanitizing agent sources 24.

[0041] Apparatus 38 may have at least two operating states: a first state in which apparatus 38 directs a first amount of a sanitizing agent toward a location where a point-of-contact surface may be disposed after installation of apparatus 38, and a second state in which apparatus 38 directs a second amount of the sanitizing agent toward the same location. Switch 40 may change the operating state of apparatus 38 by controlling the power applied to sanitizing agent sources 24, as described above. Manual switch 40 may be integrated into apparatus 38 (such as in housing 12), or may be located in close proximity to apparatus 38. Switch 40 may be a button, lever, switch, other binary switching device, or a slider, dimmer, or other analog switching device.

[0042] Apparatus 38 may sanitize a point-of-contact surface when activated by switch 40. For example, an individual may reach into apparatus 38, turn a doorknob disposed within interior 16, and open the attached door. After opening the door, the user may manually “flip” switch 40, changing apparatus 38 from an “OFF” state to an “ON” state. In an “ON” state, the electrical circuit of apparatus 38 is configured to energize bulbs 24 such that bulbs 24 emit a

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non-zero amount of a sanitizing agent, such as germicidal UV, toward the doorknob. The shape and materials of interior 16 may reflect and direct the sanitizing agent (*e.g.*, germicidal UV) onto the doorknob. Bulbs 24 may be deactivated (*i.e.*, apparatus 38 may be changed from an "ON" state to an "OFF" state in which bulbs 24 emit a substantially zero amount of the sanitizing agent) upon a second manual "flip" of switch 40. A user of the door may also flip switch 40 prior to using the doorknob to sanitize the doorknob before making contact with the doorknob, then flip switch 40 a second time to deactivate bulbs 24 such that the user may safely extend a hand into apparatus 38. In an alternative embodiment, apparatus 38 may have three discrete operating states: "HIGH," "LOW," and "OFF" which may be selected by "flipping" an appropriate switch. Apparatus 38 may also have four or more discrete operating states, or may have multiple operating states along an analog scale.

[0043] Figure 10 is a schematic view of a second embodiment 42 of a system for sanitizing a point-of-contact surface. System 42 may include many of the same features and functionality as system 36, but system 42 may change the state of apparatus 38 with a remote activation system 44. Remote activation system 44 may include a remote receiver 46 integrated with apparatus 38 and a remote control 48. Remote receiver 46 may have an independent power supply, as shown. Remote control 48 may communicate with remote receiver 46 wirelessly, such as by a radio frequency signal, or through a wired connection.

[0044] Figure 11 is a schematic view of a third embodiment 50 of a system for sanitizing a point-of-contact surface. System 50 may include many of the same features and functionality as systems 36 and 42, but system 50 may include a timer 52 for automatically deactivating apparatus 38. Timer 52 may be coupled with manual switch 40 such that timer 52 automatically changes the operating state of (*e.g.*, cuts power to) apparatus 38 after a set amount of time after switch 40 is "flipped." As a result, apparatus 38 may sanitize a surface for a pre-determined amount of time, such as, for example, 3–5 seconds, upon switch 40 being "flipped." Timer 52 may be configured to allow apparatus 38 to administer an effective dose of the sanitizing agent before de-energizing the electrical circuit. For example, timer 52 may allow the circuit of apparatus 38 to remain energized for about 5 seconds after switch 40 is "flipped."

[0045] Figure 12 is a schematic view of a fourth embodiment 54 of a system for sanitizing a point-of-contact surface. System 54 may include many of the same features and

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functionality as systems 36, 42, and 50, but system 54 may include a motion sensor 56 for automatically activating and/or deactivating apparatus 38. Although not shown, motion sensor 56 may include an independent power supply. In an exemplary embodiment, after motion sensor 56 senses movement (*e.g.*, a hand entering apparatus 38), system 54 may wait about six seconds (*i.e.*, enough time for a user to access the point-of-contact and remove the hand), then change the operating state of apparatus 38 (*e.g.*, from a de-energized "OFF" state to an energized "ON" state) to sanitize the point of contact. Timer 52 may allow the circuit of apparatus 38 to remain energized for about 5 seconds before de-energizing the circuit. Such an exemplary embodiment may include two or more timers 52 (*e.g.*, a first timer to count the passage of time between sensing movement and the energizing of the circuit, and a second timer to count the passage of time between the energizing of the circuit and the de-energizing of the circuit).

[0046] A system and apparatus for sanitizing a point-of-contact surface, such as, for example, a doorknob, other door opening device, ATM, or elevator buttons or control panel, as described herein has many advantages. The reduction of communicable germs in hospitals, where individuals may have weakened immune systems, may reduce loss of life and other illness resulting from transmitted germs. The reduction of communicable germs in the workplace and in schools may reduce lost work productivity and lost school days. The size and shape of the apparatus can be tailored to a particular application, so the apparatus need not unduly add to the bulk of the point-of-contact and can function with many different points of contact. The shapes and materials of the apparatus (*e.g.*, anterior dome 20, anterior dome 62, inner surface 26, posterior surface 28) may increase the efficiency and efficacy of the sources of a sanitizing agent—thereby lowering the necessary power consumption of the system and apparatus—by reflecting or directing the sanitizing agent toward a location where the point-of-contact may be disposed. Additionally, because the sanitizing system and apparatus may include one or more of, for example, a switch, timer, remote activation system, or motion sensor, the use and power consumption of the sanitizing system can be scaled to the frequency that sanitization is necessary for a particular point of contact.

[0047] Although numerous embodiments of this invention have been described above with a certain degree of particularity, those skilled in the art could make numerous alterations to the disclosed embodiments without departing from the spirit or scope of this invention. All directional references (*e.g.*, plus, minus, upper, lower, upward, downward, left, right, leftward,

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rightward, top, bottom, above, below, vertical, horizontal, clockwise, and counterclockwise) are only used for identification purposes to aid the reader's understanding of the present invention, and do not create limitations, particularly as to the position, orientation, or use of the invention. Joinder references (*e.g.*, attached, coupled, connected, and the like) are to be construed broadly and may include intermediate members between a connection of elements and relative movement between elements. As such, joinder references do not necessarily infer that two elements are directly connected and in fixed relation to each other. It is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative only and not limiting. Changes in detail or structure may be made without departing from the spirit of the invention as defined in the appended claims.

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CLAIMS

What is claimed is:

1. An apparatus for sanitizing an object, the apparatus comprising:

a housing at least partially defining an interior cavity configured to accept the object, wherein the object includes a sanitizing surface, the housing including:

a first end wall located at a first end of the interior cavity and having a first end wall interior surface at least partially defining the interior cavity;

a sidewall extending from and integral with at least a portion of the first end wall and having a sidewall interior surface at least partially defining the interior cavity; and

a second end wall on an opposite end of the interior cavity from the first end wall having a second end wall interior surface at least partially defining the interior cavity, wherein the second end wall at least partially defines an opening into the interior cavity; and

at least one germicidal light source disposed within the interior cavity, wherein the germicidal light source provides germicidal light into the interior cavity.

2. The apparatus of claim 1, wherein the germicidal light source is a first germicidal light source, further comprising a second germicidal light source disposed on an opposite side of the interior cavity from first germicidal light source.

3. The apparatus of claim 2, wherein the first germicidal light source and the second germicidal light source each project from the sidewall interior surface into the interior cavity.

4. The apparatus of claim 2, wherein at least one of the first germicidal light source or the second germicidal light source are cylindrical light sources.

5. The apparatus of claim 1, wherein the at least one germicidal light source forms a projection into the interior cavity and is configured to direct the germicidal light with a field of view greater than 180 degrees into the interior cavity.

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6. The apparatus of claim 1, wherein the first end wall interior surface, the second end wall interior surface, and the sidewall interior surface are UV reflective and configured to reflect germicidal light from the at least one germicidal light source toward the object.

7. The apparatus of claim 6, wherein the second end wall comprises a curved structure with the second end wall interior surface following a curvature of the curved structure.

8. The apparatus of claim 7, wherein the curved structure is fixed relative to the germicidal light source.

9. The apparatus of claim 1, wherein the at least one germicidal light source is attached to the sidewall and spaced from the first end wall and the second end wall and the sanitizing surface is a point-of-contact sanitizing surface.

10. The apparatus of claim 1, wherein the first end wall is a posterior end wall, the second end wall is an anterior end wall, and the sidewall is coupled with the posterior end wall and projects in an anterior direction relative to the posterior end wall.

11. An apparatus for sanitizing an object, the apparatus comprising:

a housing at least partially defining an interior cavity configured to accept the object, wherein the object includes a sanitizing surface, the housing including:

a posterior wall located at a first end of the interior cavity, the posterior wall having a posterior wall interior surface at least partially defining the interior cavity;

a sidewall extending from and integral with at least a portion of the posterior wall, the sidewall having a sidewall interior surface at least partially defining the interior cavity; and

an anterior wall on an opposite end of the interior cavity from the posterior wall having an anterior wall interior surface at least partially defining the interior cavity, wherein the anterior wall at least partially defines an opening into the interior cavity; and

at least one germicidal light source disposed within the interior cavity, wherein the germicidal light source provides germicidal light into the interior cavity, wherein the posterior

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wall interior surface, the anterior wall interior surface, and the sidewall interior surface are UV reflective and configured to reflect germicidal light from the at least one germicidal light source toward the object.

12. The apparatus of claim 11, wherein the germicidal light source is a first germicidal light source, further comprising a second germicidal light source disposed on an opposite side of the interior cavity from first germicidal light source.

13. The apparatus of claim 12, wherein the first germicidal light source and the second germicidal light source each project from the sidewall interior surface into the interior cavity.

14. The apparatus of claim 11, wherein the at least one germicidal light source is attached to the sidewall and spaced from the posterior wall and the anterior wall and the sanitizing surface is a point-of-contact sanitizing surface.

15. The apparatus of claim 11, wherein the at least one germicidal light source is configured to direct the germicidal light with a field of view greater than 180 degrees into the interior cavity.

16. The apparatus of claim 11, wherein the anterior wall comprises a curved structure with the anterior wall interior surface following a curvature of the curved structure.

17. The apparatus of claim 16, wherein the curved structure is fixed relative to the germicidal light source.

18. An apparatus for sanitizing an object, the apparatus comprising:

a housing at least partially defining an interior cavity configured to accept the object, wherein the object includes a sanitizing surface, the housing including:

a first end wall located at a first end of the interior cavity and having a first end wall interior surface at least partially defining the interior cavity;

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a sidewall extending from and integral with at least a portion of the first end wall and having a sidewall interior surface at least partially defining the interior cavity; and

a second end wall on an opposite end of the interior cavity from the first end wall, the second end wall having a curved structure and a second end wall interior surface at least partially defining the interior cavity, wherein the second end wall at least partially defines an opening into the interior cavity; and

at least one germicidal light source disposed within the interior cavity, wherein the germicidal light source provides germicidal light into the interior cavity.

19. The apparatus of claim 18, wherein the at least one germicidal light source is configured to direct the germicidal light with a field of view greater than 180 degrees into the interior cavity.

20. The apparatus of claim 19, wherein the first end wall interior surface, the second end wall interior surface, and the sidewall interior surface are configured to reflect germicidal light from the at least one germicidal light source toward the object and the sanitizing surface is a point-of-contact sanitizing surface.

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ABSTRACT

An apparatus for sanitizing a point-of-contact surface may include a housing configured to be affixed about at least a portion of said point of contact. The housing may have an interior in or through which the point of contact may be accessed and an anterior opening for access to the interior. The apparatus may further include one or more sources of a sanitizing agent, such as germicidal light, configured to direct the sanitizing agent toward a location where at least a portion of the point-of-contact surface may be disposed. One or more of an anterior dome, an inner surface, and a posterior surface may also be configured to reflect the sanitizing agent toward the location where at least a portion of the point-of-contact surface may be disposed.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	AGD0100.7
	Application Number	
Title of Invention	SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Dean		Schumacher	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Orchard Lke	State/Province	MI	Country of Residence	US

Mailing Address of Inventor:

Address 1	4033 Beach Drive		
Address 2			
City	Farmington Hills	State/Province	MI
Postal Code	48324	Country	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	62124		
Email Address		Add Email	Remove Email

Application Information:

Title of the Invention	SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT		
Attorney Docket Number	AGD0100.7	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	9	Suggested Figure for Publication (if any)	1

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	AGD0100.7
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Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	62124		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	18/508686	2023-11-14

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	AGD0100.7
	Application Number	
Title of Invention	SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT	

Prior Application Status	Patented			Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
18/508686	Continuation of	17/496237	2021-10-07	11813373	2023-10-25
Prior Application Status	Patented			Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
17/496237	Continuation of	17/032187	2020-09-25	11400174	2022-07-13
Prior Application Status	Patented			Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
17/032187	Continuation of	15/831043	2017-12-04	10792380	2020-09-16
Prior Application Status	Patented			Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
15/831043	Continuation of	14/299815	2014-06-09	9833525	2017-11-15
Prior Application Status	Abandoned			Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)		
14/299815	Continuation in part of	14/252294	2014-04-14		
Prior Application Status	Patented			Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14/252294	Continuation of	13/070044	2011-03-23	8698100	2014-03-26
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.				Add	

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

			Remove
Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	AGD0100.7
	Application Number	
Title of Invention	SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT	

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	AGD0100.7
	Application Number	
Title of Invention	SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	AGD0100.7
	Application Number	
Title of Invention	SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1 Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

◯ Assignee	◯ Legal Representative under 35 U.S.C. 117	◯ Joint Inventor
◯ Person to whom the inventor is obligated to assign.	◯ Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Applicant:

Address 1			
Address 2			
City		**State/Province**	
Country		Postal Code	
Phone Number		Fax Number	
Email Address			

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Assignee Information including Non-Applicant Assignee Information:

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	AGD0100.7
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Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

Remove

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country		Postal Code	
Phone Number		Fax Number	
Email Address			

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Signature:

Remove

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Quincy J. Harrison/			Date (YYYY-MM-DD)	2024-08-13
First Name	Quincy	Last Name	Harrison	Registration Number	65374

Additional Signature may be generated within this form by selecting the Add button. Add

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	AGD0100.7
	Application Number	
Title of Invention	SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT	

This collection of information is required by 37 CFR 1.76. 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 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet 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,** V**A 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1 The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3 A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent CooperationTreaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of U.S. patent application Ser. No. 18/508,686, now pending, which is a continuation of U.S. patent application Ser. No. 17/496,237, issued as U.S. Pat. No. 11,813,373, which is a continuation of U.S. patent application Ser. No. 17/032,187, issued as U.S. Pat. No. 11,400,174 which is a continuation of U.S. patent application Ser. No. 15/831,043, issued as U.S. Pat. No. 10,792,380, which is a continuation of U.S. patent application Ser. No. 14/299,815, issued as U.S. Pat. No. 9,833,525, which is a continuation-in-part of U.S. patent application Ser. No. 14/252,294, now abandoned, which is a continuation of U.S. patent application Ser. No. 13/070,044, issued as U.S. Pat. No. 8,698,100, all of which are hereby incorporated by reference in their entireties.

BACKGROUND

a. Technical Field

[0002] The present disclosure relates to a system and apparatus for sanitizing a point of contact for multiple persons. More specifically, this disclosure relates to a system and apparatus for sanitizing a surface of a door opening device, an elevator control panel, an automatic teller machine, or another point of contact.

b. Background Art

[0003] Doorknobs, other door opening devices, and other points of contact for large groups of people, such as automatic teller machines (ATMs) and elevator buttons or control panels, can be involved in the spread of communicable germs. In hospitals, germs communicated through points of contact can lead to increased patient sickness. In an office environment, germs communicated through points of contact can lead to sick employees and lost productivity. In public spaces, germs communicated through points of contact can lead to a sick populace and spread of disease.

[0004] The effect of germs spread through points of contact can be significantly reduced by sterilizing or sanitizing the surface of the point of contact periodically, such as after each use

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of the point of contact. There is therefore a need for a system and apparatus to sanitize point-of-contact surfaces to eliminate one or more of the problems described above.

BRIEF SUMMARY

[0005] An apparatus for sanitizing a point-of-contact surface, such as, for example, a doorknob, other door opening device, automatic teller machine, or elevator buttons or control panels, may include a housing configured to be affixed about at least a portion of the point-of-contact surface. The housing may have an interior in or through which the point-of-contact surface may be accessed and an anterior opening for access to the interior. The apparatus may further include one or more sources of a sanitizing agent configured to direct the sanitizing agent toward the point-of-contact surface. At least one of the one or more sources of a sanitizing agent may be a source of germicidal ultraviolet (UV) light.

[0006] Another embodiment of an apparatus for sanitizing a point-of-contact surface may include a housing having an interior in or through which a point-of-contact surface may be accessed, a posterior opening through which at least a portion of the point-of-contact surface may extend into the interior, and an anterior opening for access to the interior. The apparatus may further include one or more sources of germicidal light configured to direct the germicidal light toward a location where at least a portion of the point-of-contact surface may be disposed. The apparatus may further include an anterior structure, affixed to or integral with the housing, configured to reflect the germicidal light toward a location where at least a portion of the point-of-contact surface may be disposed, the anterior structure defining the anterior opening through which the interior may be accessed, wherein at least a portion of the anterior structure extends in an anterior direction beyond an anterior-most portion of the point-of-contact surface, such that the apparatus is configured to sanitize the anterior-most portion of the point-of-contact surface.

[0007] Another embodiment of an apparatus for sanitizing a point-of-contact surface may include one or more sources of germicidal light configured to direct the germicidal light toward a location where at least a portion of the point-of-contact surface may be disposed. The apparatus may further include a housing in which the one or more sources of germicidal light are disposed, the housing configured to be affixed about at least a portion of the point-of-contact surface. The housing may include an interior in or through which the point-of-contact surface may be accessed, a posterior surface defining a posterior opening through which at least a portion of the

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point-of-contact surface may extend into the interior, the posterior surface configured to reflect light from the one or more sources of germicidal light towards a portion of the point-of-contact surface, and an anterior opening for access to the interior. A portion of the housing may extend in an anterior direction beyond an anterior-most portion of the point-of-contact surface.

[0008] Another embodiment of an apparatus for sanitizing a point-of-contact surface may include a housing having an interior in or through which a point-of-contact surface may be accessed, a posterior opening through which at least a portion of the point-of-contact surface may extend into the interior, and an anterior opening for access to the interior. The apparatus may further include one or more sources of germicidal light configured to direct the germicidal light toward a location where at least a portion of the point-of-contact surface may be disposed, wherein at least a portion of at least one of the one or more sources of germicidal light extends in the anterior direction beyond an anterior-most portion of the point-of-contact surface.

[0009] A system for sanitizing a point-of-contact surface may include an apparatus configured to be affixed about at least a portion of the point-of-contact surface. The apparatus may include one or more sources of a sanitizing agent and may have at least a first operating state in which the apparatus is configured to direct a first amount of the sanitizing agent toward the point-of-contact surface and a second operating state in which the apparatus is configured to direct a second amount of the sanitizing agent toward the point-of-contact surface. The system may further include a switch configured to change the operating state of the apparatus. The switch may comprise one or more of a manual switch, a motion sensor, a timer, and a remote activation system.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Figure 1 is an isometric view of a first embodiment of a sanitizing apparatus for a point-of-contact surface.

[0011] Figure 2 is an anterior view of the first apparatus embodiment.

[0012] Figure 3 is a first side view of the first apparatus embodiment.

[0013] Figure 4 is a second side view of the first apparatus embodiment.

[0014] Figure 5 is a cross-sectional view of the first apparatus embodiment, taken substantially along line 5-5 in Figure 3, with an exemplary point of contact shown in phantom.

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[0015] Figure 6 is an isometric view of a second embodiment of a sanitizing apparatus for a point-of-contact surface.

[0016] Figure 7 is an anterior view of the second apparatus embodiment.

[0017] Figure 8 is a posterior view of the second apparatus embodiment.

[0018] Figure 9 is a schematic view of a first embodiment of a system for sanitizing a point-of-contact surface.

[0019] Figure 10 is a schematic view of a second embodiment of a system for sanitizing a point-of-contact surface.

[0020] Figure 11 is a schematic view of a third embodiment of a system for sanitizing a point-of-contact surface.

[0021] Figure 12 is a schematic view of a fourth embodiment of a system for sanitizing a point-of-contact surface.

[0022] Figure 13 is a cross-sectional view of a third embodiment of a sanitizing apparatus for a point-of-contact surface.

[0023] Figure 14 is a cross-sectional view of a fourth embodiment of a sanitizing apparatus for a point-of-contact surface.

DETAILED DESCRIPTION

[0024] It is known in the art that certain sanitizing agents may be used to sanitize objects and surfaces, such as doorknobs, other door opening devices, automatic teller machines (ATMs), or elevator buttons and control panels. One type of sanitizing agent is electromagnetic energy of a particular frequency in the ultraviolet (UV) light spectrum. Ultraviolet light with a wavelength in the range of about 100 nanometers (nm) to about 280 nanometers (referred to herein as germicidal UV) is known to be deadly to bacteria and other micro-organisms, killing the micro-organisms, rendering them harmless, or eliminating their ability to reproduce. Germicidal UV with a wavelength of about 254 nanometers (a frequency of about 1.18 petahertz (PHz)) or about 185 nm is known to be particularly effective. In one embodiment of the present invention, germicidal UV may be used as an effective agent for sterilizing or sanitizing doorknobs, other door opening devices, automatic teller machines (ATMs), elevator buttons and control panels,

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and other devices and apparatus that may be points of contact for a large volume of people, referred to herein as "points of contact." Similarly, as used herein, a "point-of-contact surface" refers to any surface of a point of contact. A system and apparatus for sanitizing such point-of-contact surfaces may involve germicidal UV or other sanitizing agents.

[0025] In addition to germicidal UV, additional or alternative types of germicidal radiation may be used. For example, but without limitation, high-intensity, narrow-spectrum (HINS) radiation (*e.g.*, in the visible light spectrum with a wavelength of or similar to, for example, 405 nm), blue light (*e.g.*, having a wavelength of or similar to 415 nm), or another wavelength of radiation that is particularly well-suited to germicidal or antimicrobial applications.

[0026] Referring now to the drawings wherein like reference numerals are used to identify identical components in the various views, Figure 1 is an isometric view of an embodiment 10 of a sanitizing apparatus for a point-of-contact surface. Apparatus 10 may include a housing 12 and one or more attachment structures 18. Housing 12 may include an anterior opening 14 and an interior 16. As used herein, "posterior" refers generally to the end of an apparatus or system, such as apparatus 10, proximate to a point of contact or to a structure to which the point of contact is attached (*e.g.*, a wall or door). "Anterior" refers generally to the end of the apparatus or system through or by which a human user may access the point of contact, such as by extension of a hand through anterior opening 14. Housing 12 may contain one or more sources of a sanitizing agent, one or more surfaces to focus and reflect the sanitizing agent toward a point-of-contact surface, and wiring and circuitry enabling the one or more sanitizing agent sources to function. An anterior dome 20 or other anterior structure may be provided at the anterior end of housing 12 and may be configured to reflect or direct the sanitizing agent toward a location where the point-of-contact surface is to be disposed when apparatus 10 is installed. At least a portion of the point of contact may extend into interior 16—*i.e.*, the point of contact may be accessed in or through interior 16. Anterior opening 14 may provide user access to interior 16—*i.e.*, human access to the point of contact sanitized by apparatus 10. Attachment structures 18 may be provided to attach housing 12 to a door, door frame, wall, or other structure to allow interior 16 to be disposed about a point-of-contact surface. Attachment structures 18 may be brackets and screws, as shown, or other functional attachment structures or devices.

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[0027] Figure 2 is an anterior view of apparatus 10 looking through anterior opening 14 and through interior 16 to a posterior opening 22. A protective screen 30 (best shown in Figure 5) has been omitted for clarity. Interior 16 may be defined as the area within housing 12 between anterior opening 14 and posterior opening 22. Posterior opening 22 may be provided for a portion of a doorknob, other door opening device, or other point of contact to extend into interior 16. In an embodiment in which no point-of-contact surface extends into interior 16, such as, for example, an ATM interface or a set of elevator buttons, posterior opening 22 may be the opening through which a sanitizing agent passes to reach the point-of-contact surface from interior 16.

[0028] Interior 16 may contain one or more sources of a sanitizing agent. In apparatus 10, the sources may be three ultraviolet (UV) light bulbs 24. Bulbs 24 may operate at the germicidal range of the ultraviolet light spectrum and/or have a germicidal coating. In embodiments where bulbs 24 apply germicidal UV as a sanitizing agent, bulbs 24 may operate within a wide range of powers and exposure times, such as, for example, power in the range of about 4–65 watts and exposure times of about 2–10 seconds. However, it should be understood that less power may be used in conjunction with a longer exposure time, or more power in conjunction with a shorter exposure time. Bulbs 24 are not limited to germicidal UV as a sanitizing agent. Bulbs 24 may sanitize surfaces based on one or more of: (1) a particular characteristic of the agent or energy applied (*e.g.*, germicidal UV); (2) the heat resulting from the application of the sanitizing agent or energy, or (3) the interaction of the agent with a particular characteristic of the surface or another substance applied to the surface.

[0029] In addition to or instead of germicidal UV, the light bulbs 24 may emit radiation of some other portion of the spectrum. For example, but without limitation, the light bulbs 24 may output high-intensity, narrow-spectrum (HINS) radiation (*e.g.*, in the visible light spectrum with a wavelength of or similar to, for example, 405 nm), blue light (*e.g.*, having a wavelength of or similar to 415 nm), or another wavelength of radiation that is particularly well-suited to germicidal or antimicrobial applications.

[0030] An inner surface 26 may be configured in shape and material to reflect or direct the sanitizing agent toward a location where the point-of-contact surface is to be disposed when apparatus 10 is installed, thereby increasing the exposure of the surface to the sanitizing agent.

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In an embodiment where the point of contact does not extend into interior 16 (*i.e.*, no point-of-contact surface is within interior 16), inner surface 26 may be configured to direct or reflect the sanitizing agent toward the posterior end of interior 16. Inner surface 26 is shown as a cylinder, but inner surface 26 may have another shape adapted to a particular application. Inner surface 26 may comprise aluminum, glass, or another reflective material, and/or may be coated with a reflective layer. Inner surface 26 may be configured to support bulbs 24 or otherwise be coupled with bulbs 24. Additionally, inner surface 26 may be a unitary surface or structure, as shown, or may comprise multiple pieces or surfaces.

[0031] A posterior surface 28 may also be provided and may be configured to reflect or direct the sanitizing agent toward a location where the point-of-contact surface is to be disposed once apparatus 10 is installed. Posterior surface 28 may be one or more plates or other insert placed at posterior opening 22, as shown in Figure 2, and may be configured to conform to the geometry of the point of contact. A two-segment posterior surface 28 with a circular opening, as shown, may be appropriate for use with a point of contact having a cylindrical extension portion, such as a doorknob. Although shown as a separate piece from housing 12, posterior surface 28 may also be integral with housing 12 and may have a hole or other cut-out portion forming posterior opening 22. Posterior surface 28 may comprise aluminum, glass, or another reflective material, or may be non-reflective if reflection from the posterior end of apparatus 10 is not desired.

[0032] Figures 3 and 4 are side views of apparatus 10. Apparatus 10 may have a "longer" side, as shown in Figure 3, and a "shorter" side, as shown in Figure 4. However, it should be understood that the geometry of apparatus 10 may be adapted to particular points of contact and particular manufacturing restraints. Additionally, the size of housing 12 (and the rest of apparatus 10) may be adapted to a particular application or particular manufacturing constraints.

[0033] Figure 5 is a cross-sectional view of apparatus 10, taken substantially along line 5-5 in Figure 3. Figure 5 includes an exemplary point-of-contact (shown as a doorknob) in phantom. Although a gap is shown between apparatus 10 and the phantom door, apparatus 10 may be configured to be flush with such a door or other structure or surface. Figure 5 also includes a protective screen 30 not shown in Figures 1 and 2. Protective screen 30 may be

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provided to separate bulbs 24 (or another source of a sanitizing agent) from anterior opening 14 and posterior opening 22—*i.e.*, screen 30 may be disposed between bulbs 24 and a central portion of interior 16. In effect, protective screen 30 may divide interior 16 into two compartments—a first compartment containing bulbs 24 and a second compartment providing human access from anterior opening 14 to the point of contact. Protective screen 30 may be provided for many purposes. For example, one purpose may be to prevent irritating contact between a user of the point of contact and bulbs 24, which may reach high temperatures and/or may be coated with a substance that may irritate human skin. Another exemplary purpose may be to prevent user contact with bulbs 24, which may be fragile. Protective screen 30 may be of any suitable shape, material, and geometry configured to allow the sanitizing agent to pass from sources 24 to the point-of-contact surface (*i.e.*, the protective screen 30 may be transparent or translucent to the sanitizing agent). For example only, screen 30 may be a relatively rigid plastic cylinder having the same diameter as anterior opening 14, as shown. Screen 30 may include gaps, slits, or vents, or may be solid. Protective screen 30 also may be a unitary structure, or may comprise several segments and/or surfaces.

[0034] Figure 6 is an isometric view of a second embodiment 34 of an apparatus for sanitizing a point-of-contact surface. Apparatus 34 is nearly identical to apparatus 10, but apparatus 34 lacks an anterior dome. Apparatus 34 may extend less in the anterior direction from the point-of-contact surface than apparatus 10, but apparatus 34 may still effectively sanitize the point-of-contact surface.

[0035] Figure 7 is an anterior view of apparatus 34. Lacking a anterior dome, housing 12 and interior 16 may be configured to extend no further in the anterior direction than do bulbs 24. Bulbs 24 may also be configured in size, shape, and orientation in apparatus 34 or apparatus 10 for a particular point of contact. For example, rather than extending axially, as shown (*i.e.*, substantially parallel to an axis of the apparatus extending from anterior opening 14 to posterior opening 22), bulbs 24 may extend circumferentially, or otherwise normal to the apparatus axis.

[0036] Figure 8 is a posterior view of apparatus 34 with posterior surface 28 removed. Apparatus 10 may appear substantially the same from the posterior perspective, except the interior of anterior dome 20 would be visible. Posterior opening 22 may be configured in size and shape to accommodate a particular point of contact.

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[0037] Figure 13 is a cross-sectional view of a third embodiment 60 of an apparatus for sanitizing a point-of-contact surface. The third apparatus 60 is substantially identical to the first apparatus 10, but the dome 62 of the third apparatus may include a conical or frustoconical inner surface (*i.e*, as opposed to the hemispherical inner surface of the dome 20 of the first apparatus 10) that is angled so as to reflect germicidal radiation towards the point-of-contact surface. Stated another way, the dome 62 may include a portion having a linear cross-section (*i.e.*, as opposed to a curved cross-section, as in the dome 20 of the first apparatus 10).

[0038] Figure 14 is a cross-sectional view of a fourth embodiment 64 of an apparatus for sanitizing a point-of-contact surface. The fourth apparatus 64 is substantially identical to the first apparatus 10, but the housing 66 of the fourth apparatus may include a reflective wall 68 that is disposed at an angle other than perpendicular to the posterior surface 28 so as to reflect germicidal radiation towards the point-of-contact surface. In an embodiment, the wall 68 may form a frustoconical housing portion. Such a frustoconical housing portion may have a narrower diameter at the anterior end of the portion, as shown in Figure 14. Alternatively, the frustoconical housing portion may have a narrower diameter at the posterior end of the portion, in an embodiment. The wall 68 may be substantially flat in cross-section (*e.g.*, may extend in a substantially linear manner between its anterior and posterior ends, as shown in Figure 14), or may be curved in cross-section. The angled wall 68 may extend to meet the screen 30, in an embodiment. In such an embodiment, or in another embodiment, the angled wall (*e.g.*, the frustoconical housing portion) may define the anterior opening 14 of the housing. Alternatively, and as shown in Figure 14, the angled wall 68 may be coupled with a structure or surface 70 (*e.g.*, a dome or a flat surface) configured to reflect sanitizing radiation towards the point-of-contact surface.

[0039] The first, third, and fourth sanitizing apparatus embodiments 10, 60, 64 all may include an anterior structure that is configured to be disposed anterior of the point-of-contact surface and to reflect germicidal radiation in a posterior direction towards the point-of-contact surface. The first apparatus 10 may include a dome 20 comprising a hemispherical portion, the third apparatus may include a dome 62 comprising a frustoconical portion, and the fourth apparatus 64 may include an angled wall that may form, for example, a frustoconical reflective housing portion.

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[0040] Figure 9 is a schematic view of a first embodiment of a system for sanitizing a point-of-contact surface, designated system 36. System 36 may include an apparatus 38 for sanitizing a point-of-contact surface and a manual switch 40. Apparatus 38 may be apparatus 10, apparatus 34, apparatus 60, apparatus 64, or another apparatus configured to sanitize a point-of-contact surface. Apparatus 38 includes an electrical circuit configured to control sanitizing agent sources 24, shown again as bulbs or lamps. The electrical circuit may include one or more power supplies (shown as three 6-volt battery packs) and one or more circuit boards configured to electrically couple the power supplies with the sanitizing agent sources 24, such as, for example, through a socket affixed to apparatus 38 into which lamp 24 may be removably placed. The power supply for the electrical circuit may also be an external source, such as, for example, from a wall socket through an appropriate cord. Additionally or alternatively, apparatus 38 or system 36 may include a generator to recharge batteries or battery packs within the circuit. The generator may be coupled to a door, door opening device, or other device such that the batteries are charged when the door is opened or closed, the door opening device is turned, or energy is otherwise imparted to the generator. Switch 40 may control the current flowing through the electrical circuit, thereby controlling the power applied to sanitizing agent sources 24 and thus controlling the amount of the sanitizing agent emitted by sanitizing agent sources 24.

[0041] Apparatus 38 may have at least two operating states: a first state in which apparatus 38 directs a first amount of a sanitizing agent toward a location where a point-of-contact surface may be disposed after installation of apparatus 38, and a second state in which apparatus 38 directs a second amount of the sanitizing agent toward the same location. Switch 40 may change the operating state of apparatus 38 by controlling the power applied to sanitizing agent sources 24, as described above. Manual switch 40 may be integrated into apparatus 38 (such as in housing 12), or may be located in close proximity to apparatus 38. Switch 40 may be a button, lever, switch, other binary switching device, or a slider, dimmer, or other analog switching device.

[0042] Apparatus 38 may sanitize a point-of-contact surface when activated by switch 40. For example, an individual may reach into apparatus 38, turn a doorknob disposed within interior 16, and open the attached door. After opening the door, the user may manually "flip" switch 40, changing apparatus 38 from an "OFF" state to an "ON" state. In an "ON" state, the electrical circuit of apparatus 38 is configured to energize bulbs 24 such that bulbs 24 emit a

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non-zero amount of a sanitizing agent, such as germicidal UV, toward the doorknob. The shape and materials of interior 16 may reflect and direct the sanitizing agent (*e.g.*, germicidal UV) onto the doorknob. Bulbs 24 may be deactivated (*i.e.*, apparatus 38 may be changed from an "ON" state to an "OFF" state in which bulbs 24 emit a substantially zero amount of the sanitizing agent) upon a second manual "flip" of switch 40. A user of the door may also flip switch 40 prior to using the doorknob to sanitize the doorknob before making contact with the doorknob, then flip switch 40 a second time to deactivate bulbs 24 such that the user may safely extend a hand into apparatus 38. In an alternative embodiment, apparatus 38 may have three discrete operating states: "HIGH," "LOW," and "OFF" which may be selected by "flipping" an appropriate switch. Apparatus 38 may also have four or more discrete operating states, or may have multiple operating states along an analog scale.

[0043] Figure 10 is a schematic view of a second embodiment 42 of a system for sanitizing a point-of-contact surface. System 42 may include many of the same features and functionality as system 36, but system 42 may change the state of apparatus 38 with a remote activation system 44. Remote activation system 44 may include a remote receiver 46 integrated with apparatus 38 and a remote control 48. Remote receiver 46 may have an independent power supply, as shown. Remote control 48 may communicate with remote receiver 46 wirelessly, such as by a radio frequency signal, or through a wired connection.

[0044] Figure 11 is a schematic view of a third embodiment 50 of a system for sanitizing a point-of-contact surface. System 50 may include many of the same features and functionality as systems 36 and 42, but system 50 may include a timer 52 for automatically deactivating apparatus 38. Timer 52 may be coupled with manual switch 40 such that timer 52 automatically changes the operating state of (*e.g.*, cuts power to) apparatus 38 after a set amount of time after switch 40 is "flipped." As a result, apparatus 38 may sanitize a surface for a pre-determined amount of time, such as, for example, 3–5 seconds, upon switch 40 being "flipped." Timer 52 may be configured to allow apparatus 38 to administer an effective dose of the sanitizing agent before de-energizing the electrical circuit. For example, timer 52 may allow the circuit of apparatus 38 to remain energized for about 5 seconds after switch 40 is "flipped."

[0045] Figure 12 is a schematic view of a fourth embodiment 54 of a system for sanitizing a point-of-contact surface. System 54 may include many of the same features and

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functionality as systems 36, 42, and 50, but system 54 may include a motion sensor 56 for automatically activating and/or deactivating apparatus 38. Although not shown, motion sensor 56 may include an independent power supply. In an exemplary embodiment, after motion sensor 56 senses movement (*e.g.*, a hand entering apparatus 38), system 54 may wait about six seconds (*i.e.*, enough time for a user to access the point-of-contact and remove the hand), then change the operating state of apparatus 38 (*e.g.*, from a de-energized "OFF" state to an energized "ON" state) to sanitize the point of contact. Timer 52 may allow the circuit of apparatus 38 to remain energized for about 5 seconds before de-energizing the circuit. Such an exemplary embodiment may include two or more timers 52 (*e.g.*, a first timer to count the passage of time between sensing movement and the energizing of the circuit, and a second timer to count the passage of time between the energizing of the circuit and the de-energizing of the circuit).

[0046] A system and apparatus for sanitizing a point-of-contact surface, such as, for example, a doorknob, other door opening device, ATM, or elevator buttons or control panel, as described herein has many advantages. The reduction of communicable germs in hospitals, where individuals may have weakened immune systems, may reduce loss of life and other illness resulting from transmitted germs. The reduction of communicable germs in the workplace and in schools may reduce lost work productivity and lost school days. The size and shape of the apparatus can be tailored to a particular application, so the apparatus need not unduly add to the bulk of the point-of-contact and can function with many different points of contact. The shapes and materials of the apparatus (*e.g.*, anterior dome 20, anterior dome 62, inner surface 26, posterior surface 28) may increase the efficiency and efficacy of the sources of a sanitizing agent—thereby lowering the necessary power consumption of the system and apparatus—by reflecting or directing the sanitizing agent toward a location where the point-of-contact may be disposed. Additionally, because the sanitizing system and apparatus may include one or more of, for example, a switch, timer, remote activation system, or motion sensor, the use and power consumption of the sanitizing system can be scaled to the frequency that sanitization is necessary for a particular point of contact.

[0047] Although numerous embodiments of this invention have been described above with a certain degree of particularity, those skilled in the art could make numerous alterations to the disclosed embodiments without departing from the spirit or scope of this invention. All directional references (*e.g.*, plus, minus, upper, lower, upward, downward, left, right, leftward,

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rightward, top, bottom, above, below, vertical, horizontal, clockwise, and counterclockwise) are only used for identification purposes to aid the reader's understanding of the present invention, and do not create limitations, particularly as to the position, orientation, or use of the invention. Joinder references (*e.g.*, attached, coupled, connected, and the like) are to be construed broadly and may include intermediate members between a connection of elements and relative movement between elements. As such, joinder references do not necessarily infer that two elements are directly connected and in fixed relation to each other. It is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative only and not limiting. Changes in detail or structure may be made without departing from the spirit of the invention as defined in the appended claims.

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CLAIMS

What is claimed is:

1. An apparatus for sanitizing an object, the apparatus comprising:

a housing at least partially defining an interior cavity configured to accept the object, wherein the object includes a sanitizing surface, the housing including:

a first end wall located at a first end of the interior cavity and having a first end wall interior surface at least partially defining the interior cavity;

a sidewall extending from and integral with at least a portion of the first end wall and having a sidewall interior surface at least partially defining the interior cavity; and

a second end wall on an opposite end of the interior cavity from the first end wall having a second end wall interior surface at least partially defining the interior cavity, wherein the second end wall at least partially defines an opening into the interior cavity; and

at least one germicidal light source disposed within the interior cavity, wherein the germicidal light source provides germicidal light into the interior cavity.

2. The apparatus of claim 1, wherein the germicidal light source is a first germicidal light source, further comprising a second germicidal light source disposed on an opposite side of the interior cavity from first germicidal light source.

3. The apparatus of claim 2, wherein the first germicidal light source and the second germicidal light source each project from the sidewall interior surface into the interior cavity.

4. The apparatus of claim 2, wherein at least one of the first germicidal light source or the second germicidal light source are cylindrical light sources.

5. The apparatus of claim 1, wherein the at least one germicidal light source forms a projection into the interior cavity and is configured to direct the germicidal light with a field of view greater than 180 degrees into the interior cavity.

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6. The apparatus of claim 1, wherein the first end wall interior surface, the second end wall interior surface, and the sidewall interior surface are UV reflective and configured to reflect germicidal light from the at least one germicidal light source toward the object.

7. The apparatus of claim 6, wherein the second end wall comprises a curved structure with the second end wall interior surface following a curvature of the curved structure.

8. The apparatus of claim 7, wherein the curved structure is fixed relative to the germicidal light source.

9. The apparatus of claim 1, wherein the at least one germicidal light source is attached to the sidewall and spaced from the first end wall and the second end wall and the sanitizing surface is a point-of-contact sanitizing surface.

10. The apparatus of claim 1, wherein the first end wall is a posterior end wall, the second end wall is an anterior end wall, and the sidewall is coupled with the posterior end wall and projects in an anterior direction relative to the posterior end wall.

11. An apparatus for sanitizing an object, the apparatus comprising:

a housing at least partially defining an interior cavity configured to accept the object, wherein the object includes a sanitizing surface, the housing including:

a posterior wall located at a first end of the interior cavity, the posterior wall having a posterior wall interior surface at least partially defining the interior cavity;

a sidewall extending from and integral with at least a portion of the posterior wall, the sidewall having a sidewall interior surface at least partially defining the interior cavity; and

an anterior wall on an opposite end of the interior cavity from the posterior wall having an anterior wall interior surface at least partially defining the interior cavity, wherein the anterior wall at least partially defines an opening into the interior cavity; and

at least one germicidal light source disposed within the interior cavity, wherein the germicidal light source provides germicidal light into the interior cavity, wherein the posterior

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wall interior surface, the anterior wall interior surface, and the sidewall interior surface are UV reflective and configured to reflect germicidal light from the at least one germicidal light source toward the object.

12. The apparatus of claim 11, wherein the germicidal light source is a first germicidal light source, further comprising a second germicidal light source disposed on an opposite side of the interior cavity from first germicidal light source.

13. The apparatus of claim 12, wherein the first germicidal light source and the second germicidal light source each project from the sidewall interior surface into the interior cavity.

14. The apparatus of claim 11, wherein the at least one germicidal light source is attached to the sidewall and spaced from the posterior wall and the anterior wall and the sanitizing surface is a point-of-contact sanitizing surface.

15. The apparatus of claim 11, wherein the at least one germicidal light source is configured to direct the germicidal light with a field of view greater than 180 degrees into the interior cavity.

16. The apparatus of claim 11, wherein the anterior wall comprises a curved structure with the anterior wall interior surface following a curvature of the curved structure.

17. The apparatus of claim 16, wherein the curved structure is fixed relative to the germicidal light source.

18. An apparatus for sanitizing an object, the apparatus comprising:

a housing at least partially defining an interior cavity configured to accept the object, wherein the object includes a sanitizing surface, the housing including:

a first end wall located at a first end of the interior cavity and having a first end wall interior surface at least partially defining the interior cavity;

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a sidewall extending from and integral with at least a portion of the first end wall and having a sidewall interior surface at least partially defining the interior cavity; and

a second end wall on an opposite end of the interior cavity from the first end wall, the second end wall having a curved structure and a second end wall interior surface at least partially defining the interior cavity, wherein the second end wall at least partially defines an opening into the interior cavity; and

at least one germicidal light source disposed within the interior cavity, wherein the germicidal light source provides germicidal light into the interior cavity.

19. The apparatus of claim 18, wherein the at least one germicidal light source is configured to direct the germicidal light with a field of view greater than 180 degrees into the interior cavity.

20. The apparatus of claim 19, wherein the first end wall interior surface, the second end wall interior surface, and the sidewall interior surface are configured to reflect germicidal light from the at least one germicidal light source toward the object and the sanitizing surface is a point-of-contact sanitizing surface.

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ABSTRACT

An apparatus for sanitizing a point-of-contact surface may include a housing configured to be affixed about at least a portion of said point of contact. The housing may have an interior in or through which the point of contact may be accessed and an anterior opening for access to the interior. The apparatus may further include one or more sources of a sanitizing agent, such as germicidal light, configured to direct the sanitizing agent toward a location where at least a portion of the point-of-contact surface may be disposed. One or more of an anterior dome, an inner surface, and a posterior surface may also be configured to reflect the sanitizing agent toward the location where at least a portion of the point-of-contact surface may be disposed.

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Title of Invention

SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT

Application Information

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FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
2830	PROCESSING FEE, EXCEPT IN PROVISIONAL APPLICATIONS	56.00	1	56.00
2817	REQUEST FOR PRIORITIZED EXAMINATION	1680.00	1	1680.00
2111	UTILITY PATENT APPL. SEARCH FEE	280.00	1	280.00
4011	BASIC FILING FEE- UTILITY	64.00	1	64.00
2311	EXAMINATION OF ORIGINAL PATENT APPLICATION	320.00	1	320.00
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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for 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

National Stage of an International Application under 35 U.S.C. 371

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.

New International Application Filed with the USPTO as a Receiving Office

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Doc Code: TRACK1.REQ
Document Description: TrackOne Request

PTO/AIA/424 (04-14)

CERTIFICATION AND REQUEST FOR PRIORITIZED EXAMINATION UNDER 37 CFR 1.102(e) (Page 1 of 1)

First Named Inventor:	Dean Schumacher	Nonprovisional Application Number (if known):	
Title of Invention:	SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT		

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS PRIORITIZED EXAMINATION FOR THE ABOVE-IDENTIFIED APPLICATION.

1. The processing fee set forth in 37 CFR 1.17(i)(1) and the prioritized examination fee set forth in 37 CFR 1.17(c) have been filed with the request. The publication fee requirement is met because that fee, set forth in 37 CFR 1.18(d), is currently $0. The basic filing fee, search fee, and examination fee are filed with the request or have been already been paid. I understand that any required excess claims fees or application size fee must be paid for the application.

2. I understand that the application may not contain, or be amended to contain, more than four independent claims, more than thirty total claims, or any multiple dependent claims, and that any request for an extension of time will cause an outstanding Track I request to be dismissed.

3. The applicable box is checked below:

I. ☑ Original Application (Track One) - Prioritized Examination under § 1.102(e)(1)

i. (a) The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a). This certification and request is being filed with the utility application via EFS-Web.

---OR---

(b) The application is an original nonprovisional plant application filed under 35 U.S.C. 111(a). This certification and request is being filed with the plant application in paper.

ii. An executed inventor's oath or declaration under 37 CFR 1.63 or 37 CFR 1.64 for each inventor, **or** the application data sheet meeting the conditions specified in 37 CFR 1.53(f)(3)(i) is filed with the application.

II. ☐ Request for Continued Examination - Prioritized Examination under § 1.102(e)(2)

i. A request for continued examination has been filed with, or prior to, this form.
ii. If the application is a utility application, this certification and request is being filed via EFS-Web.
iii. The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a), or is a national stage entry under 35 U.S.C. 371.
iv. This certification and request is being filed prior to the mailing of a first Office action responsive to the request for continued examination.
v. No prior request for continued examination has been granted prioritized examination status under 37 CFR 1.102(e)(2).

Signature /Quincy J. Harrison/	Date 08/13/2024
Name (Print/Typed) Quincy Harrison	Practitioner Registration Number 65374

Note: *This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required.**

☐ *Total of _____ forms are submitted.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

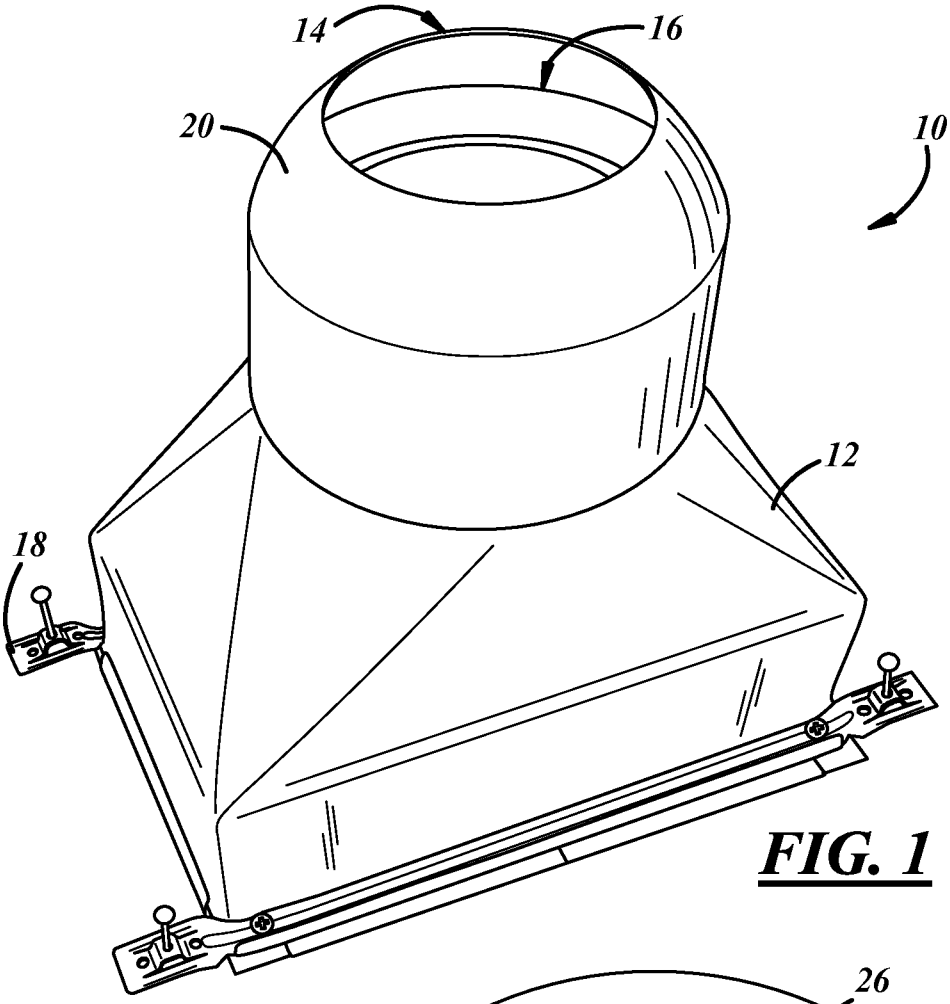


FIG. 1

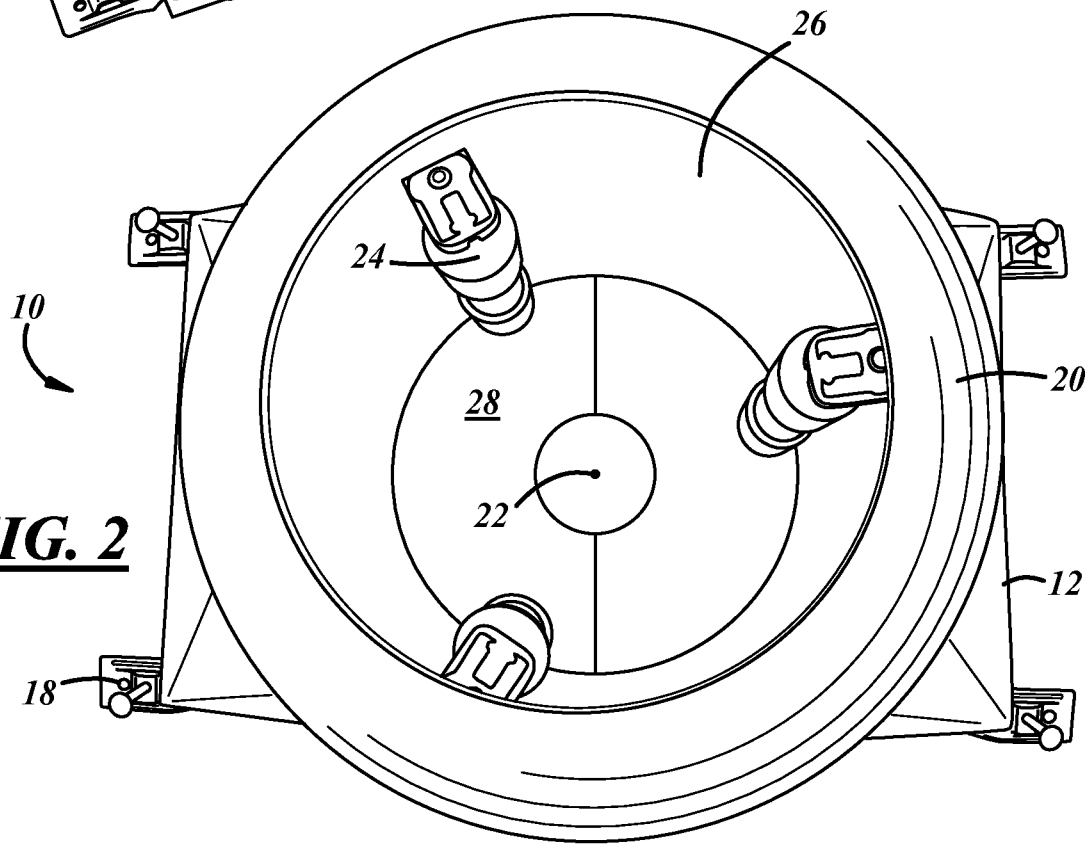


FIG. 2

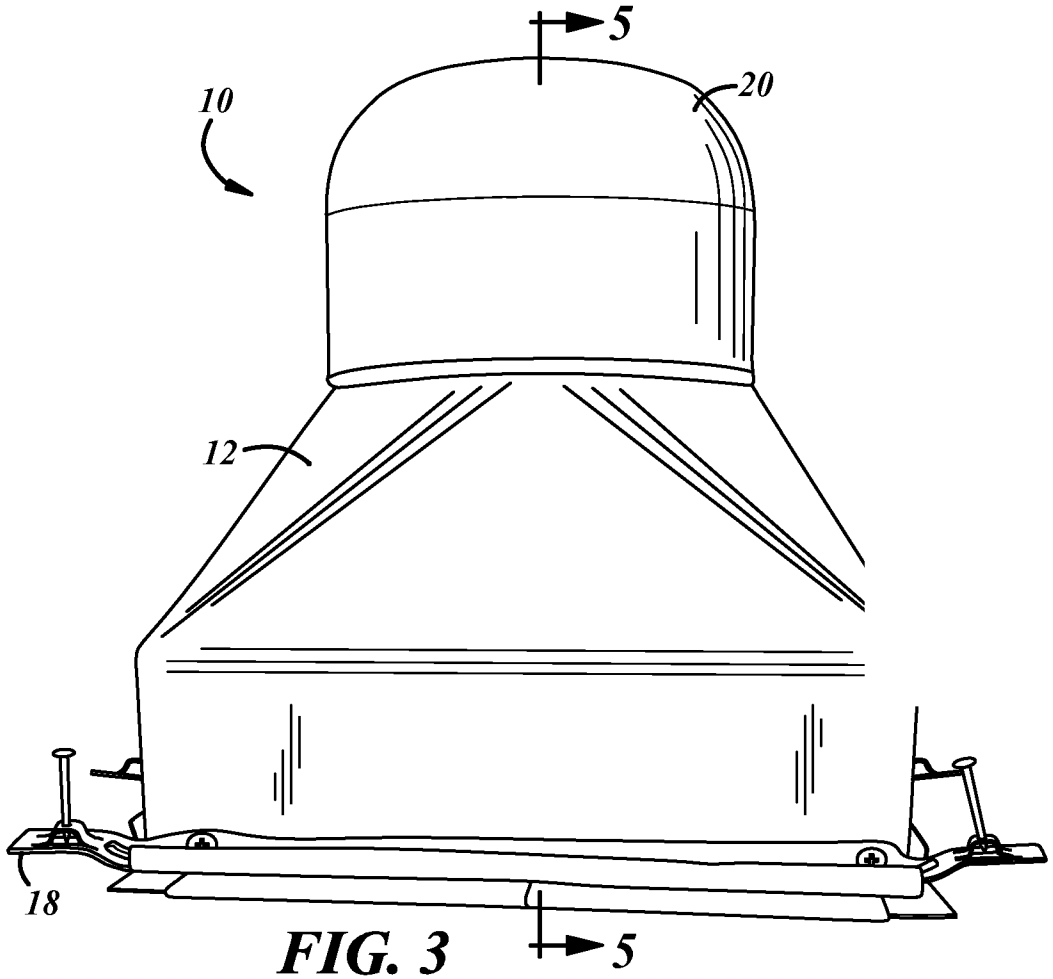


FIG. 3

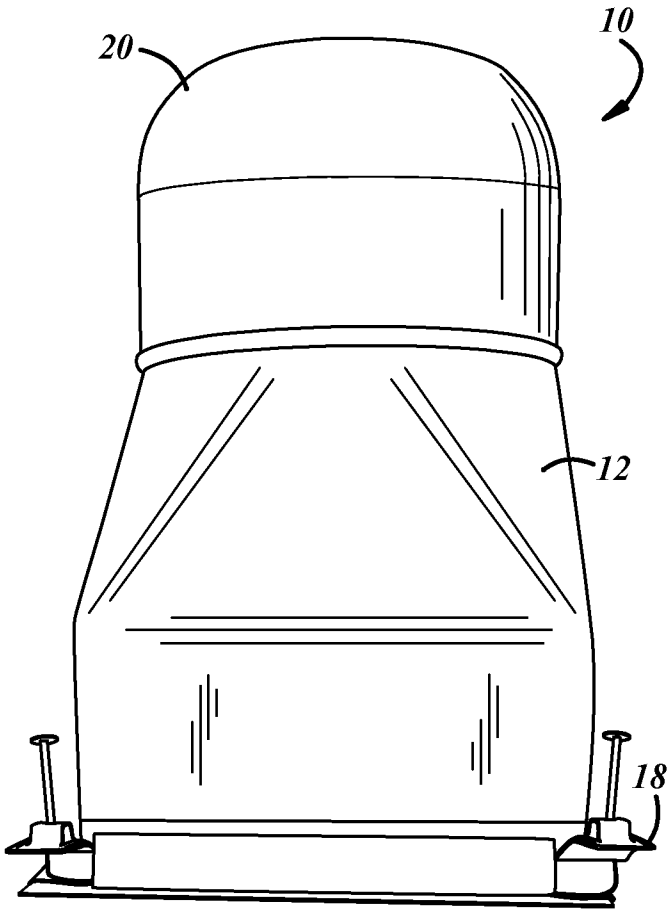


FIG. 4

HYUNDAI MOTOR AMERICA
Ex. 1002
Page 51 of 701

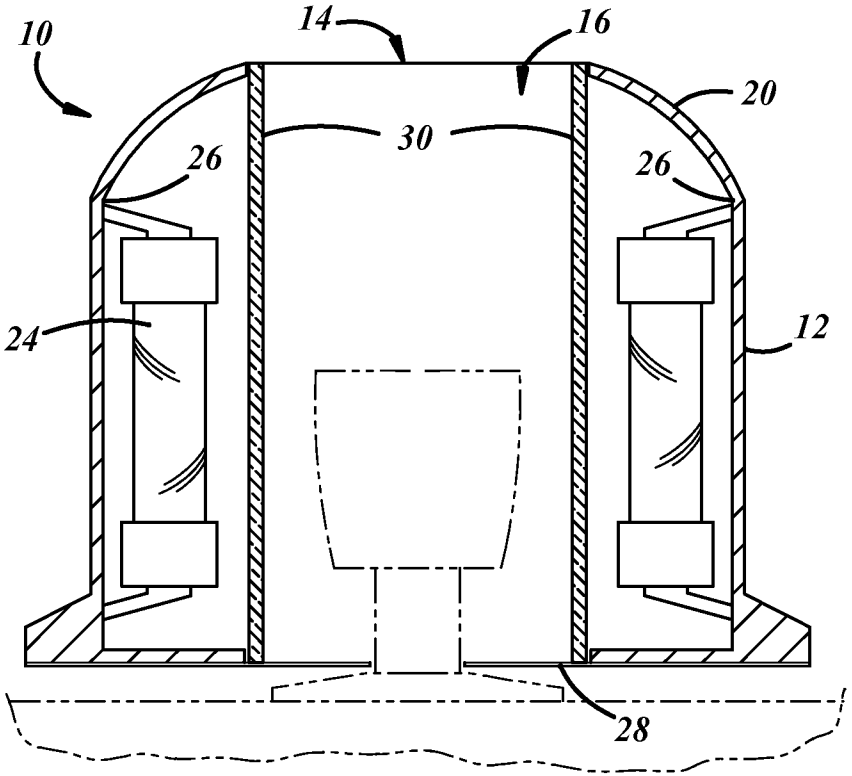


FIG. 5

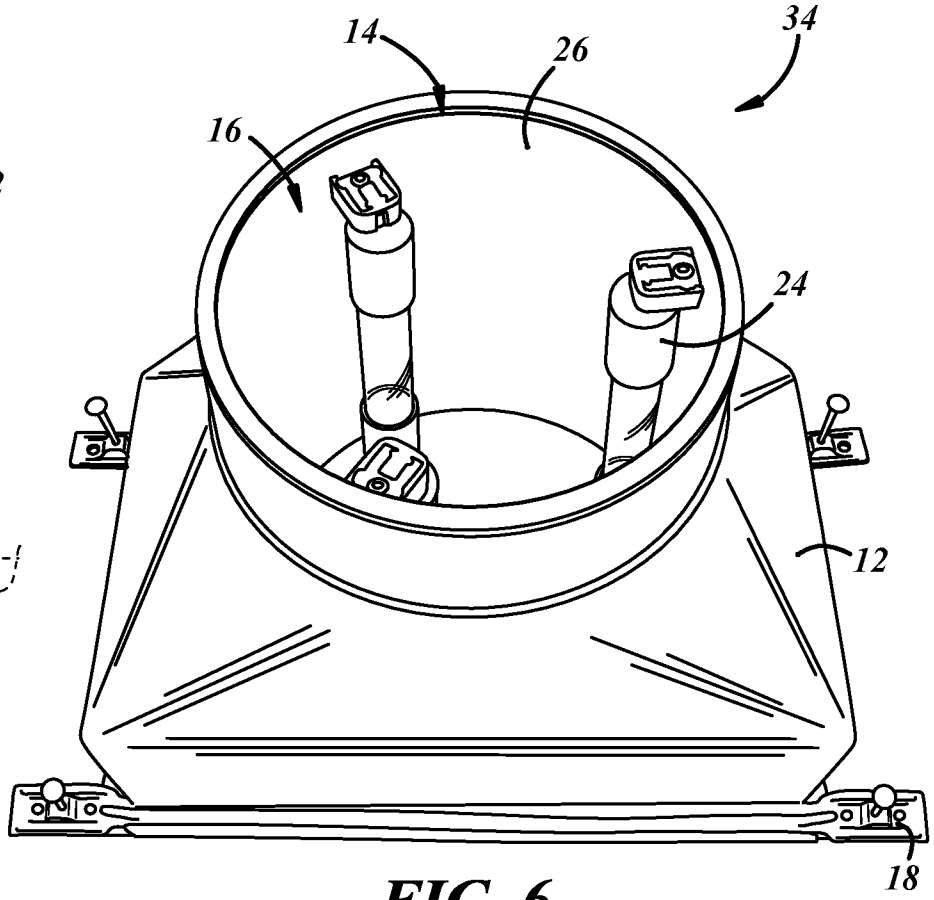


FIG. 6

HYUNDAI MOTOR AMERICA
Ex. 1002
Page 52 of 701

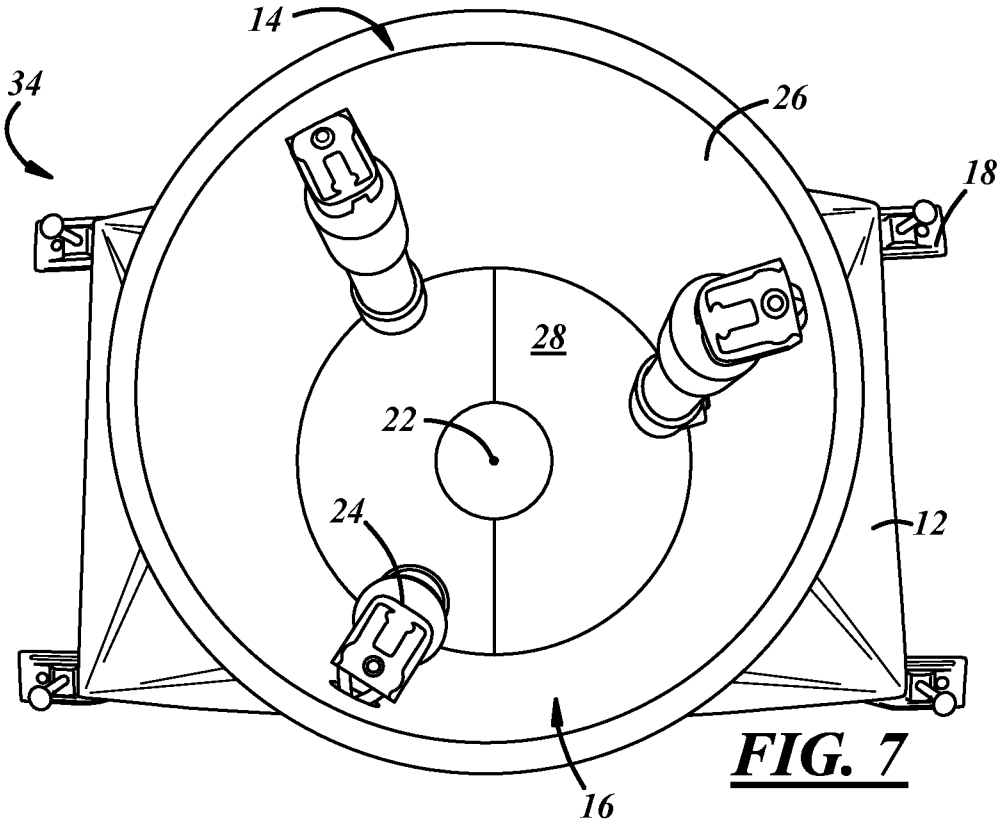


FIG. 7

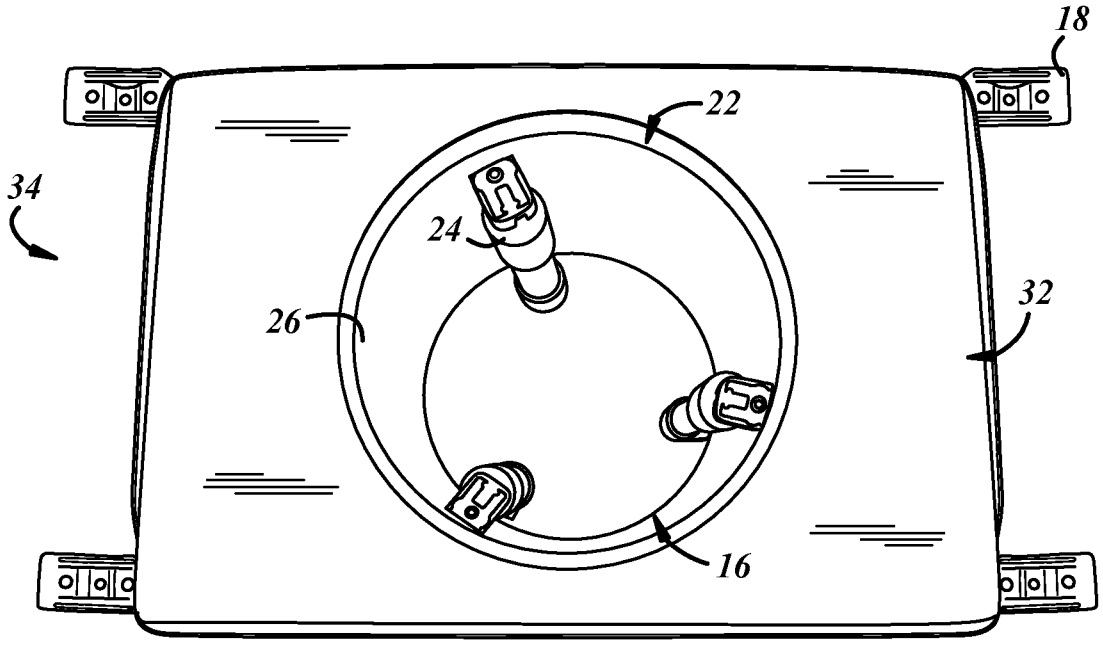


FIG. 8

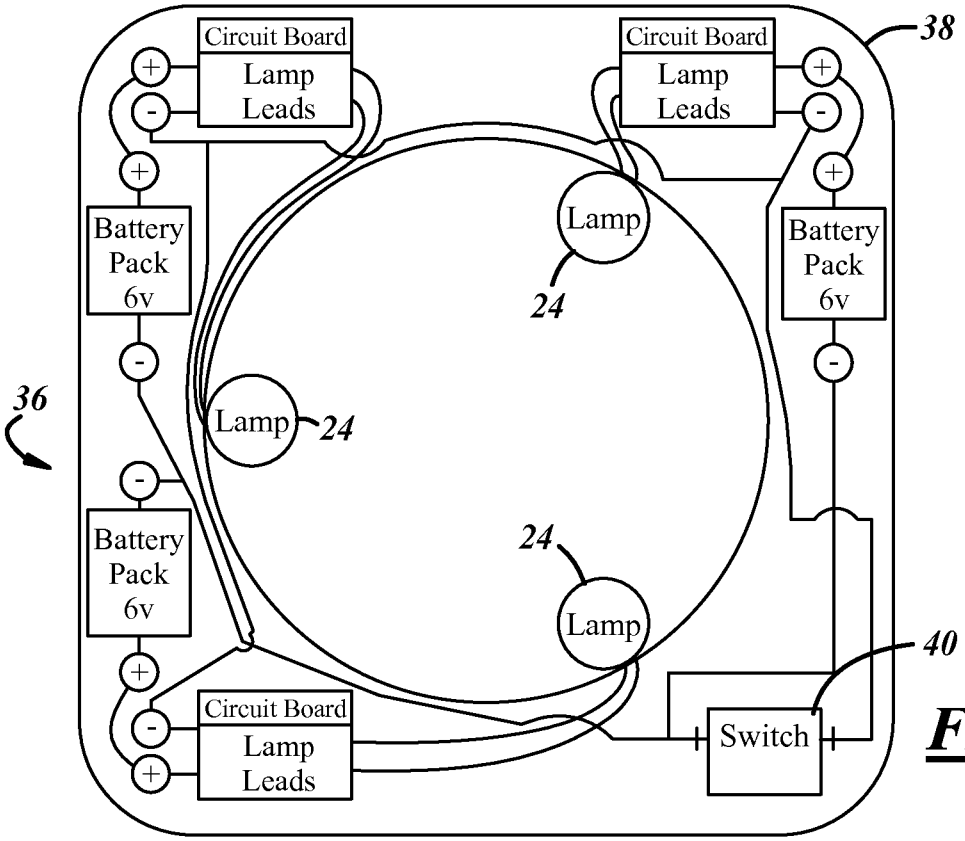

Circuit Board
Lamp
Leads
Circuit Board
Lamp
Leads
38
Battery
Pack
6v
Lamp
24
Battery
Pack
6v
36
Lamp
24
Battery
Pack
6v
24
Lamp
40
Circuit Board
Lamp
Leads
Switch

FIG. 9

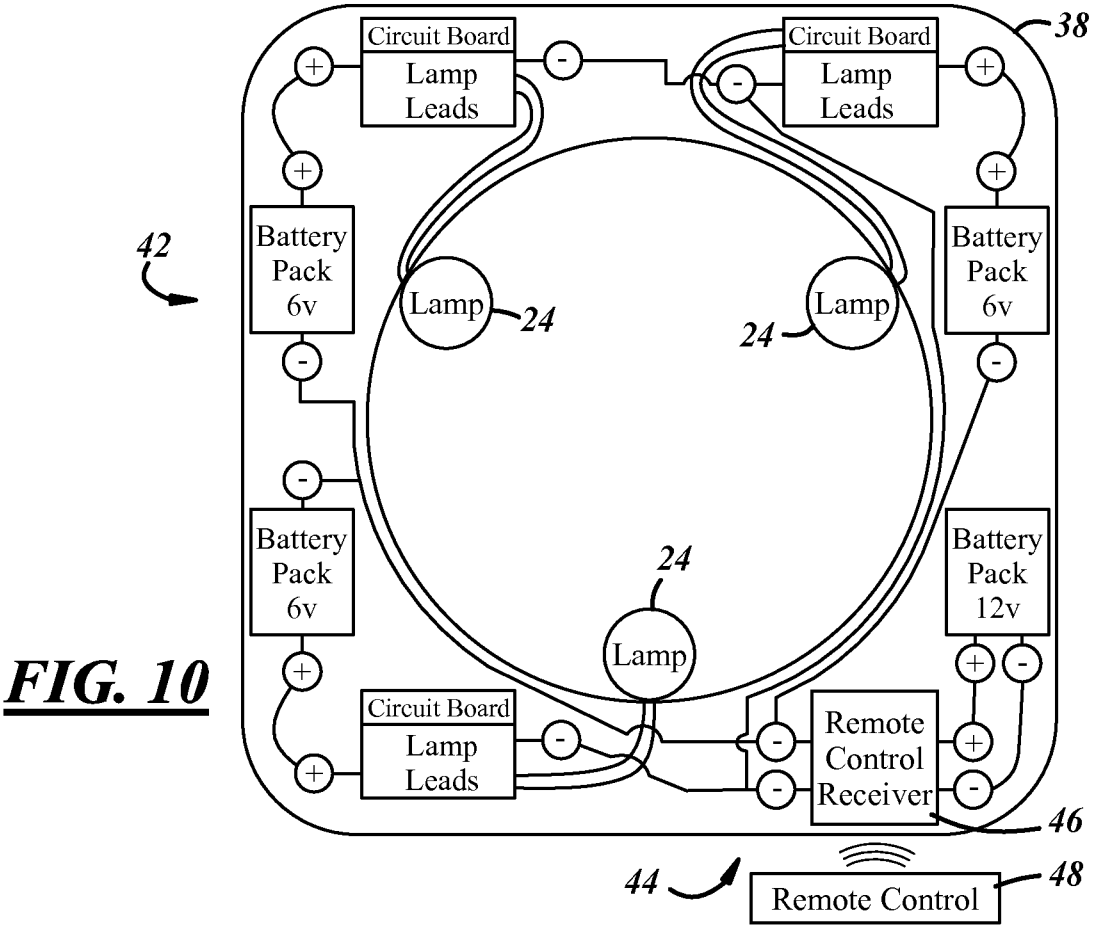

Circuit Board
Lamp
Leads
Circuit Board
Lamp
Leads
38
42
Battery
Pack
6v
Lamp
24
24
Lamp
Battery
Pack
6v
Battery
Pack
6v
24
Battery
Pack
12v
Lamp
Circuit Board
Lamp
Leads
Remote
Control
Receiver
46
44
Remote Control
48

FIG. 10

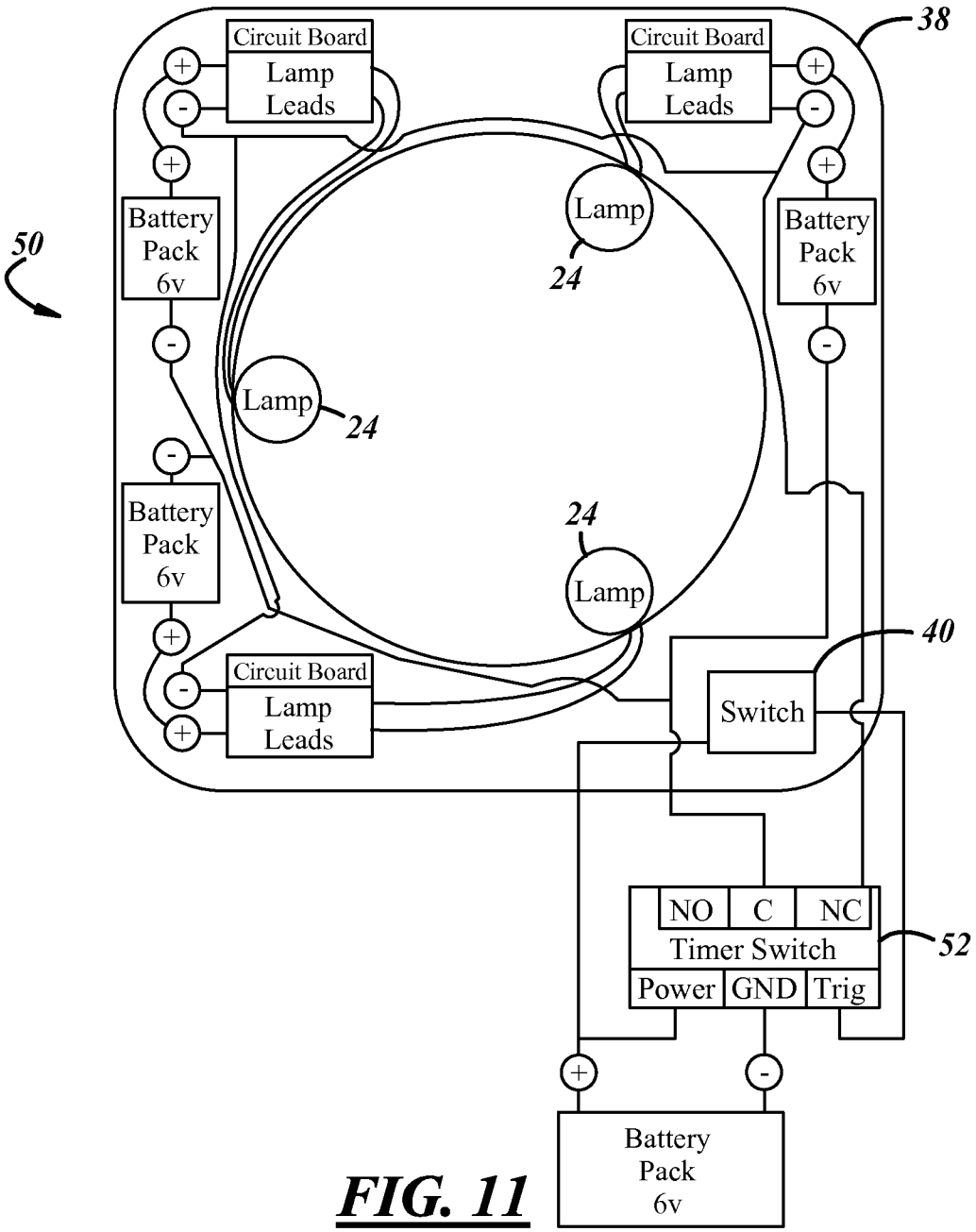

50
38
Circuit Board
Lamp
Leads
Circuit Board
Lamp
Leads
Battery
Pack
6v
Lamp
24
Battery
Pack
6v
Lamp
24
Battery
Pack
6v
24
Lamp
Circuit Board
Lamp
Leads
40
Switch
NO
C
NC
Timer Switch
52
Power
GND
Trig
Battery
Pack
6v

FIG. 11

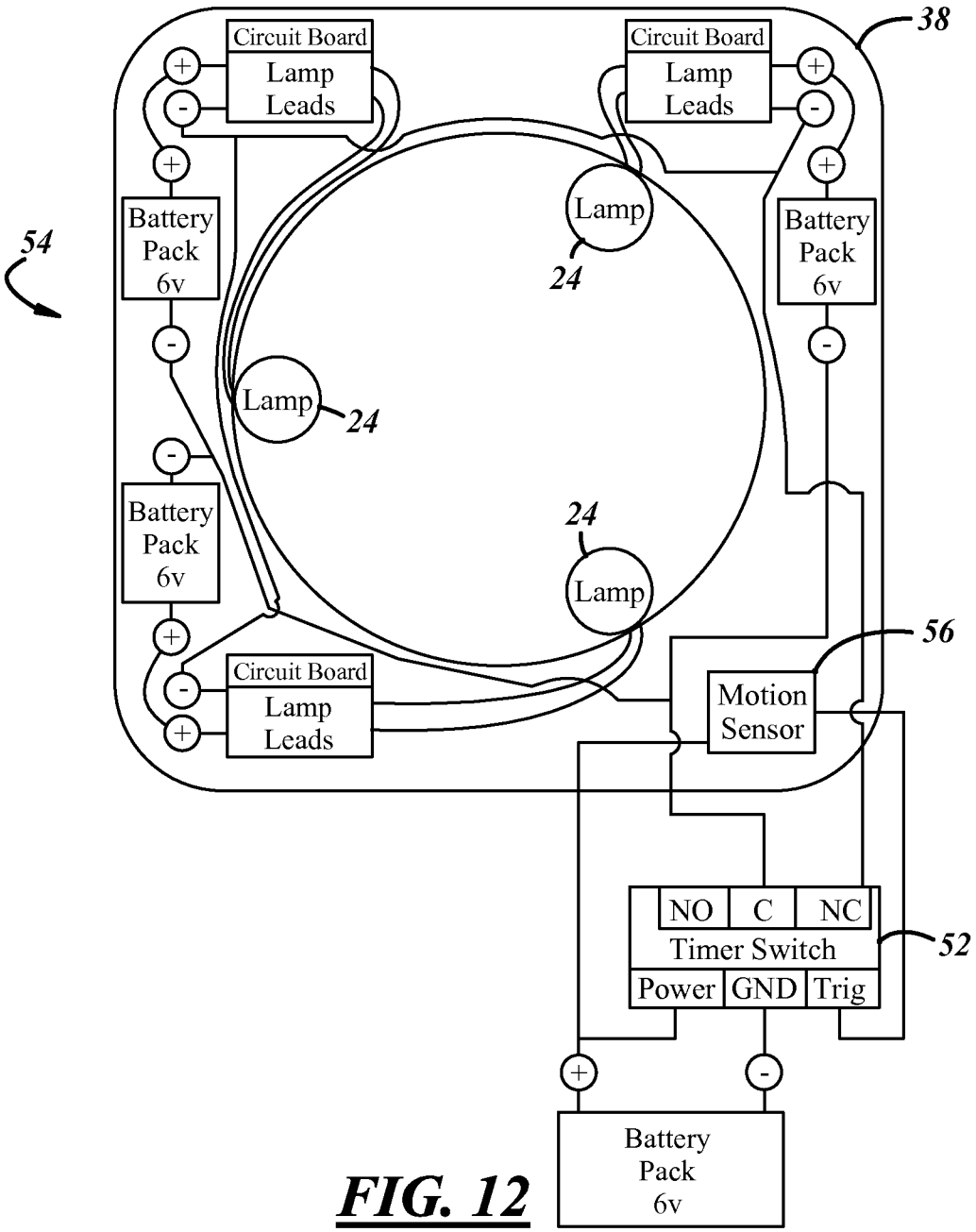

54
38
Circuit Board
Lamp
Leads
Circuit Board
Lamp
Leads
Battery
Pack
6v
Lamp
24
Battery
Pack
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Lamp
24
Battery
Pack
6v
24
Lamp
56
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Sensor
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NC
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GND
Trig
Battery
Pack
6v

FIG. 12

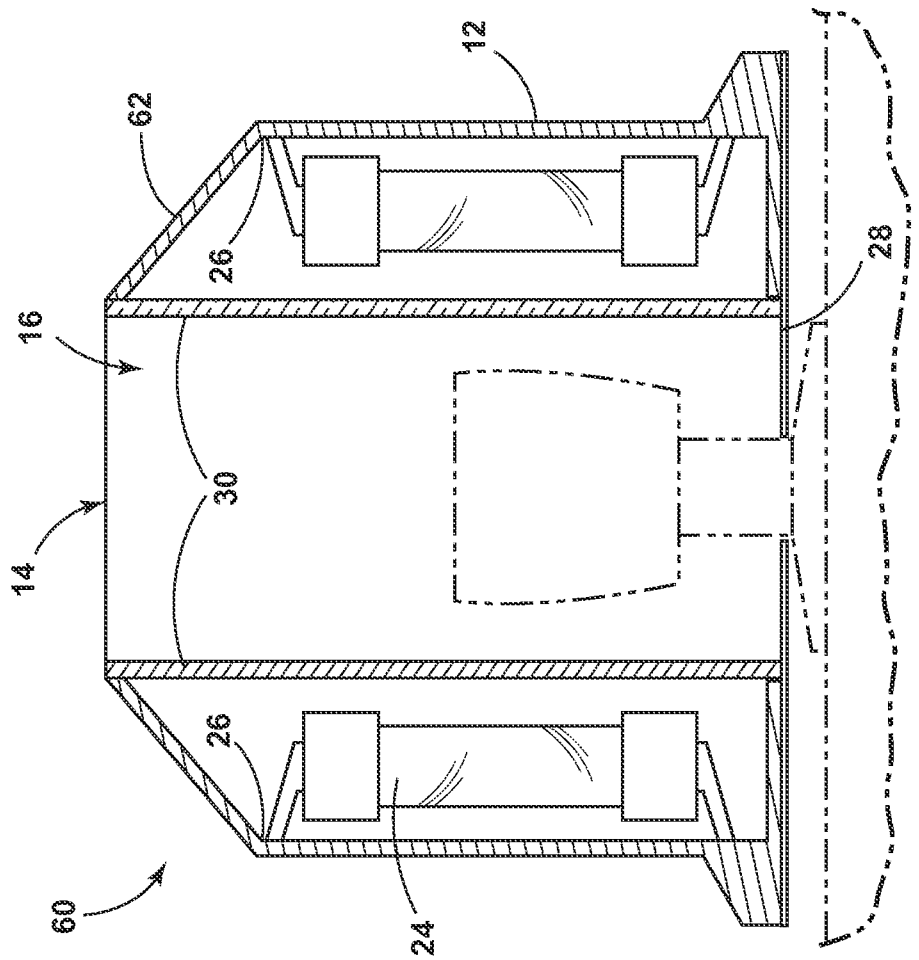


FIG. 13

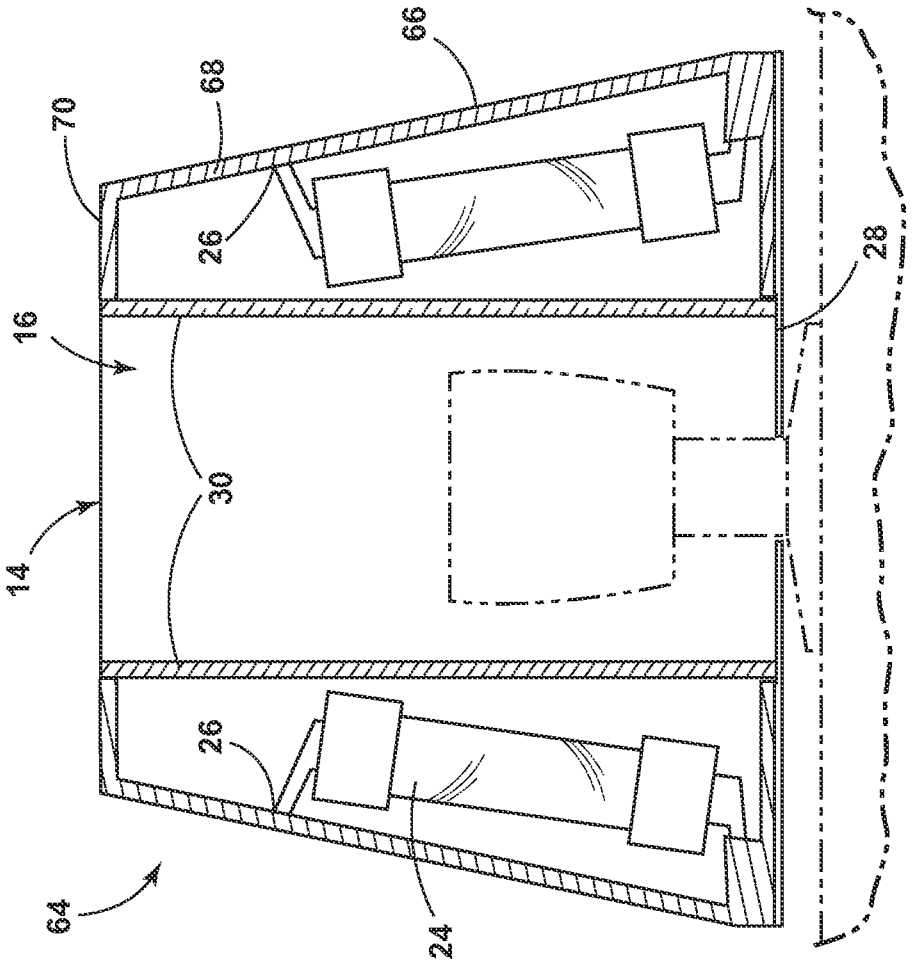


FIG. 14

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/804,396	**08/14/2024 12:19:00 PM Z ET**	**AGD0100.7**

Title of Invention

SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	7738	FILED BY	Kateryna Ilchyshyn
PATENT CENTER #	66772866	FILING DATE	-
CUSTOMER #	62124	FIRST NAMED INVENTOR	Dean Schumacher
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	David Nay

Documents

TOTAL DOCUMENTS: 6

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
ADS_AGD0100.7.pdf	9	Application Data Sheet	2146 KB
AGD0100.7_Application-APP.TEXT.docx	18	Application body structured text document	28 KB
Warning: The form and legal phraseology often used in patent claims, such as "means" and "said" should be avoided. See MPEP 608.01(b). Please review and revise if necessary.			
Drawings_AGD0100.7.pdf	9	Drawings-only black and white line drawings	401 KB
Declaration AGD0100.7.pdf	1	Oath or Declaration filed	129 KB
aia0424_AGD0100.7.pdf	2	Track One Request	112 KB
AGD0100.7_Application.pdf	18	Auxiliary PDF of Application	149 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
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PTO/AIA/01 (06-12)
Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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.

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT

As the below named inventor, I hereby declare that:

This declaration is directed to:

- [■] The attached application, or
- [ ] United States application or PCT international application number _____ filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Dean Schumacher Date (Optional): 6/6/14

Signature: _____

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. 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 1.11 and 1.14. This collection is estimated to take 1 minute 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.

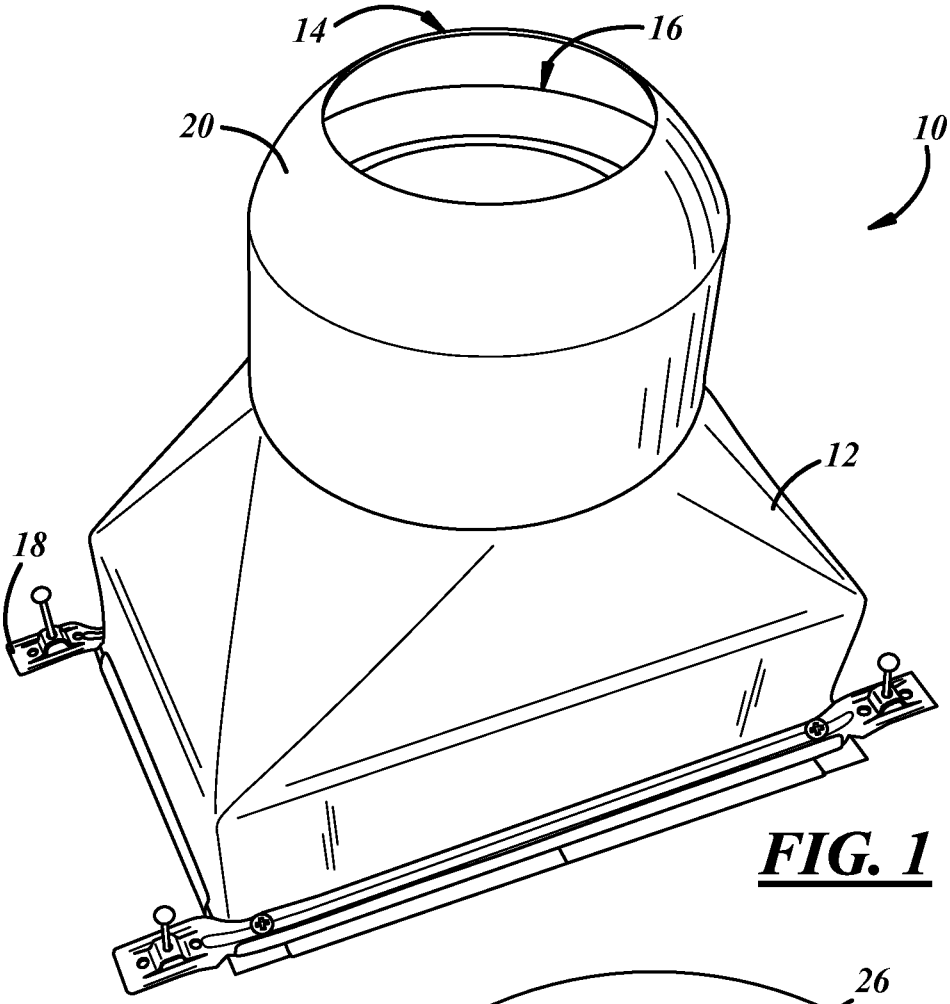


FIG. 1

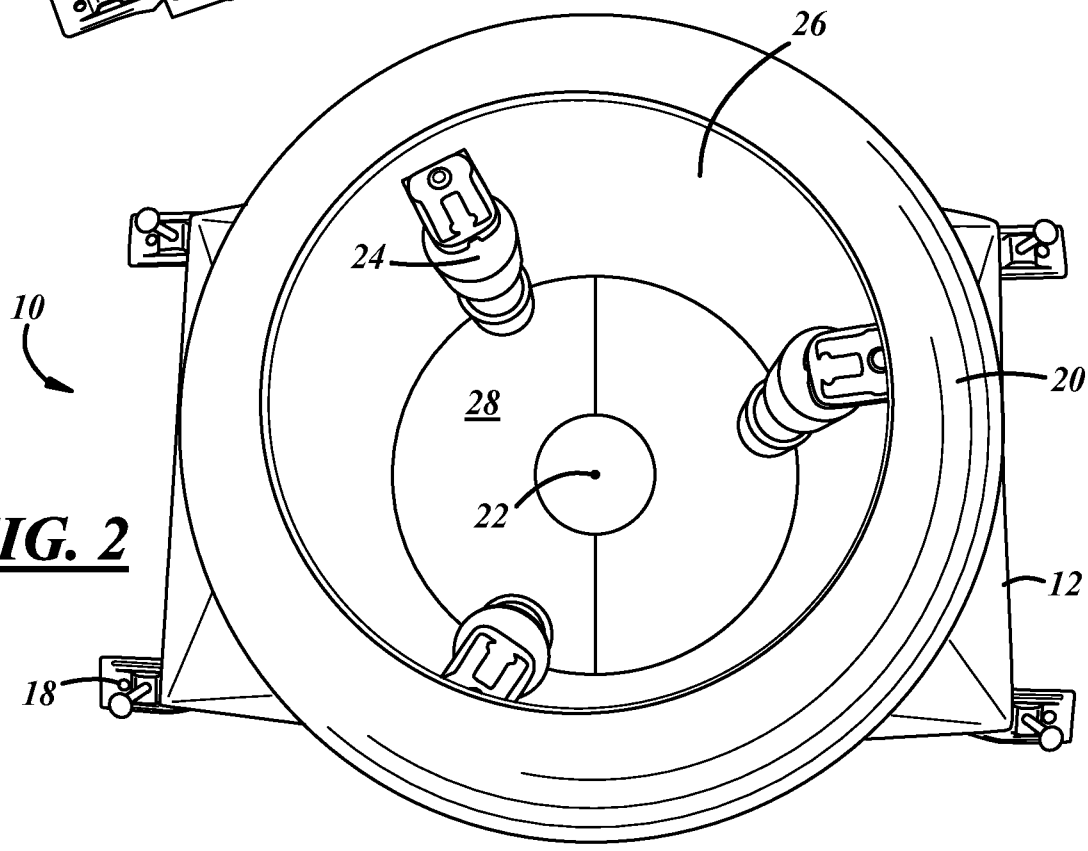


FIG. 2

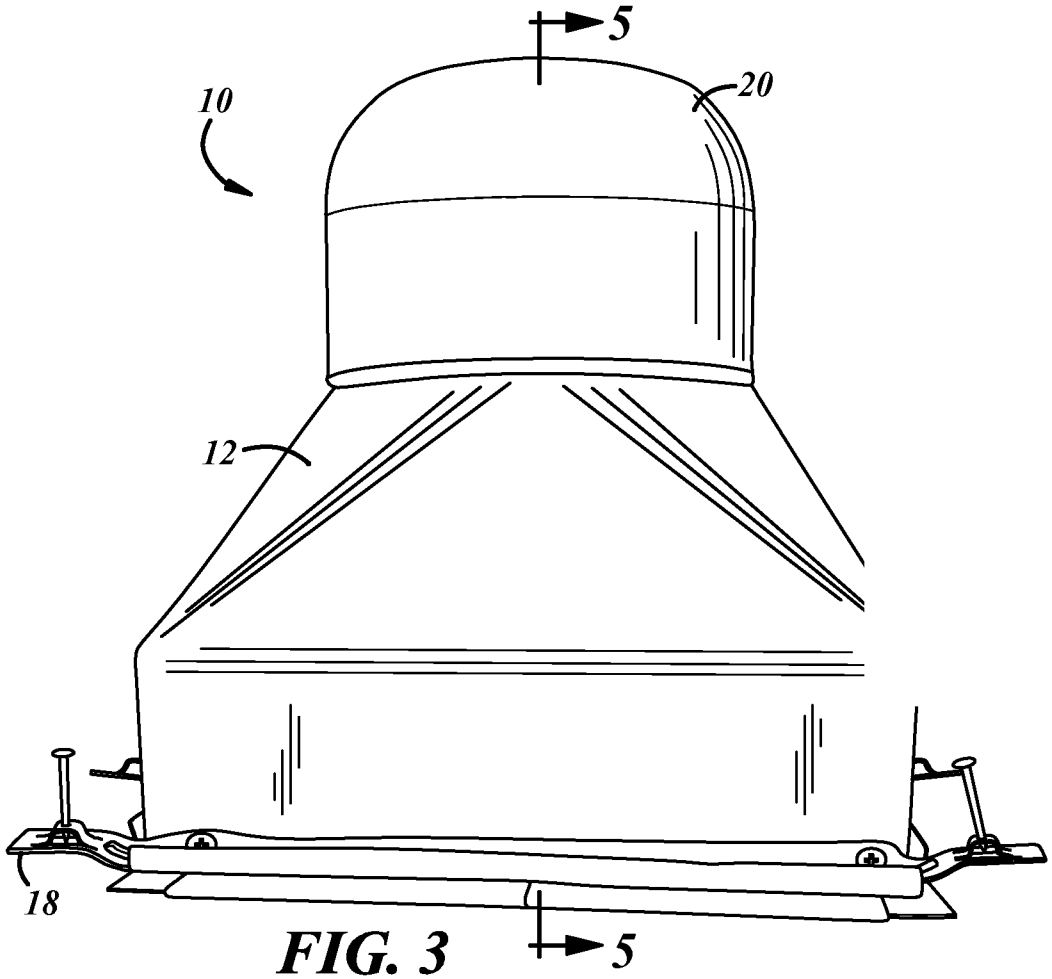


FIG. 3

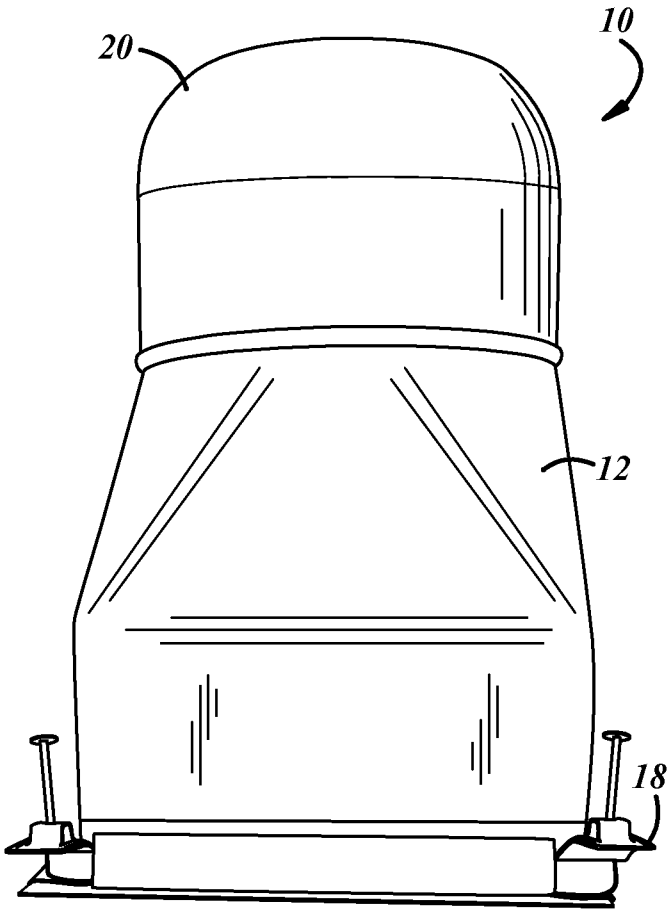


FIG. 4

HYUNDAI MOTOR AMERICA
Ex. 1002
Page 63 of 701

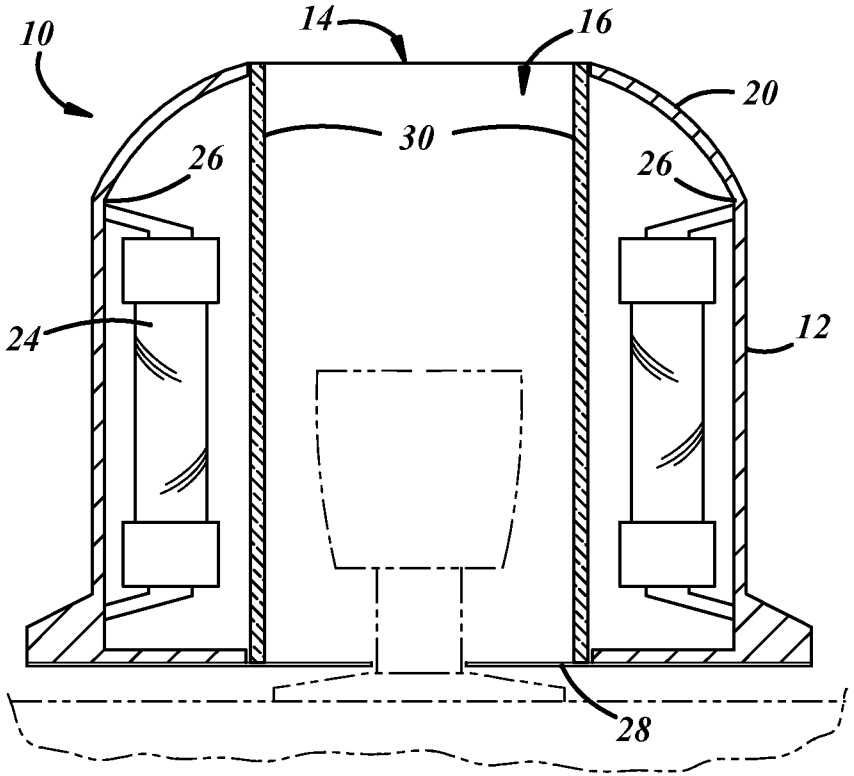


FIG. 5

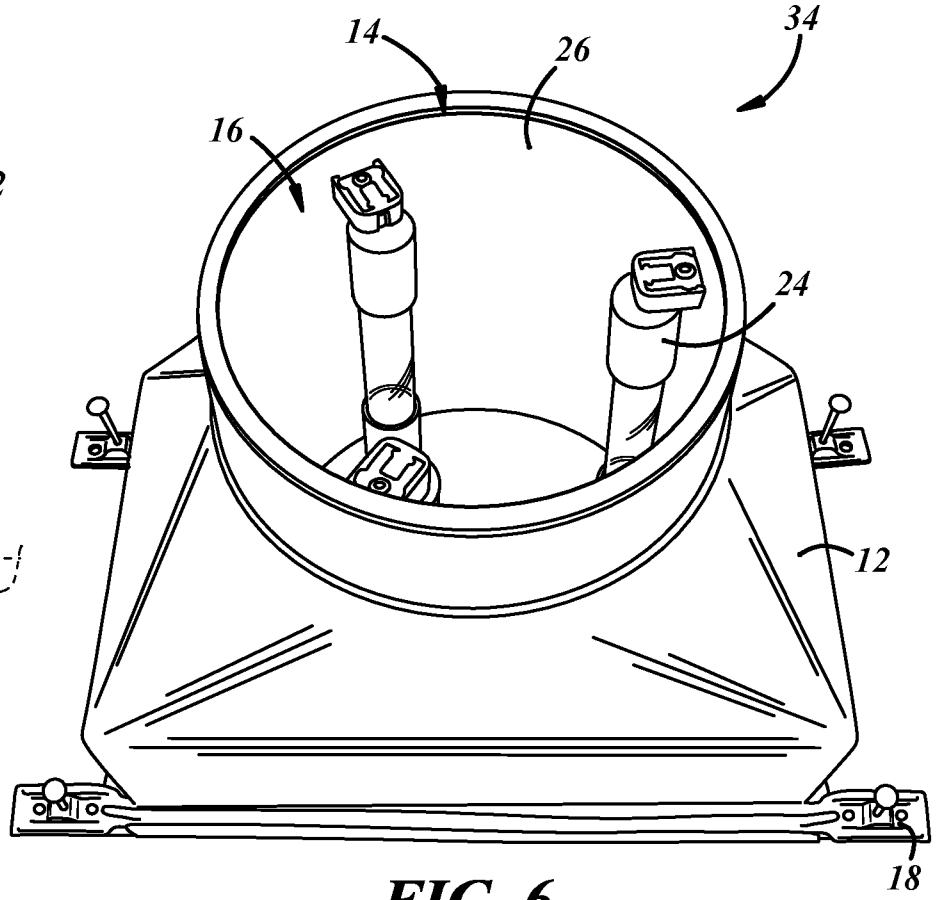


FIG. 6

HYUNDAI MOTOR AMERICA
Ex. 1002
Page 64 of 701

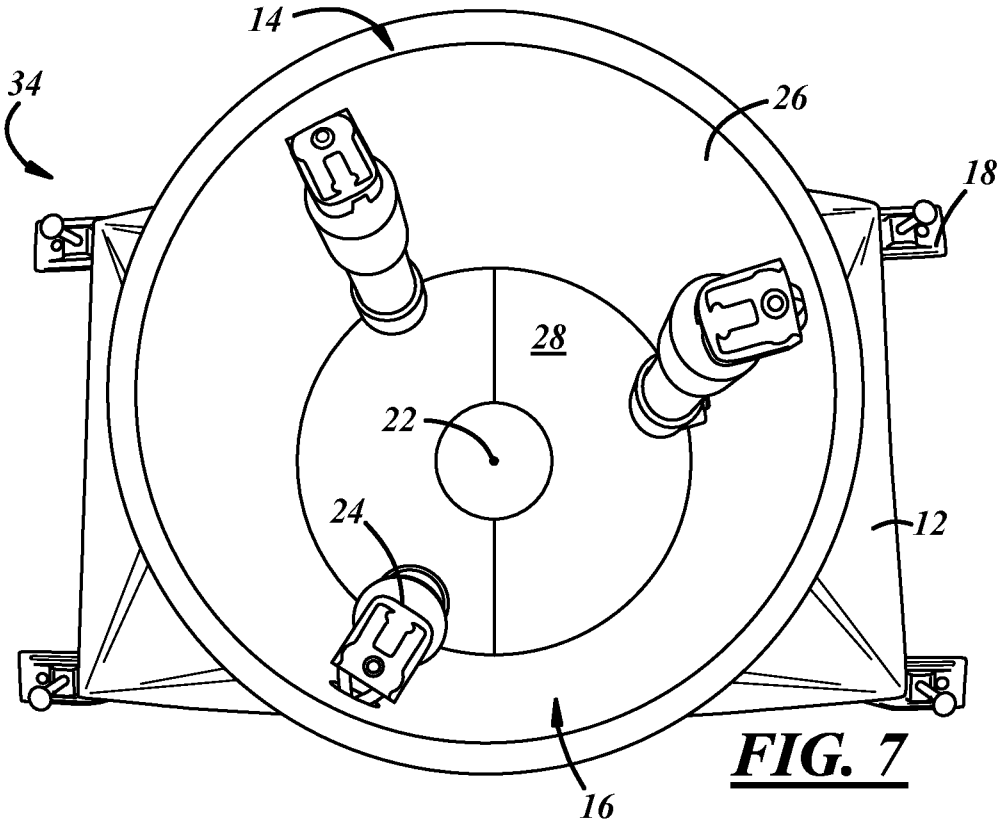


FIG. 7

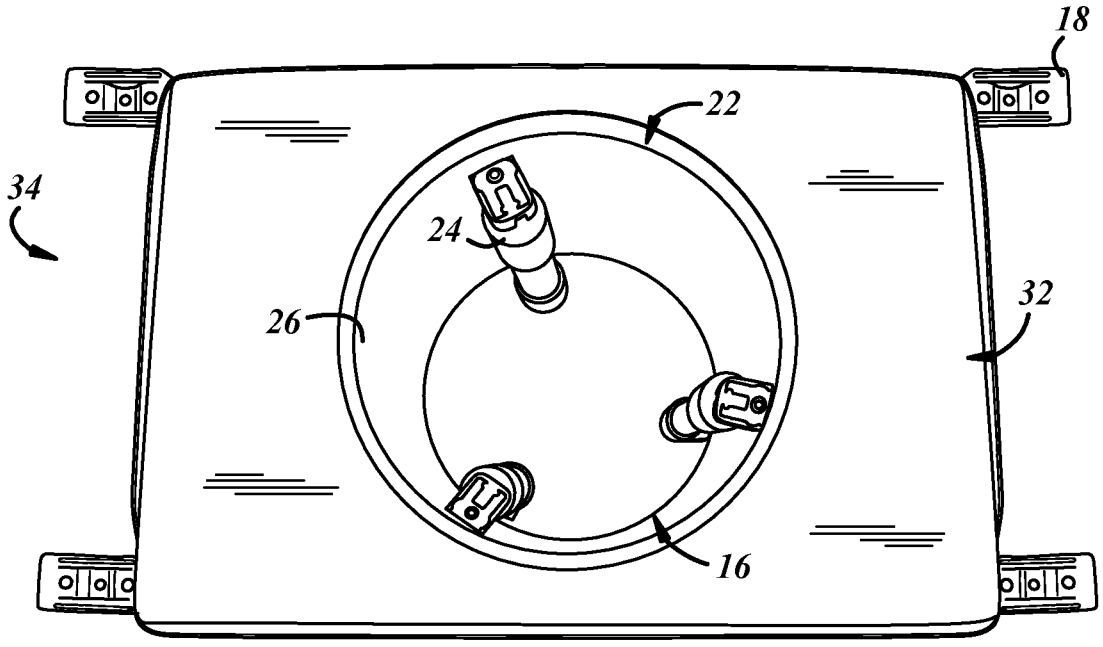


FIG. 8

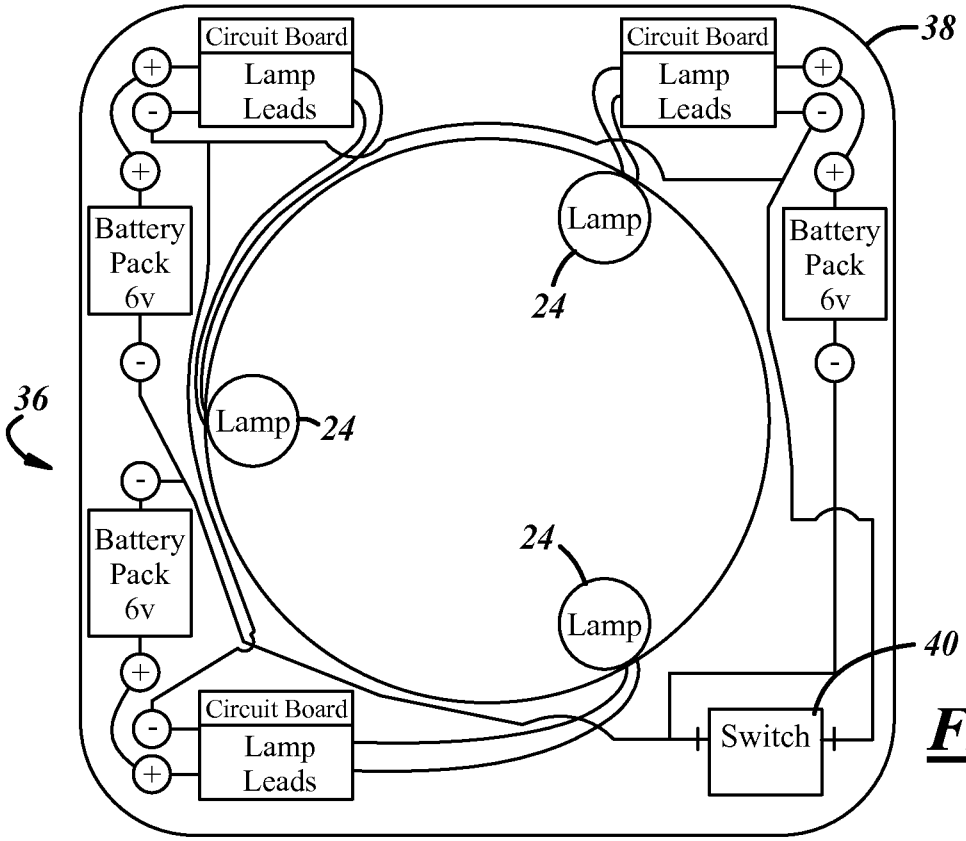

38
Circuit Board
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6v
Lamp
24
36
Lamp
24
Battery
Pack
6v
24
Lamp
40
Circuit Board
Lamp
Leads
Switch

FIG. 9

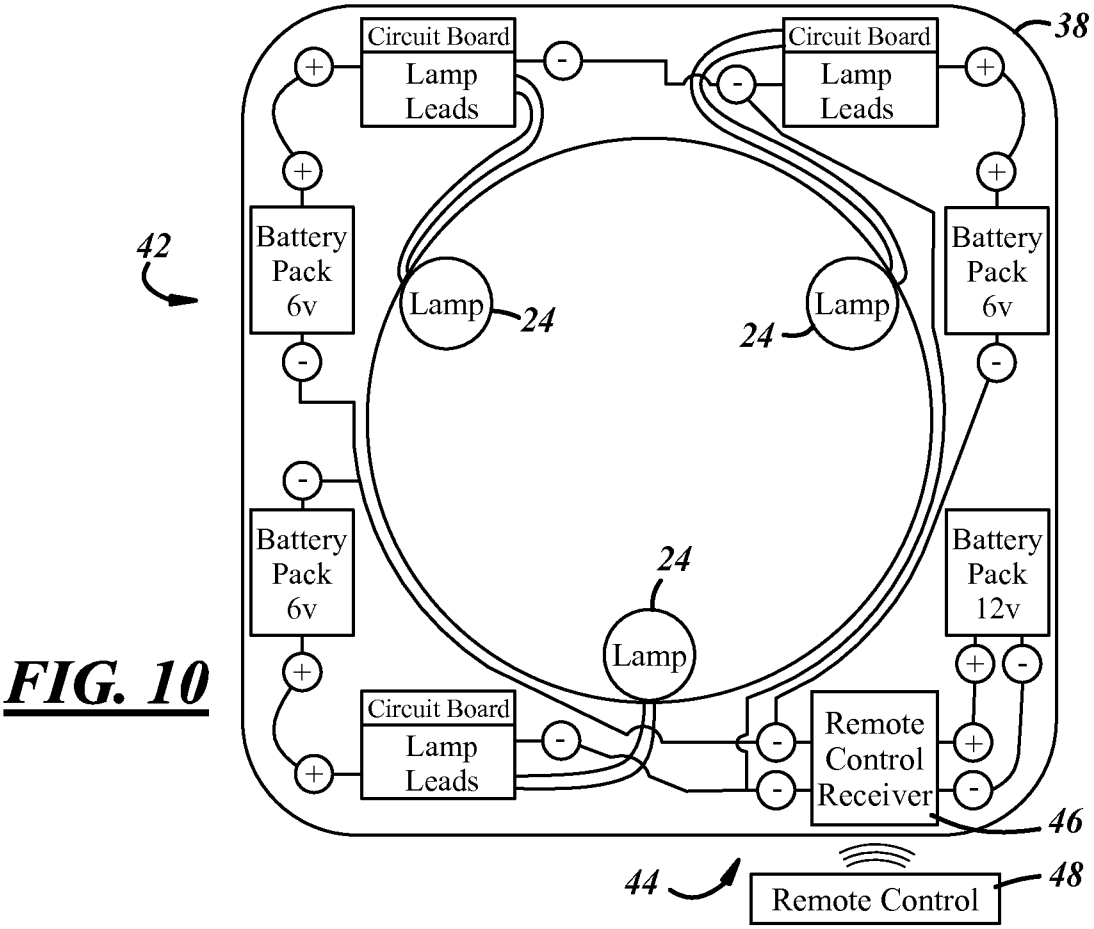

38
Circuit Board
Lamp
Leads
Circuit Board
Lamp
Leads
42
Battery
Pack
6v
Lamp
24
24
Lamp
Battery
Pack
6v
Battery
Pack
6v
24
Battery
Pack
12v
Lamp
Circuit Board
Lamp
Leads
Remote
Control
Receiver
46
44
Remote Control
48

FIG. 10

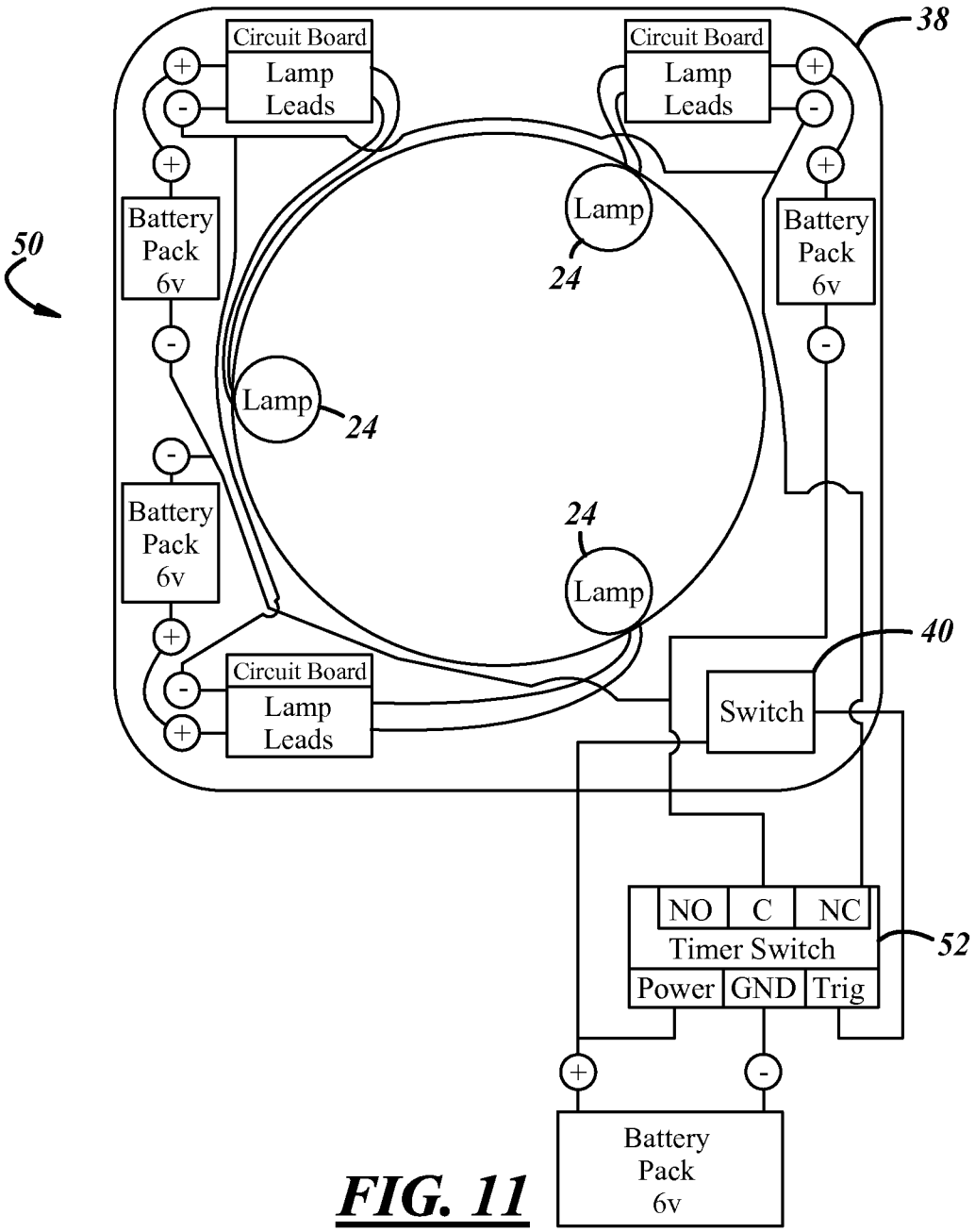

50
38
Circuit Board
Lamp
Leads
Circuit Board
Lamp
Leads
Battery
Pack
6v
Lamp
24
Battery
Pack
6v
Lamp
24
Battery
Pack
6v
24
Lamp
Circuit Board
Lamp
Leads
40
Switch
NO
C
NC
Timer Switch
52
Power
GND
Trig
Battery
Pack
6v

FIG. 11

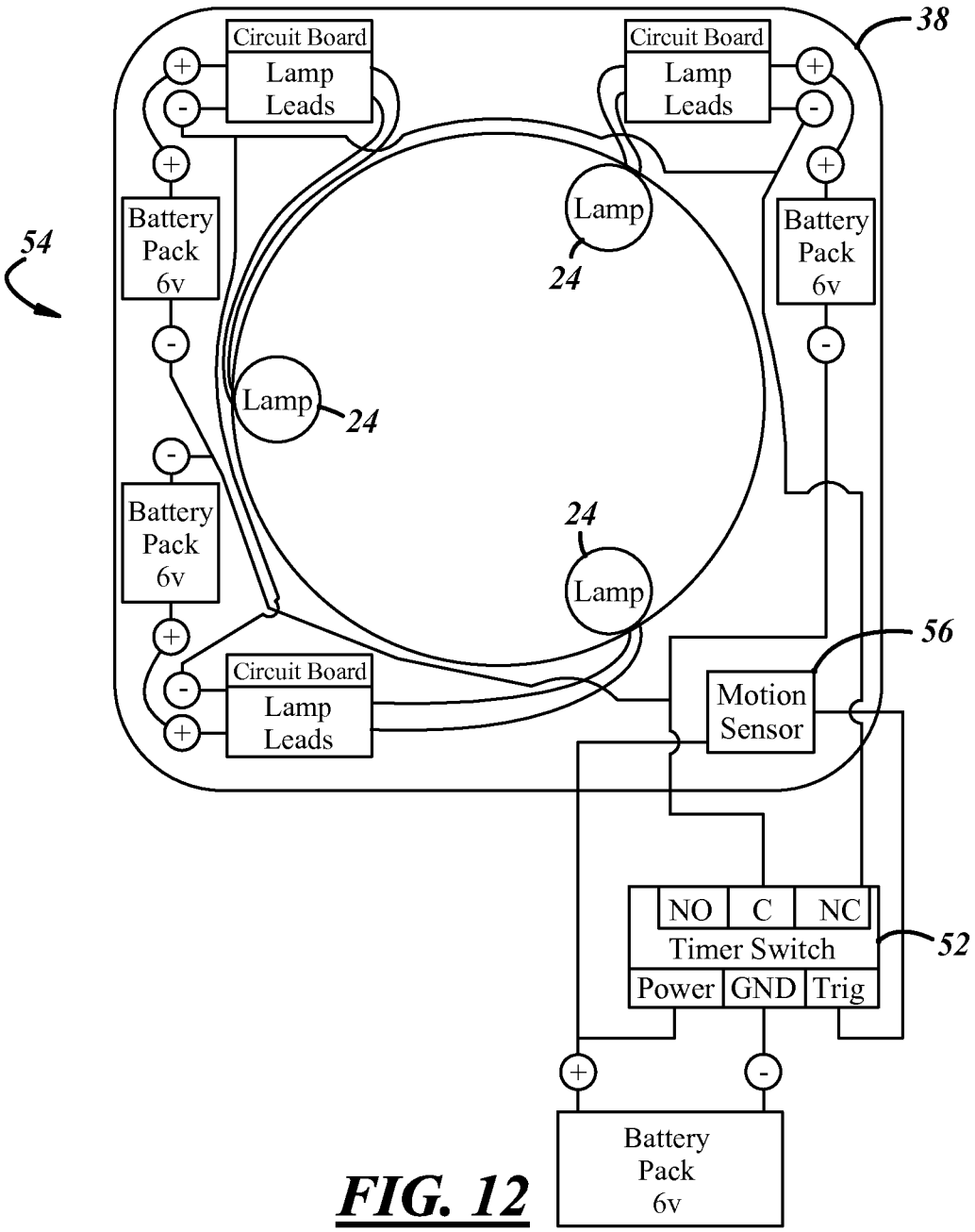

54
38
Circuit Board
Lamp
Leads
Circuit Board
Lamp
Leads
Battery
Pack
6v
Lamp
24
Battery
Pack
6v
Lamp
24
Battery
Pack
6v
24
Lamp
Circuit Board
Lamp
Leads
56
Motion
Sensor
NO
C
NC
Timer Switch
52
Power
GND
Trig
Battery
Pack
6v

FIG. 12

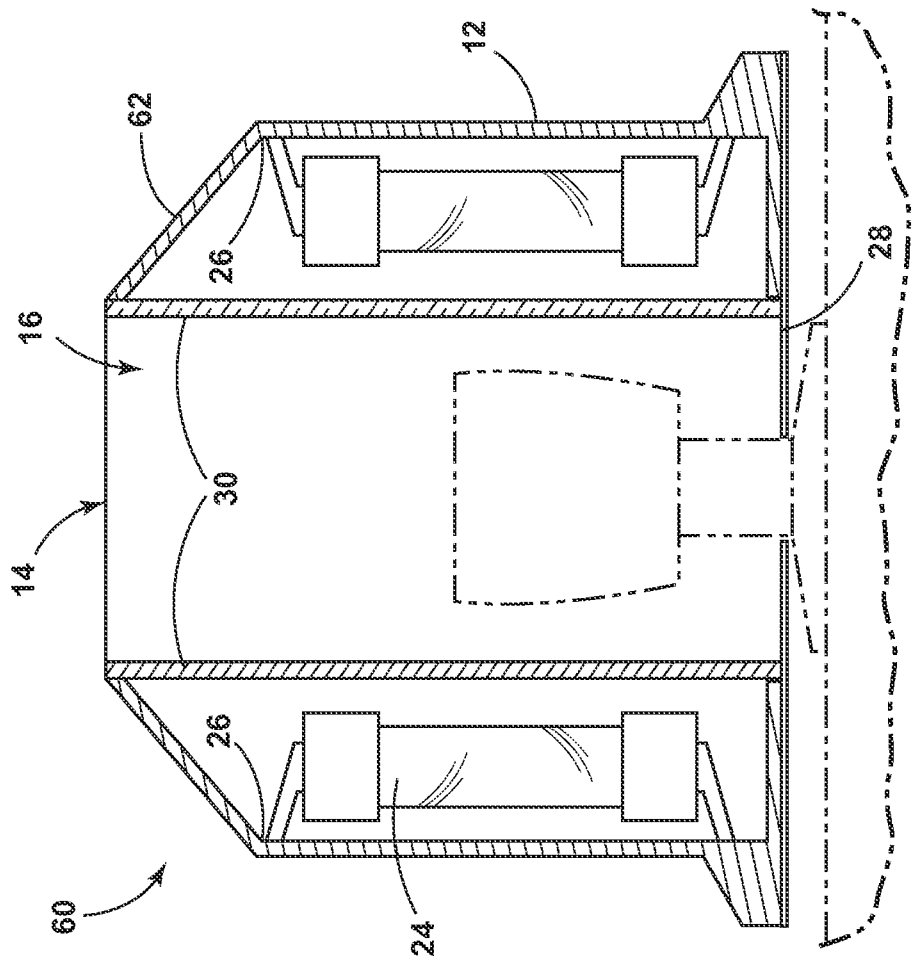


FIG. 13

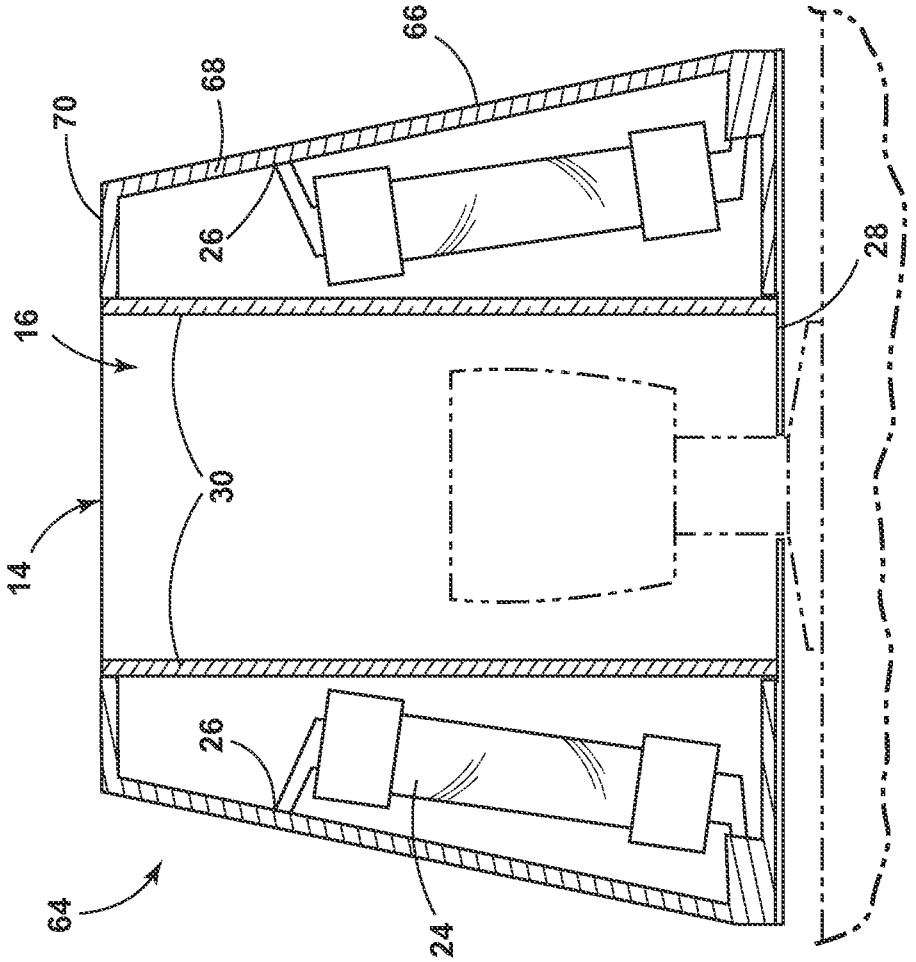


FIG. 14

DocCode - SCORE

Placeholder Sheet for Supplemental Content

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
18/804,396	08/14/2024		664	AGD0100.7	20	3

CONFIRMATION NO. 7738

FILING RECEIPT

62124
QUINN IP Law
21500 Haggerty Road
Suite 300
Northville, MI 48167

OC00000007097598

Date Mailed: 08/29/2024

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

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Inventor(s)

Dean Schumacher, Orchard Lke, MI;

Applicant(s)

Dean Schumacher, Orchard Lke, MI;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 18/508,686 11/14/2023
which is a CON of 17/496,237 10/07/2021 PAT 11,813,373
which is a CON of 17/032,187 09/25/2020 PAT 11,400,174
which is a CON of 15/831,043 12/04/2017 PAT 10,792,380
which is a CON of 14/299,815 06/09/2014 PAT 9,833,525
which is a CIP of 14/252,294 04/14/2014 ABN
which is a CON of 13/070,044 03/23/2011 PAT 8,698,100

Foreign Applications for which priority is claimed (You may be eligible to benefit from the Patent Prosecution Highway program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

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The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 18/804,396**
Projected Publication Date: 12/05/2024
Non-Publication Request: No
Early Publication Request: No
**** SMALL ENTITY ****
Title

SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT

Preliminary Class

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

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Title 37, Code of Federal Regulations, 5.11 & 5.15

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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 18/804,396

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	64		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	280		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	320		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	20 minus 20 =	* 0	x =	0	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*	x =	0			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 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).			0			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	664		TOTAL	

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	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 found in the appropriate box in column 1.

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Kathi Vidal

Kathi Vidal
Under Secretary of Commerce for Intellectual Property and
Director of the United States Patent and Trademark Office

Derrick Brent
Deputy Under Secretary of Commerce for Intellectual Property and
Deputy Director of the United States Patent and Trademark Office

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	AGD0100.7
	Application Number	
Title of Invention	SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

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☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Dean		Schumacher	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	~~Orchard Lke~~ Orchard Lake	State/Province	MI	Country of Residence	US

Mailing Address of Inventor:

Address 1	4033 Beach Drive		
Address 2			
City	~~Farmington Hills~~ Orchard Lake	State/Province	MI
Postal Code	48324	Country	US

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

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For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	62124		
Email Address		Add Email	Remove Email

Application Information:

Title of the Invention	SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT		
Attorney Docket Number	AGD0100.7	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	9	Suggested Figure for Publication (if any)	1

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	AGD0100.7
	Application Number	
Title of Invention	SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

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Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	62124		

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This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	18/508686	2023-11-14

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	AGD0100.7
	Application Number	
Title of Invention	SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT	

Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
18/508686	Continuation of	17/496237	2021-10-07	11813373	2023-10-25
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
17/496237	Continuation of	17/032187	2020-09-25	11400174	2022-07-13
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
17/032187	Continuation of	15/831043	2017-12-04	10792380	2020-09-16
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
15/831043	Continuation of	14/299815	2014-06-09	9833525	2017-11-15
Prior Application Status	Abandoned				Remove
Application Number	Continuity Type	Prior Application Number		Filing or 371(c) Date (YYYY-MM-DD)	
14/299815	Continuation in part of	14/252294		2014-04-14	
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14/252294	Continuation of	13/070044	2011-03-23	8698100	2014-03-26

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This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

			Remove
Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	AGD0100.7
	Application Number	
Title of Invention	SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT	

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	AGD0100.7
	Application Number	
Title of Invention	SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

PTO/AIA/14 (01-22)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	AGD0100.7
	Application Number	
Title of Invention	SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

◯ Assignee ◯ Legal Representative under 35 U.S.C. 117 ◯ Joint Inventor

◯ Person to whom the inventor is obligated to assign. ◯ Person who shows sufficient proprietary interest

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Applicant:

Address 1			
Address 2			
City		**State/Province**	
Country		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button.

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

PTO/AIA/14 (01-22)
Approved for use through 05/31/2024. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	AGD0100.7
	Application Number	
Title of Invention	SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Quincy J. Harrison/			Date (YYYY-MM-DD)	2024-08-13
First Name	Quincy	Last Name	Harrison	Registration Number	65374

Additional Signature may be generated within this form by selecting the Add button.

PTO/AIA/14 (01-22)
Approved for use through 05/31/2024. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	AGD0100.7
	Application Number	
Title of Invention	SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT	

This collection of information is required by 37 CFR 1.76. 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 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet 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,** V**A 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1 The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3 A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent CooperationTreaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

HYUNDAI MOTOR AMERICA
Ex. 1002
Page 86 of 701

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Alexandria, VA 22313 - 1450
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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/804,396	**08/30/2024 01:01:44 PM Z ET**	**AGD0100.7**

Title of Invention

SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	7738	FILED BY	Kateryna Ilchyshyn
PATENT CENTER #	66993918	FILING DATE	08/14/2024
CUSTOMER #	62124	FIRST NAMED INVENTOR	Dean Schumacher
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Quincy Harrison

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
Corr. ADS_AGD0100.7.pdf	9	Application Data Sheet	142 KB

Warning: This is not a USPTO supplied ADS fillable form. Data in the form cannot be automatically loaded to other USPTO systems.

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
Corr. ADS_AGD0100.7.pdf	3D551A0FEFCC06F7B75ECE99B1AC98B457DAF021E2B020E7D242B630935CCBCA852E1D7626C27E3A2CF560A8923BD3ED309E62073D17ECE4F2A901E6414599B8

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.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for 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

National Stage of an International Application under 35 U.S.C. 371

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.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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.
18/804,396	08/14/2024	Dean Schumacher	AGD0100.7	7738

62124 7590 09/17/2024

QUINN IP Law
21500 Haggerty Road
Suite 300
Northville, MI 48167

EXAMINER
CENTRAL, DOCKET

ART UNIT	PAPER NUMBER
OPAP	

NOTIFICATION DATE	DELIVERY MODE
09/17/2024	ELECTRONIC

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

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USDocketing@quinniplaw.com
adomagala@quinniplaw.com

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Ex. 1002
Page 89 of 701

Decision Granting Request for Prioritized Examination (Track I)	**Application No.** 18/804,396	**Applicant(s)** Schumacher, Dean	
	Examiner CHERYL P GIBSON BAYLOR	**Art Unit** OPET	**AIA (FITF) Status** Yes

1. THE REQUEST FILED 14 August 2024 IS **GRANTED** .

The above-identified application has met the requirements for prioritized examination

A. ☑ for an original nonprovisional application (Track I).
B. ☐ for an application undergoing continued examination (RCE).

2. **The above-identified application will undergo prioritized examination**. The application will be accorded special status throughout its entire course of prosecution until one of the following occurs:

A. filing a **petition for extension of time** to extend the time period for filing a reply;

B. filing an **amendment to amend the application to contain more than four independent claims, more than thirty total claims** , or a multiple dependent claim;

C. filing a **request for continued examination** ;

D. filing a notice of appeal;

E. filing a request for suspension of action;

F. mailing of a notice of allowance;

G. mailing of a final Office action;

H. completion of examination as defined in 37 CFR 41.102; or

I. abandonment of the application.

Telephone inquiries with regard to this decision should be directed to CHERYL GIBSON BAYLOR at (571)272-3213. In his/her absence, calls may be directed to Petition Help Desk at (571) 272-3282.

/CHERYL GIBSON BAYLOR/ Paralegal Specialist, OPET	

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82A (07-13)
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TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	18804396
Filing Date	8/14/2024
First Named Inventor	Dean Schumacher
Title	SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT
Art Unit	TBD
Examiner Name	TBD
Attorney Docket Number	AGD0100.7

SIGNATURE of Applicant or Patent Practitioner

Signature	/Quincy J. Harrison/	Date (Optional)	
Name	Quincy J. Harrison	Registration Number	65374
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ *Total of _____ forms are submitted.

A Federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with an information collection subject to the requirements of the Paperwork Reduction Act of 1995, unless the information collection has a currently valid OMB Control Number. The OMB Control Number for this information collection is 0651-0035. Public burden for this form is estimated to average 3 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the information collection. Send comments regarding this burden estimate or any other aspect of this information collection, including suggestions for reducing this burden to the Chief Administrative Officer, United States Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450 or email InformationCollection@uspto.gov. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS.** If filing this completed form by mail, 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.

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82B (07-13)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

☑ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: 62124

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

☑ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number:

OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

☑ Inventor or Joint Inventor (title not required below)

☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

☐ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature		Date (Optional)	
Name	Dean Schumacher		
Title			

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ Total of forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. 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 1.11 and 1.14. This collection is estimated to take 3 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.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. The United States Patent and Trademark Office (USPTO) collects the information in this record under authority of 35 U.S.C. 2. The USPTO's system of records is used to manage all applicant and owner information including name, citizenship, residence, post office address, and other information with respect to inventors and their legal representatives pertaining to the applicant's/owner's activities in connection with the invention for which a patent is sought or has been granted. The applicable Privacy Act System of Records Notice for the information collected in this form is COMMERCE/PAT-TM-7 Patent Application Files, available in the Federal Register at 78 FR 19243 (March 29, 2013). https://www.govinfo.gov/content/pkg/FR-2013-03-29/pdf/2013-07341.pdf

Routine uses of the information in this record may include disclosure to: 1) law enforcement, in the event that the system of records indicates a violation or potential violation of law; 2) a Federal, state, local, or international agency, in response to its request; 3) a contractor of the USPTO having need for the information in order to perform a contract; 4) the Department of Justice for determination of whether the Freedom of Information Act (FOIA) requires disclosure of the record; 5) a Member of Congress submitting a request involving an individual to whom the record pertains, when the individual has requested the Member's assistance with respect to the subject matter of the record; 6) a court, magistrate, or administrative tribunal, in the course of presenting evidence, including disclosures to opposing counsel in the course of settlement negotiations; 7) the Administrator, General Services Administration (GSA), or their designee, during an inspection of records conducted by GSA under authority of 44 U.S.C. 2904 and 2906, in accordance with the GSA regulations and any other relevant (i.e., GSA or Commerce) directive, where such disclosure shall not be used to make determinations about individuals; 8) another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)); 9) the Office of Personnel Management (OPM) for personnel research purposes; and 9) the Office of Management and Budget (OMB) for legislative coordination and clearance.

If you do not furnish the information requested on this form, the USPTO may not be able to process and/or examine your submission, which may result in termination of proceedings, abandonment of the application, and/or expiration of the patent.

Additional Uses

Additional USPTO uses of the information in this record may include disclosure to: 1) the International Bureau of the World Intellectual Property Organization, if the record is related to an international application filed under the Patent Cooperation Treaty; 2) the public i) after publication of the application pursuant to 35 U.S.C. 122(b), ii) after issuance of a patent pursuant to 35 U.S.C. 151, iii) if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections, or an issued patent, or iv) without publication of the application or patent under the specific circumstances provided for by 37 CFR 1.14(a)(1)(v)-(vii); and/or 3) the National Archives and Records Administration, for inspection of records.

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/804,396	**10/14/2024 02:15:31 PM Z ET**	**AGD0100.7**

Title of Invention

SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	7738	FILED BY	Kateryna Ilchyshyn
PATENT CENTER #	67555430	FILING DATE	08/14/2024
CUSTOMER #	62124	FIRST NAMED INVENTOR	Dean Schumacher
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Quincy Harrison

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
AGD0100.7_POA.pdf	3	Power of Attorney	604 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
AGD0100.7_POA.pdf	4A00E175A25A0A373C3F813DA26EE4D2126D34F9A3FF290300B565686DF2D211F24E8FF75A1C244EE67FC688EF288D2BEDB36E46EF047504DB82537C1BE006B8

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.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for 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

National Stage of an International Application under 35 U.S.C. 371

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.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
18/804,396	08/14/2024	1711	664	AGD0100.7	20	3

CONFIRMATION NO. 7738

REPLACEMENT FILING RECEIPT

62124
QUINN IP Law
21500 Haggerty Road
Suite 300
Northville, MI 48167

OC000000079246839

Date Mailed: 10/15/2024

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Dean Schumacher, Orchard Lake, MI;

Applicant(s)

Dean Schumacher, Orchard Lake, MI;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 18/508,686 11/14/2023
which is a CON of 17/496,237 10/07/2021 PAT 11,813,373
which is a CON of 17/032,187 09/25/2020 PAT 11,400,174
which is a CON of 15/831,043 12/04/2017 PAT 10,792,380
which is a CON of 14/299,815 06/09/2014 PAT 9,833,525
which is a CIP of 14/252,294 04/14/2014 ABN
which is a CON of 13/070,044 03/23/2011 PAT 8,698,100

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

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Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 08/27/2024

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 18/804,396**

Projected Publication Date: 12/05/2024

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****
Title

SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT

Preliminary Class

250

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

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For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor

community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

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Page 99 of 701

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/804,396	08/14/2024	Dean Schumacher	AGD0100.7	7738

62124 7590 10/17/2024

QUINN IP Law
21500 Haggerty Road
Suite 300
Northville, MI 48167

EXAMINER
KO, JASON Y

ART UNIT	PAPER NUMBER
1711	

NOTIFICATION DATE	DELIVERY MODE
10/17/2024	ELECTRONIC

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

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USDocketing@quinniplaw.com
adomagala@quinniplaw.com

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Page 100 of 701

Office Action Summary	Application No. 18/804,396	Applicant(s) Schumacher, Dean	
	Examiner JASON Y KO	Art Unit 1711	AIA (FITF) Status Yes

-- 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 2 MONTHS 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 _____.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ 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*

5) ☑ Claim(s) 1-20 is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☐ Claim(s) _____ is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☑ Claim(s) 1-20 are subject to restriction and/or election requirement

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov.**

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ 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).

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).

Certified copies:

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)).

** 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) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

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

4) ☐ Other: _____.

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Ex. 1002
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Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DETAILED ACTION

Election/Restriction

This application contains claims directed to the following patentably distinct species of Figs 1-5 and 9, Figs. 6-8 and 10, Figs. 11 an d13, and Figs. 12 and 14. The species are independent or distinct because they appear to be directed toward mutually exclusive arrangements of sanitizing apparatuses. In addition, these species are not obvious variants of each other based on the current record.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species, or a single grouping of patentably indistinct species, for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, no claims have been identified to be generic.

There is a serious search and/or examination burden for the patentably distinct species as set forth above because at least the following reason(s) apply: The different species require separate search and examination strategies.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species to be examined even though the requirement may be traversed (37 CFR 1.143) **and (ii) identification of the claims encompassing the elected species or grouping of patentably indistinct species**, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

The election may be made with or without traverse. To preserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the election of species requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely

traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable on the elected species or grouping of patentably indistinct species.

Should applicant traverse on the ground that the species, or groupings of patentably indistinct species from which election is required, are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing them to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the species unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103 or pre-AIA 35 U.S.C. 103(a) of the other species.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which depend from or otherwise require all the limitations of an allowable generic claim as provided by 37 CFR 1.141.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON Y KO whose telephone number is (571)270-7451. The examiner can normally be reached M-F: 9:00-6:00.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-270-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit

https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JASON Y. KO
Primary Examiner
Art Unit 1711

/JASON Y KO/
Primary Examiner, Art Unit 1711

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UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
18/804,396	08/14/2024	Dean Schumacher	AGD0100.7

CONFIRMATION NO. 7738

62124
QUINN IP Law
21500 Haggerty Road
Suite 300
Northville, MI 48167

POA ACCEPTANCE LETTER

OC000000079467712

Date Mailed: 10/18/2024

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/14/2024.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/atesfai/

PTO/SB/08a (01-22)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	18804396
Filing Date	2024-08-14
First Named Inventor	Dean Schumacher
Art Unit	1711
Examiner Name	Jason Y. Ko
Attorney Docket Number	AGD0100.7

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	10092669	B2	2018-10-09	John J. Marshall	
	2	10309124	B2	2019-06-04	Darren York	
	3	10455936	B2	2019-10-29	Jacob Vincent McKnight	
	4	10994040	B2	2021-05-04	Robert M. Kennedy	
	5	4710634		1987-12-01	Richard L. Brookes	
	6	7175807	B1	2007-02-13	Kelly L. Jones	
	7	7989779	B1	2011-08-02	David A. Ray	
	8	9649398	B1	2017-05-16	Darren York	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	18804396
	Filing Date	2024-08-14
	First Named Inventor	Dean Schumacher
	Art Unit	1711
	Examiner Name	Jason Y. Ko
	Attorney Docket Number	AGD0100.7

	9	D895764	S1	2020-09-08	Darren York	
	10	D905827	S1	2020-12-22	Darren York	

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20050230638	A1	2005-10-20	Bruce Ancona	
	2	20060243762	A1	2006-11-02	Simon Sassoon	
	3	20080023497	A1	2008-01-31	Simon Sassoon	
	4	20100051641	A1	2010-03-04	Simon Sassoon	
	5	20110174992	A1	2011-07-21	Masami Sakita	
	6	20120176241	A1	2012-07-12	Scott Pasch	
	7	20120305804	A1	2012-12-06	Edward Goldman	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	18804396
	Filing Date	2024-08-14
	First Named Inventor	Dean Schumacher
	Art Unit	1711
	Examiner Name	Jason Y. Ko
	Attorney Docket Number	AGD0100.7

	8	20170246332	A1	2017-08-31	John J. Marshall		
	9	20180085481	A1	2018-03-29	Dean Schumacher		
	10	20180119447	A1	2018-05-03	Darren York		
	11	20180339075	A1	2018-11-29	Robert M. Kennedy		
	12	20190117806	A1	2019-04-25	Amos Cahan		
	13	20190388572	A1	2019-12-26	Theodore John Cole		
	14	20200217102	A1	2020-07-09	Abdul Jabbar Gargash		

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] ¡	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	102008063887	DE	A1	2010-07-01	Brieseck Bernd		☐
	2	200410373	KR	Y1	2006-03-08	Chung Junwon		☐

PC 6.1.24

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	18804396
	Filing Date	2024-08-14
	First Named Inventor	Dean Schumacher
	Art Unit	1711
	Examiner Name	Jason Y. Ko
	Attorney Docket Number	AGD0100.7

	3	2009056765	WO	A2	2009-05-07	Jaffres Remy		☐
	4	20200016717	KR	A	2020-02-17	Kwon Hyeon UK		☐
	5	202672848	CN	U	2013-01-16	Yao Shiru		☐

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Extended European Search Report from European Application No. 21843406.6 dated September 23, 2024; 16 pages.	☐
	2	International Search Report and Written Opinion issued in Application No. PCT/US2021/041606 dated October 21, 2021; 10 pages.	☐
	3	Non-Final Office Action issued in Application No. 17/496,237 dated February 9, 2023; 5 pages.	☐
	4	Final Office Action issued in Application No. 15/932,221 dated March 22, 2022; 17 pages.	☐
	5	Non-Final Office Action issued in Application No. 17/032,187 dated March 2, 2022; 7 pages.	☐

If you wish to add additional non-patent literature document citation information please click the Add button Add

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	18804396
	Filing Date	2024-08-14
	First Named Inventor	Dean Schumacher
	Art Unit	1711
	Examiner Name	Jason Y. Ko
	Attorney Docket Number	AGD0100.7

EXAMINER SIGNATURE			
Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	18804396
Filing Date	2024-08-14
First Named Inventor	Dean Schumacher
Art Unit	1711
Examiner Name	Jason Y. Ko
Attorney Docket Number	AGD0100.7

CERTIFICATION STATEMENT

Please see 37 CFR 1.97(e) to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☒ A certification statement is not submitted herewith.

FEE

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

COPIES

☐ An identification of an earlier application pursuant to 37 CFR 1.98 (d) (1) is attached.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Quincy J. Harrison/	Date (YYYY-MM-DD)	2024-11-06
Name/Print	Quincy J. Harrison	Registration Number	65,374

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

HYUNDAI MOTOR AMERICA
Ex. 1002
Page 112 of 701

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: JONATHAN GIROUX
GREENBERG TRAURIG, LLP
77 W. WACKER DRIVE
SUITE 3100
CHICAGO, IL 60601

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing *(day/month/year)*	OCT 21 2021
Applicant's or agent's file reference 160513-011700-PCT	**FOR FURTHER ACTION** See paragraphs 1 and 4 below
International application No. PCT/US2021/041606	International filing date *(day/month/year)* 14 July 2021
Applicant GERM DOME INDUSTRIES LLC	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   Filing of amendments and statement under Article 19:
   The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

   When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

   How? Directly to the International Bureau preferably through ePCT, or on paper to:
   The International Bureau of WIPO, 34, chemin des Colombettes, 1211 Geneva 20, Switzerland
   (Facsimile No.: +41 22 338 82 70)

   For more detailed instructions, see the *PCT Applicant's Guide*, International Phase, paragraphs 9.004 – 9.011.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:
   ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with any request to forward the texts of both the protest and the decision thereon to the designated Offices.
   ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   The applicant may **submit comments on an informal basis on the written opinion of the International Searching Authority** to the International Bureau. These comments will be made available to the public after international publication. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established.

   Shortly after the expiration of **18 months from the priority date, the international application will be published** by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparations for international publication (Rules 90*bis*.1 and 90*bis*.3).

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for **entry into the national phase** before those designated Offices. In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months. For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide*, National Chapters.

   Within **22 months from the priority date, the applicant may request that a supplementary international search be carried out** by a different International Searching Authority that offers this service (Rule 45*bis*.1). The procedure for requesting supplementary international search is described in the *PCT Applicant's Guide*, International Phase, paragraphs 8.006-8.032.

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, VA 22313-1450 Facsimile No. 571-273-8300	Authorized officer Harry Kim Telephone No. PCT Helpdesk: 571-272-4300

Form PCT/ISA/220 (revised January 2019)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference		FOR FURTHER ACTION
160513-011700-PCT		see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/US2021/041606	14 July 2021	17 July 2020
Applicant		
GERM DOME INDUSTRIES LLC		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 9 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of:

☒ the international application in the language in which it was filed.

☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).

c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☐ **Certain claims were found unsearchable** (see Box No. II).

3. ☐ **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

a. the figure of the **drawings** to be published with the abstract is Figure No. 1

☒ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

b. ☐ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2021/041606

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - E05B 1/00; A61L 2/00; A61L 2/10; A61L 2/24 (2021.01)
CPC - E05B 1/0069; A61L 2/00; A61L 2/10; A61L 2/24; E05B 1/00 (2021.08)

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)
see Search History document

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

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
see Search History document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	KR 20-0410373 Y1 (JUNG JOON-WON) 08 May 2006 (08.05.2006) machine translation	1-4, 6, 7, 14-19
Y	WO 2009/056765 A2 (HILL-ROM S.A.S.) 07 May 2009 (07.05.2009) entire document	1-4, 6, 7, 14-19
Y	US 10,092,669 B2 (STRATEGIC PARTNERSHIPS ALLIANCE, LLC) 09 October 2018 (09.10.2018) entire document	6, 7
A	CN 202672848 U (YAO SHIRU) 16 January 2013 (16.01.2013) machine translation	1-20
A	DE 102008 063 887 A1 (DORMA GMBH & CO. KG) 01 July 2010 (01.07.2010) machine translation	1-20

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"D" document cited by the applicant in the international application
"E" earlier application or patent 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
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
24 September 2021	OCT 21 2021
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, VA 22313-1450 Facsimile No. 571-273-8300	Authorized officer Harry Kim Telephone No. PCT Helpdesk: 571-272-4300

Form PCT/ISA/210 (second sheet) (July 2019)

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: JONATHAN GIROUX
GREENBERG TRAURIG, LLP
77 W. WACKER DRIVE
SUITE 3100
CHICAGO, IL 60601

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	OCT 21 2021

Applicant's or agent's file reference	FOR FURTHER ACTION
160513-011700-PCT	See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US2021/041606	14 July 2021	17 July 2020

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - E05B 1/00; A61L 2/00; A61L 2/10; A61L 2/24 (2021.01)
CPC - E05B 1/0069; A61L 2/00; A61L 2/10; A61L 2/24; E05B 1/00 (2021.08)

Applicant GERM DOME INDUSTRIES LLC

1. 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 under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/US	Date of completion of this opinion	Authorized officer
Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, VA 22313-1450 Facsimile No. 571-273-8300	24 September 2021	Harry Kim PCT Helpdesk: 571-272-4300 Telephone No. 571-272-4300

Form PCT/ISA/237 (cover sheet) (revised January 2019)

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2021/041606

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed.

   ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(b)).

3. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:

   a. ☐ forming part of the international application as filed:

      ☐ in the form of an Annex C/ST.25 text file.

      ☐ on paper or in the form of an image file.

   b. ☐ furnished together with the international application under PCT Rule 13*ter*.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.

   c. ☐ furnished subsequent to the international filing date for the purposes of international search only:

      ☐ in the form of an Annex C/ST.25 text file (Rule 13*ter*.1(a)).

      ☐ on paper or in the form of an image file (Rule 13*ter*.1(b) and Administrative Instructions, Section 713).

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2021/041606

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-20	YES
	Claims	None	NO
Inventive step (IS)	Claims	5, 8-13, 20	YES
	Claims	1-4, 6, 7, 14-19	NO
Industrial applicability (IA)	Claims	1-20	YES
	Claims	None	NO

2. Citations and explanations:

Claims 1-4 and 14-19 lack an inventive step under PCT Article 33(3) as being obvious over KR 20-0410373 to Jung Joon-won (hereinafter, "Jung") in view of WO 2009/056765 to Hill-Rom S.A.S. (hereinafter, "Hill-Rom").

Regarding Claim 1, Jung discloses a door handle sanitizing apparatus (a door handle sterilization dryer; Para. [13]; Fig. 3) comprising: a posterior wall (the sanitizing dryer has a posterior wall; Fig. 1) configured to be disposed anterior of and substantially parallel to a door surface (the posterior wall is substantially flat and would be capable of being disposed anterior of and substantially parallel to a door surface; Figs. 1 & 3) and having an inner surface (the posterior wall has an inner surface with the door handle 10; Fig. 1); an arch portion extending in an anterior direction from the posterior wall (housing part 120 is arched and extends in an anterior direction from the top of the posterior wall; Fig. 1), the arch portion having an anterior end (figure 3 shows the anterior, front face, end of the housing part 120) and an inner surface (housing part 120 has an internal receiving part; Page 4 Ln. 133; Fig. 1); and a second sanitizing agent source disposed on the inner surface of the arch portion (UV lamp 210 emits ultraviolet rays capable of sterilizing bacteria on the door handle; Page. 4 Lns. 143-145; Fig. 1). Jung fails to explicitly disclose a first sanitizing agent source disposed on the posterior wall inner surface.
Hill-Rom is in the field of systems of door handle signaling and disinfection (Para. [0004]) and teaches a first sanitizing agent source disposed on the posterior wall inner surface (light sources 46 are disposed on a posterior wall facing the handle 14c emit light in the ultraviolet range to obtain disinfection of the handle; Paras. [0015] & [0026]). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the posterior wall of Jung with the sanitizing agent source disposed on the posterior wall as taught by Hill-Rom. The purpose being to provide the sanitizing ultraviolet lights directed at the underside of the handle to better sanitize the side not facing the other sanitizing source.

Regarding Claim 2, modified Jung discloses the door handle sanitizing apparatus of claim 1. Jung discloses further wherein the first sanitizing agent source or the second sanitizing agent source is a germicidal ultraviolet light source (UV lamp 210 emits ultraviolet rays capable of sterilizing bacteria on the door handle; Page. 4 Lns. 143-145; Fig. 1).

Regarding Claim 3, modified Jung discloses the door handle sanitizing apparatus of claim 1. Jung fails to explicitly disclose wherein the first sanitizing agent source or the second sanitizing agent source is an LED.
Hill-Rom teaches wherein the first sanitizing agent source or the second sanitizing agent source is an LED (miniaturized light sources such as light-emitting diodes called LEDs can be used; Para. [0008]). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ultraviolet lamps of Jung to include the LEDs as taught by Hill-Rom. The purpose being to use a source that is smaller and more efficient.

Regarding Claim 4, modified Jung discloses the door handle sanitizing apparatus of claim 1. Jung fails to explicitly disclose wherein the first sanitizing agent source is angled at between 30 degrees and 60 degrees with respect to the posterior wall.
Hill-Rom teaches wherein the first sanitizing agent source is angled at between 30 degrees and 60 degrees with respect to the posterior wall (figure 4 shows the the light source is angled between 30 and 60 degrees with respect to the posterior wall). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the posterior wall of Jung with the angled first sanitizing source as taught by Hill-Rom. The purpose being to provide sanitizing ultraviolet lights directed at the underside of the handle to better sanitize the side not facing the other sanitizing source.

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2021/041606

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claim 20 is objected under PCT Rule 66.2(a)(v) as lacking clarity under PCT Article 6 because claim 20 is indefinite for the following reasons:

Claim 20 is stated to depend from claim 1 and is best understood to depend from claim 14 based on the antecedent basis of "second sanitizing agent".

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2021/041606

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:

Regarding Claim 14, Jung discloses a door handle sanitizing apparatus (a door handle sterilization dryer 100; Para. [13]; Fig. 3) comprising: an inner surface comprising: a first, linear portion (the back wall of the sterilization dryer 100 is linear; Fig. 1) disposed generally parallel to a door and anterior to the door when the apparatus is affixed to the door (the back wall lies flat on a door's surface and is parallel and anterior to the door; Fig. 1), wherein the first portion extends from a transition portion to a linear tip (the back wall extends from a transition portion on the far right to a linear tip on the far left as shown in figure 1); and a second, curved portion (housing part 120 is curved; Fig. 1) that projects in an anterior direction from the transition portion of the first portion to an anterior tip (housing part 120 extends away from the back wall from the transition portion in an anterior direction to an anterior tip at the corner; fig. 1); wherein the inner surface defines a projected two-dimensional area that is perpendicular to the door and extends along the inner surface, anterior from the linear tip, and down from the anterior tip (the cross section in figure 1 illustrates the projected two dimensional area that is perpendicular to the door and extends along the inner surface, anterior from the linear tip, and down from the anterior tip); and a second sanitizing agent source disposed on the second portion (UV lamp 210 is contained in the housing part 120 and emits ultraviolet rays capable of sterilizing bacteria on the door handle; Page. 4 Lns. 143-145; Fig. 1); wherein the apparatus is configured to receive and sanitize a door handle extending through the projected two-dimensional area (the handle sterilization dryer 100 is capable of receiving and sanitizing a door handle that extends through the projected area; Para. [13]; Figs. 1 & 3). Jung fails to explicitly disclose a first sanitizing agent source disposed on the first portion.
Hill-Rom is in the field of systems for door handle signaling and disinfection and teaches a first sanitizing agent source disposed on the first portion (light sources 46 are disposed on a linear back wall facing the handle 14c and emit light in the ultraviolet range to obtain disinfection of the handle; Paras. [0015] & [0026]). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the first portion of Jung with the sanitizing agent source disposed on the first portion as taught by Hill-Rom. The purpose being to provide the sanitizing ultraviolet lights directed at the underside of the handle to better sanitize the side not facing the other sanitizing source.

Regarding Claim 15, modified Jung discloses the door handle sanitizing apparatus of claim 14. Jung discloses further comprising: two opposed sidewalls that are generally parallel to each other and generally transverse to the door when the apparatus is affixed to the door (figure 3 shows a sidewall and an assumed second opposed sidewall, not shown, that are generally parallel and transverse the door surface); wherein the inner surface extends between the two sidewalls (the back wall and housing 120 extend between the two opposed sidewalls; Fig. 3).

Regarding Claim 16, modified Jung discloses the door handle sanitizing apparatus of claim 14. Jung discloses further wherein a transverse cross-sectional shape of the inner surface is a J-shape (figure 1 shows the cross-sectional shape of the back wall and housing 120 that forms a generally J-shape).

Regarding Claim 17, modified Jung discloses the door handle sanitizing apparatus of claim 14. Jung discloses further wherein the first sanitizing agent source or the second sanitizing agent source is a germicidal ultraviolet light source (UV lamp 210 emits ultraviolet rays capable of sterilizing bacteria on the door handle; Page. 4 Lns. 143-145; Fig. 1).

Regarding Claim 18, modified Jung discloses the door handle sanitizing apparatus of claim 14. Jung fails to explicitly disclose wherein the first sanitizing agent source or the second sanitizing agent source is an LED.
Hill-Rom teaches wherein the first sanitizing agent source or the second sanitizing agent source is an LED (miniaturized light sources such as light-emitting diodes called LEDs can be used; Para. [0008]). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ultraviolet lamps of Jung to include the LEDs as taught by Hill-Rom. The purpose being to use a source that is smaller and more efficient.

Regarding Claim 19, modified Jung discloses the door handle sanitizing apparatus of claim 14. Jung fails to explicitly disclose wherein the second sanitizing agent is angled at between 30 degrees and 60 degrees with respect to the first portion.
Hill-Rom teaches wherein the second sanitizing agent is angled at between 30 degrees and 60 degrees with respect to the first portion (figure 4 shows the the light source is angled between 30 and 60 degrees with respect to the back wall portion).It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the posterior wall of Jung with the angled first sanitizing source as taught by Hill-Rom. The purpose being to provide sanitizing ultraviolet lights directed at the underside of the handle to better sanitize the side not facing the other sanitizing source.

Claims 6 and 7 lack an inventive step under PCT Article 33(3) as being obvious over KR 20-0410373 to Jung Joon-won (hereinafter, "Jung") in view of WO 2009/056765 to Hill-Rom S.A.S. (hereinafter, "Hill-Rom") and US 10,092,669 to Strategic Partnerships Alliance, LLC (hereinafter, "Strategic").

Regarding Claim 6, modified Jung discloses the door handle sanitizing apparatus of claim 1. Jung discloses further comprising a motion sensor disposed under the arch portion (detection sensor 150; Fig. 1). Jung fails to explicitly disclose wherein the apparatus is configured to deactivate the first and second sanitizing agent sources responsive to the motion sensor detecting motion.
Strategic is in the field of a sterilization system for a door handle (Abstract) and teaches a motion sensor disposed under the arch portion (motion sensor 58 is disposed under the shield 24; Fig. 5), wherein the apparatus is configured to deactivate the first and second sanitizing agent sources responsive to the motion sensor detecting motion (when motion sensor 58 detects the user's hand, the motion sensor 58 generates the first detection signal, which is then communicated to the controller 60, the controller 60 may be placed on standby to wait for removal of the user's hand; Col. 6 Lns. 22-26). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the motion sensor of Jung to include the sensor controls as taught by Strategic. The purpose being to prevent the system from exposing the user's hand to excess ultraviolet light when in use.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2021/041606

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:

Regarding Claim 7, modified Jung discloses the door handle sanitizing apparatus of claim 6. Jung fails to explicitly disclose further comprising an electronic controller in electronic communication with the motion sensor, wherein the controller is configured to: instruct the first and second sanitizing agent sources to begin a sanitization cycle; receive an indication from the motion sensor that the motion sensor has detected motion; in response to the indication, instruct the first and second sanitizing agent sources to pause the sanitization cycle; and instruct the first and second sanitizing agent sources to resume the sanitization cycle.
Strategic teaches further comprising an electronic controller in electronic communication with the motion sensor (controller 60 in operative communication with the motion sensor 58; Col. 5 Lns. 45-48), wherein the controller is configured to: instruct the first and second sanitizing agent sources to begin a sanitization cycle (upon receipt of the second detection signal the controller 60 initiates the sterilization cycle; Col. 6 Lns. 30-31); receive an indication from the motion sensor that the motion sensor has detected motion (if the motion sensor 58 detects a user's hand during the sterilization cycle, the motion sensor 58 generates the first detection signal which is communicated to the controller 60; Col. 6 Lns. 43-46); in response to the indication, instruct the first and second sanitizing agent sources to pause the sanitization cycle (if the controller 60 receives a first detection signal during the sterilization cycle, the controller 60 generates and transmits a stop signal to the sanitizing light elements 14 to stop emitting light; Col. 6 Lns. 46-50); and instruct the first and second sanitizing agent sources to resume the sanitization cycle (once the motion sensor 58 detects removal of the user's hand from the handle 12 the controller 60 initiates the sterilization cycle; Col. 6 Lns. 49-52). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Jung to include the sanitization cycle as taught by Strategic. The purpose being to prevent the system from exposing the user's hand to excess ultraviolet light when in use and to perform sanitization after a person has been in contact with the handle.

Claims 5, 8-13, and 20 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest:

Regarding claim 5, the prior art of record, individually or in combination, does not teach or fairly suggest the door handle sanitizing apparatus of claim 1, wherein the second sanitizing agent source is angled to project the sanitizing agent towards the posterior wall.

The following prior art is made of record to support and further define the reasons that claim 5 meets the criteria set out in PCT Article 33 (2)-(3):
Regarding claim 5, modified Jung discloses the door handle sanitizing apparatus of claim 1. Jung fails to explicitly disclose wherein the second sanitizing agent source is angled to project the sanitizing agent towards the posterior wall.
Hill-Rom is in the field of systems of door handle signaling and disinfection (Para. [0004]), Strategic is in the field of a sterilization system for a door handle (Abstract), and Yao Shiru (hereinafter "Yao") is in the field of an automatic disinfection door handle (Para. [0002]). However, Hill-Rom, Strategic, and Yao all fail to teach wherein the second sanitizing agent source is angled to project the sanitizing agent towards the posterior wall.
Of all the found references with sanitizing sources, the sanitizing sources are always directed away from the posterior wall or parallel to the posterior wall. None of the references have a sanitizing source that is angled towards the posterior wall.

Regarding claim 8, the prior art of record, individually or in combination, does not teach or fairly suggest the door handle sanitizing apparatus of claim 7, wherein the controller is further configured to instruct the first and second sanitizing agent sources to resume the sanitization cycle in response to the motion sensor not detecting motion for a predetermined period of time.

The following prior art is made of record to support and further define the reasons that claim 8 meets the criteria set out in PCT Article 33 (2)-(3):
Regarding claim 8, modified Jung discloses the door handle sanitizing apparatus of claim 7. Jung fails to explicitly disclose wherein the controller is further configured to instruct the first and second sanitizing agent sources to resume the sanitization cycle in response to the motion sensor not detecting motion for a predetermined period of time.
Strategic is in the field of a sterilization system for a door handle (Abstract) and teaches resuming the sanitization cycle in response to the motion sensor detecting removal of the user's hand (once the motion sensor 58 detects removal of the user's hand from the handle 12 the controller 60 initiates the sterilization cycle; Col. 6 Lns 49-52). Strategic fails to teach wherein the controller is further configured to instruct the first and second sanitizing agent sources to resume the sanitization cycle in response to the motion sensor not detecting motion for a predetermined period of time.
In general, there are no references in a relevant field of art that include a system that resumes a sanitization cycle in response to not detecting motion for a predetermined period of time.

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2021/041606

Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of:

Regarding claim 9, the prior art of record, individually or in combination, does not teach or fairly suggest a door handle sanitizing apparatus comprising: an inner surface having a first generally linear portion a second curved portion disposed at a top of the first portion, whereby the inner surface forms an approximately J-shaped surface; a first sanitizing light source disposed at a bottom portion of the first portion of the inner surface and configured to project sanitizing light towards the second portion of the inner surface; and a second sanitizing light source disposed on the second portion and configured to project sanitizing light towards the first portion of the inner surface.

The following prior art is made of record to support and further define the reasons that claim 9 meets the criteria set out in PCT Article 33 (2)-(3):

Jung discloses a door handle sanitizing apparatus (a door handle sterilization dryer 100; Para. [13]; Fig. 3) comprising: an inner surface having a first generally linear portion (the back wall of the sterilization dryer 100 is linear; Fig. 1) a second curved portion disposed at a top of the first portion (housing part 120 is curved and extends away from the back wall from the top; fig. 1), whereby the inner surface forms an approximately J-shaped surface (figure 1 shows the cross-sectional shape of the back wall and housing 120 that forms a generally J-shape); and a second sanitizing light source disposed on the second portion (UV lamp 210 is contained in the housing part 120 and emits ultraviolet rays capable of sterilizing bacteria on the door handle; Page. 4 Lns. 143-145; Fig. 1). Jung fails to explicitly disclose a first sanitizing light source disposed at a bottom portion of the first portion of the inner surface and configured to project sanitizing light towards the second portion of the inner surface; and the second sanitizing light source configured to project sanitizing light towards the first portion of the inner surface.

Strategic is in the field of a sterilization system for a door handle (Abstract) and discloses a door handle sanitizing apparatus (sterilization system 10; Fig. 1) comprising: an inner surface having a second curved portion (shield 24 has an inner curved surface; Figs. 3 & 5); and a second sanitizing light source disposed on the second portion (sanitizing light elements 14 are disposed within the shield 24; Fig. 5). Strategic fails to explicitly disclose a first generally linear portion; whereby the inner surface forms an approximately J-shaped surface; a first sanitizing light source disposed at a bottom portion of the first portion of the inner surface and configured to project sanitizing light towards the second portion of the inner surface; and the second sanitizing light configured to project sanitizing light towards the first portion of the inner surface.

CN 202672848 to Yao Shiru (hereinafter Yao) is in the field of an automatic disinfection door handle (Para. [0002]) and discloses a door handle sanitizing apparatus (a door handle for automatic disinfection; Para. [0023]; Fig. 1) comprising: an inner surface having a first generally linear portion (base plate 10 has a linear inner surface; Fig. 2) a second portion disposed at a top of the first portion (protruding plate 103 is disposed at the top of the base plate 10; Figs. 1 & 2); and a second sanitizing light source disposed on the second portion (the bottom surface of the protruding plate103 is provided with a layer of ultraviolet emission areas 101; Para. [0023]; Fig. 1). Yao fails to explicitly disclose a curved portion; whereby the inner surface forms an approximately J-shaped surface; a first sanitizing light source disposed at a bottom portion of the first portion of the inner surface and configured to project sanitizing light towards the second portion of the inner surface; and the second sanitizing light configured to project sanitizing light towards the first portion of the inner surface.

None of the cited prior art references taken alone or in combination disclose or suggest the specific elements of the second sanitizing light configured to project sanitizing light towards the first portion of the inner surface. All of the found references have the sanitizing lights configured to project away from the first portion or parallel to the first portion.

Claims 10-13 depend from claim 9, and therefore meet the criteria set out in PCT Article 33(2)-(3) for at least the same reasons as claim 9.

Regarding claim 20, the prior art of record, individually or in combination, does not teach or fairly suggest the door handle sanitizing apparatus of claim 14, wherein the second sanitizing agent source is angled to project the sanitizing agent towards the first portion.

The following prior art is made of record to support and further define the reasons that claim 20 meets the criteria set out in PCT Article 33 (2)-(3):

Regarding claim 20, modified Jung discloses the door handle sanitizing apparatus of claim 14. Jung fails to explicitly disclose wherein the second sanitizing agent source is angled to project the sanitizing agent towards the first portion.

Hill-Rom is in the field of systems of door handle signaling and disinfection (Para. [0004]), Strategic is in the field of a sterilization system for a door handle (Abstract), and Yao Shiru (hereinafter "Yao") is in the field of an automatic disinfection door handle (Para. [0002]). However, Hill-Rom, Strategic, and Yao all fail to teach wherein the second sanitizing agent source is angled to project the sanitizing agent towards the first portion.

Of all the found references with sanitizing sources, the sanitizing sources are always directed away from the first portion or parallel to the first portion. None of the references have a sanitizing source that is angled towards the first portion.

Claims 1-20 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

UNITED STATES
PATENT AND TRADEMARK OFFICE

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www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/804,396	**11/06/2024 04:33:40 PM Z ET**	**AGD0100.7**

Title of Invention

SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	7738	FILED BY	CHRISTINE SYCK
PATENT CENTER #	67867480	FILING DATE	08/14/2024
CUSTOMER #	62124	FIRST NAMED INVENTOR	Dean Schumacher
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Quincy Harrison

Documents

TOTAL DOCUMENTS: 12

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
KR20200016717.pdf	7	Foreign Reference	205 KB
CN202672848.pdf	10	Foreign Reference	512 KB
KR200410373.pdf	11	Foreign Reference	964 KB
NPL_1.pdf	16	Non Patent Literature	919 KB
IDS_AGD0100_7.pdf	7	Information Disclosure Statement (IDS) Form (SB08)	1273 KB
DE102008063887.pdf	37	Foreign Reference	2571 KB
NPL_5.pdf	7	Non Patent Literature	358 KB
NPL_3.pdf	12	Non Patent Literature	373 KB
NPL_4.pdf	17	Non Patent Literature	1065 KB

NPL_2.pdf	10	Non Patent Literature	623 KB
Statement_Relevance_AGD0100_7.pdf	2	Transmittal Letter	80 KB
WO2009056765.pdf	10	Foreign Reference	848 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for 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

National Stage of an International Application under 35 U.S.C. 371

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.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Espacenet

KR20200016717A Ultraviolet disinfection for public facilities

Applicants: KWON HYEON UK [KR]

Inventors: KWON HYEON UK [KR]

Classifications:

IPC ***A61L2/10; E05B1/00; H02N2/18;***

CPC **A61L2/10 (KR); E05B1/0069 (KR); H02N2/18 (KR);** A61L2202/11 (KR);

Priorities: KR20180093098A 2018-08-07

Application: KR20180093098A·2018-08-07

Publication: KR20200016717A·2020-02-17

Published as: KR20200016717A

Ultraviolet disinfection for public facilities

Abstract

The present invention is provided to effectively disinfect germs transferred from hand to hand in public facilities. An internal iron piece is installed near the middle of a door. An ultraviolet lamp is installed on the internal iron piece. A piezoelectric element is installed in a joint between the internal iron piece and the door. A protective cover enables cleaning without touching the ultraviolet lamp directly.

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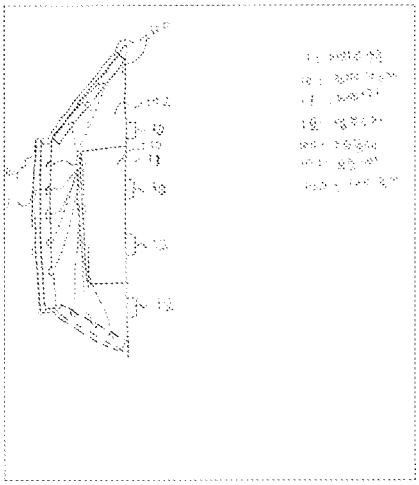
전체 청구항 수 : 총 1 항

(54) 발명의 명칭 **압전소자를 적용한 공공시설 자외선 소독 손잡이**

(57) 요 약

본 발명은 공공시설에서 손에서 손으로 옮겨지는 병균을 효과적으로 소독할 수 있도록하는 효과를 제공하기 위함이다.

대 표 도 - 도2



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(52) CPC특허분류
H02N 2/18 (2013.01)
A61L 2202/11 (2013.01)

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명 세 서

청구범위

청구항 1

내부철재는, 문 중간 부근에 설치되어, 손잡이로써 작용을 할 수 있도록 하고

자외선램프는, 내부철재에 설치되어, 그 빛이 문 손잡이 전체를 덮을 수 있도록 촘촘히하여 잡을 때 소독시키고, 내장배터리는 내부철재에 설치되어, 그 기전력이 자외선램프를 충분히 작동시킬 수 있고,

압전소자는 내부철재와 문 연결부에 설치되어 문을 열거나 닫을때 기전력이 생겨 내장배터리의 스위치 작용을 하고

보호커버는 자외선램프를 직접 손으로 만지지 않고 청소를 유리하게 할 수 있는 것을 특징으로 하는 압전소자를 적용한 공공시설 자외선 소독 손잡이.

발명의 설명

기 술 분 야

[0001] 본 발명은 압전소자를 적용한 공공시설 자외선 소독 손잡이에 관한 것이다

배 경 기 술

[0002] 일반적으로 공공시설 손잡이는 한쪽의 세로틀 또는 거기에 부착한 경첩 등의 철물을 축으로 하여 회전하는 형식으로 개폐하는 문의 손잡이를 말한다.

[0003] 좀 더 설명하자면 이를 통해 많은 사람들이 해당 손잡이를 손을 씻지 않은 상태로 만지게 되며 각종 병균이 옮겨갈 수 있었다.

발명의 내용

해결하려는 과제

[0004] 상술한 바와 같은 문제점을 해결하기 위해 안출된 본 발명의 목적은, 문 손잡이에 자외선 소독 램프가 구비됨으로써, 문손잡이를 잡아 열고 닫음으로 인해 옮겨가는 병균을 소독할 수 있는 문 손잡이를 제공하기 위함이다. 그리고 본 발명에서 항상 켜져있는 자외선 램프는 에너지를 과잉소비할 수 있으므로 압전소자를 손잡이에 구비함으로써, 문을 열고 닫을 때 힘에 의해 기전력이 발생하여 자연적으로 스위치의 기능을 제공하기 위함이다

과제의 해결 수단

[0005] 상기한 바와 같은 목적을 달성하기 위한 본 발명에 따르면, 자외선 램프가 손잡이를 잡을 때 작동하여 손을 소독하는 것을 특징으로 한다. 이때 기전력은 문 구조의 단순화를 위하여 내장배터리를 사용하고 압전소자를 사용하여 그 기전력의 스위치 작용하는 것을 특징으로 한다.

발명의 효과

[0006] 이상 살펴본 바와 같은 본 발명의 효과는, 자외선 램프가 문손잡이의 설치함으로써, 공공시설에서 많은 손이 접촉하여 옮을 수 있는 병균을 줄이수 있는 압전소자를 적용한 공공시설 자외선 소독 손잡이를 제공할 수 있다. 또한, 문 구조를 단순화 하기 위해 내장배터리를 구비하며 그 스위치는 압전소자를 이용하여 문을 열고 닫을 때 발생하는 기전력으로 작동함으로써 압전소자를 적용한 공공시설 자외선 소독 손잡이를 제공할 수 있다.

도면의 간단한 설명

[0007] 도 1은 본 발명의 바람직한 실시예에 따른 압전소자를 적용한 공공시설 자외선 소독 손잡이를 나타낸 정면도이다.

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도 2는 본 발명의 바람직한 실시예에 따른 압전소자를 적용한 공공시설 자외선 소독 손잡이를 나타낸 측면도이다

발명을 실시하기 위한 구체적인 내용

[0008] 본 발명의 이점 및 특징, 그리고 그것들을 달성하는 방법은 첨부되는 도면과 함께 상세하게 후술되어 있는 실시예들을 참조하면 명확해질 것이다. 그러나 본 발명은 이하에서 개시되는 실시예들에 한정되는 것이 아니라 서로 다른 다양한 형태로 구현될 수 있으며, 단지 본 실시예들은 본 발명의 개시가 완전하도록 하고, 본 발명이 속하는 기술분야에서 통상의 지식을 가진 자에게 발명의 범주를 완전하게 알려주기 위해 제공되는 것이며, 본 발명은 청구항의 범주에 의해 정의될 뿐이다.

[0009] 이하, 본 발명의 실시예들에 의해 본 발명을 설명하기 위한 도면들을 참고하여 본 발명에 대해 설명하도록 한다.

[0010] 본 발명에 따른 압전소자를 적용한 공공시설 자외선 소독 손잡이는 기본 몸체 및 자외선램프등 전기적 작용자로 구성된다.

[0011] 먼저 주요몸체 중 내부철제(102)에 내장배터리 및 자외선 램프를 설치할 수 있는 공간이 설치된다.

[0012] 또한 내부철재(102)의 형태는 문 손잡이로써 사용될 수 있도록 문 손잡이에 해당하는 위치에 위치한다.

[0013] 또한, 내부철제(102)는 '철'이라는 금속에 한정되지 아니하며 알류미늄등의 금속, 플라스틱, 유리등 문손잡이의 형태로 만들 수 있는 것까지 포함한다.

[0014] 이하, 도면을 참조하여 본 발명의 구성결합방법과 사용설명에 대해 자세히 설명한다.

[0015] 내부철제(102)에는 배터리와 자외선램프(11, 1)이 설치되고 이때 자외선램프는 그 소독효과가 손잡이 전체 면적에 작용될 수 있도록 촘촘히 설치한다.

[0016] 또한 내부철제(102)에는 이를 연결하는 전선이 설치된다. 자외선 램프와 그 전선 배터리에 용량은 한정하지 않는다.

[0017] 또 압전소자는 내부철제(102)와 문 사이 연결부에 들어갈 수 있도록 한다.

[0018] 또 내부철제와 연결되어 바깥으로 자외선 램프가 향하도록 설치된 경우 이를 보호하고 청소를 용이하게 하기위해 보호커버(101)을 설치한다.

[0019] 압전소자(12)가 문을 열거나 닫을 때 부피차가 생기며 기전력을 형성한다 그 기전력은 배터리(11)에 작용하여 배터리의 기전력이 자외선램프(1)로 향하도록 한다.

[0020] 위와 같은 과정을 통해 문을 열고 닫으면 자외선램프에 불이 들어와 손 소독이 되도록 한다

[0021] 본 발명이 속하는 기술분야의 통상의 지식을 가진 자는 본 발명이 그 기술적 사상이나 필수적인 특징을 변경하지 않고서 다른 구체적인 형태로 실시될 수 있다는 것을 이해할 수 있을 것이다. 그러므로 이상에서 기술한 실시예들은 모든 면에서 예시적인 것이며 한정적이 아닌 것으로 이해해야만 한다. 본 발명의 범위는 상기 상세한 설명보다는 후술하는 특허청구의 범위에 의하여 나타내어지며, 특허청구의 범위의 의미 및 범위 그리고 균등 개념으로부터 도출되는 모든 변경 또는 변형된 형태가 본 발명의 범위에 포함되는 것으로 해석되어야 한다. 더불어, 상술하는 과정에서 기술된 구성의 작동순서는 반드시 시계열적인 순서대로 수행될 필요는 없으며, 각 구성 및 단계의 수행 순서가 바뀌어도 본 발명의 요지를 충족한다면 이러한 과정은 본 발명의 권리범위에 속할 수 있음은 물론이다.

부호의 설명

[0022] 1 : 자외선 램프 10 : 전기적 작용자

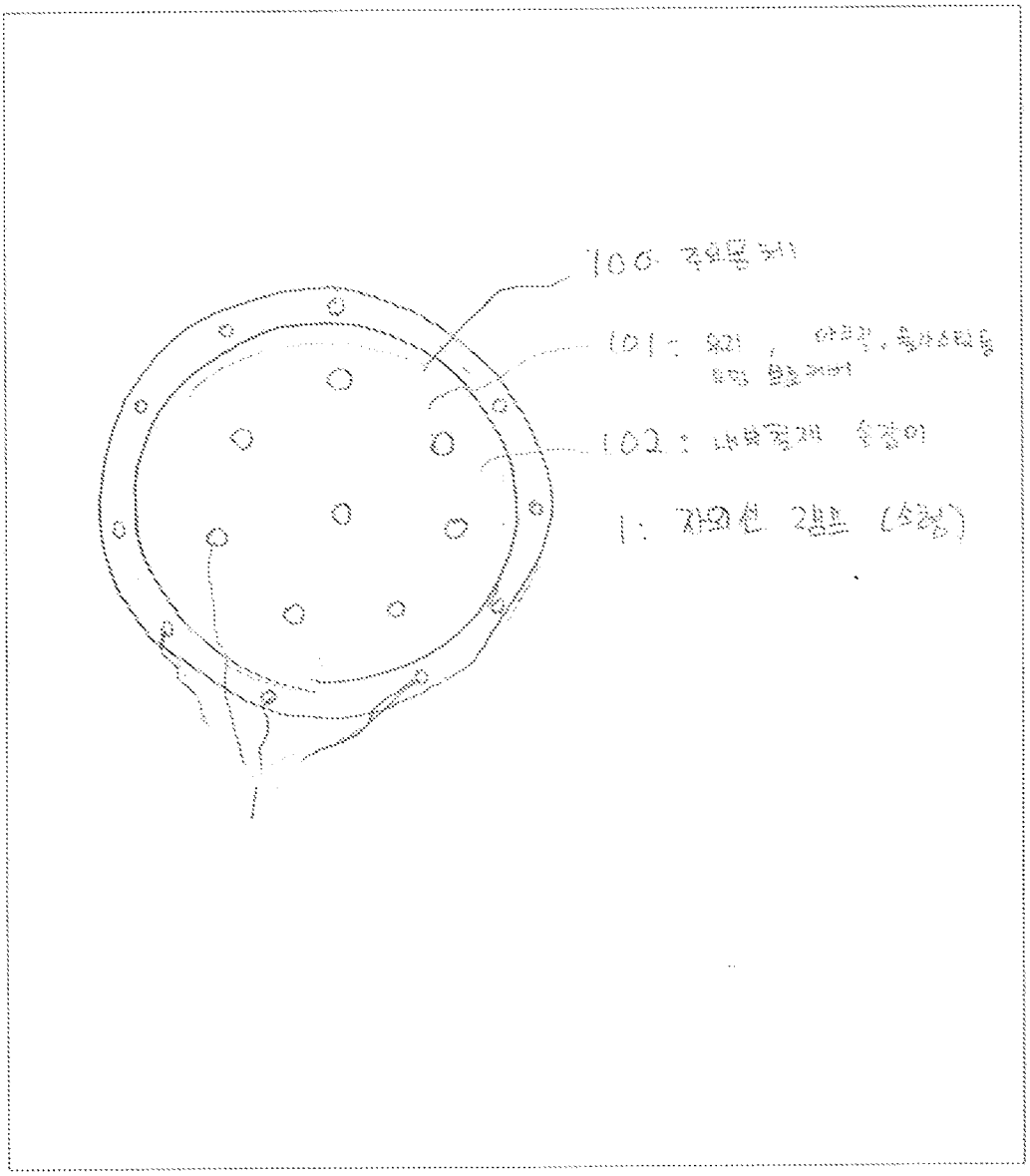
11 : 배터리 12 : 압전소자

100 : 주요 몸체 101 : 보호커버 102 : 내부 철제구조

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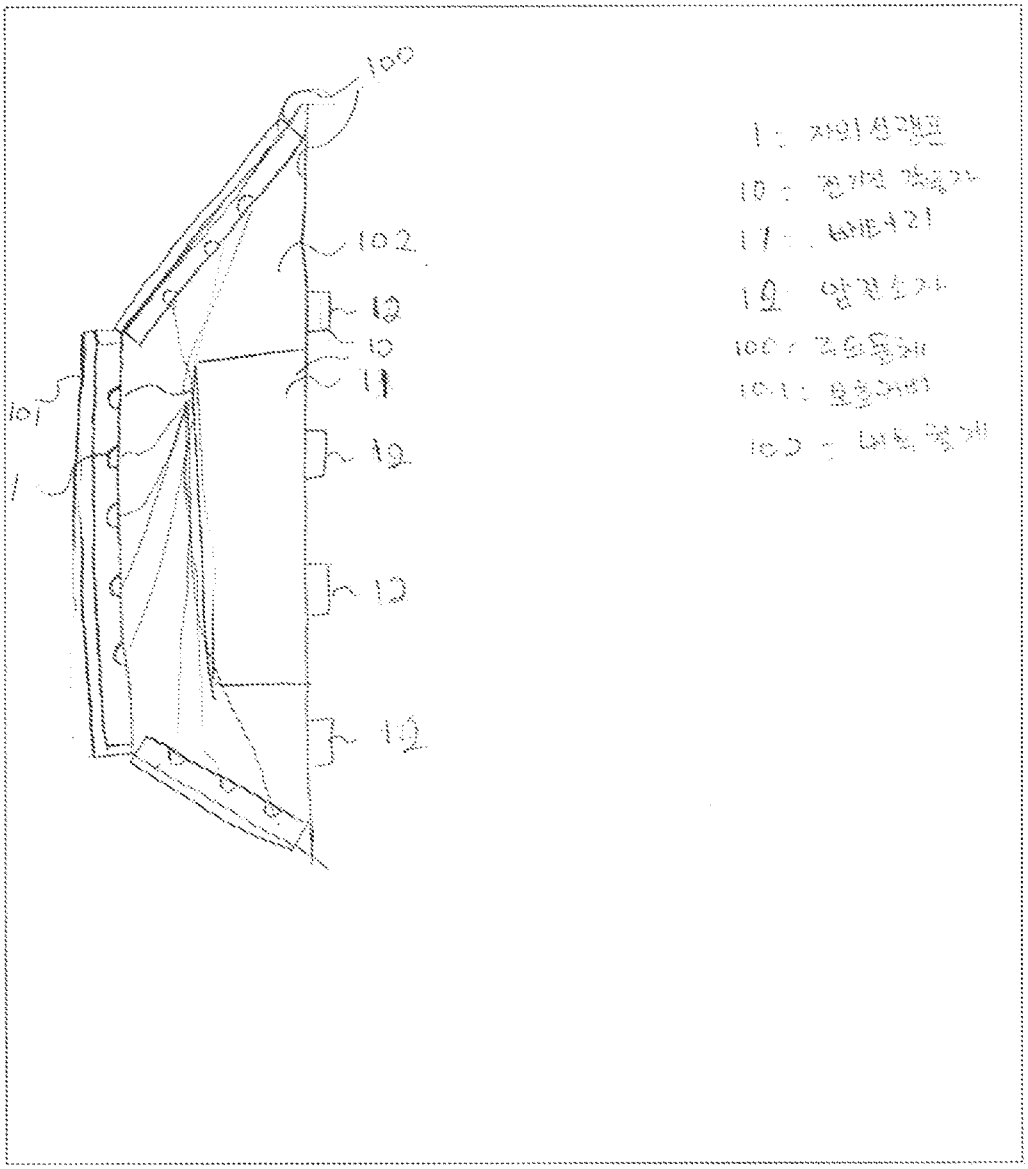
도면

도면1



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도면2



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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Dean Schumacher

Inventor : Dean Schumacher | Confirmation No.: 7738

Serial No.: 18/804,396 | Examiner: Jason Y. Ko

Filed: August 14, 2024 | Group Art Unit: 1711

For: SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT

Attorney Docket No.: AGD0100.7

STATEMENT OF RELEVANCE FOR NON-ENGLISH REFERENCES

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

In compliance with the duty of disclosure under 37 C.F.R. § 1.56 and § 1.97-1.98, the references listed and identified on the attached Forms PTO/SB/08A are being submitted herewith for consideration by the Examiner. The following information is intended to satisfy the requirement for a concise explanation of relevance under 37 CFR §1.98(a)(3) and MPEP §609:

DE102008063887 (A1): An English language Abstract of the foreign language document is provided herewith, which was obtained from Espacenet (http://worldwide.espacenet.com).

KR200410373 (Y1): An English language Abstract of the foreign language document is provided herewith, which was obtained from Espacenet (http://worldwide.espacenet.com).

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CN202672848 (U): An English language Abstract of the foreign language document is provided herewith, which was obtained from Espacenet (http://worldwide.espacenet.com).

Citation of the listed references is not to be construed as an admission that any of the references are "material" as defined under 37 C.F.R. § 1.56(b). Form PTO/SB/08A is included herewith. Consideration and entry into the record of these references is respectfully requested.

Please charge any fees associated with this information disclosure statement to deposit account 07-0960.

Respectfully submitted,

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[Suite sur la page suivante]

(54) **Title:** IMPROVEMENT IN A DOOR FOR FACILITATING THE LOCATION THEREOF

(54) **Titre :** PERFECTIONNEMENT A UNE PORTE, PERMETTANT DE FACILITER LE REPERAGE DE CELLE-CI

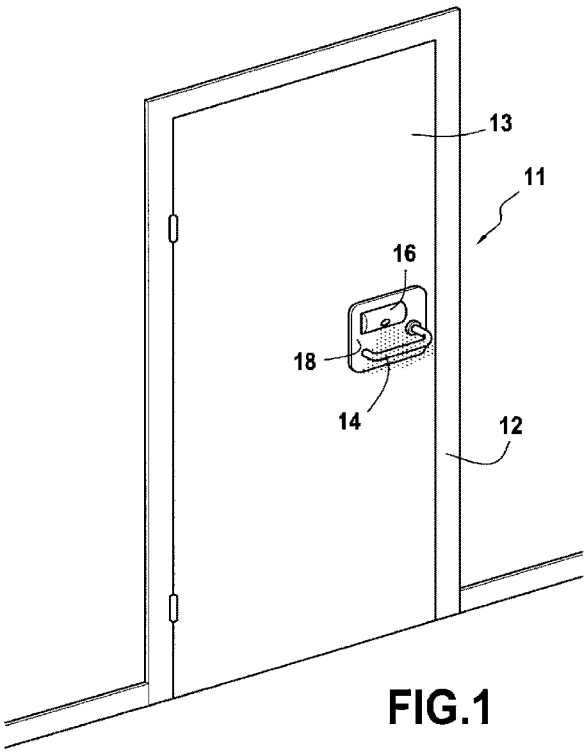


FIG.1

(57) **Abstract:** The invention relates to a door that is easy to locate even at night. According to the invention, the door handle (14) is lighted by at least one specific light source (16) located in the vicinity thereof, at least in the closed door position. Preferably, the light source generates an ultraviolet radiation towards an area that is photo-luminescent at the wavelength of said source and that is defined on said handle.

(57) **Abrégé :** Porte facile à localiser même la nuit. Selon l'invention, la poignée (14) de la porte est éclairée par au moins une source lumineuse spécifique (16) placée au voisinage de celle-ci, au moins en position de fermeture de la porte. De préférence, la source lumineuse émet un rayonnement ultraviolet vers une zone photoluminescente à la longueur d'onde de ladite source définie sur ladite poignée.

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TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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Perfectionnement à une porte, permettant de faciliter le repérage de celle-ci

L'invention se rapporte à une porte et concerne plus particulièrement l'amélioration de la localisation de celle-ci en facilitant son repérage, notamment au niveau de la poignée, de jour ou dans l'obscurité.

L'invention s'applique particulièrement au domaine hospitalier ou à une chambre médicalisée, par exemple équipée pour héberger une personne handicapée souffrant de déficience visuelle ou de la maladie d'Alzheimer.

Elle concerne aussi avantageusement un perfectionnement utilisant les moyens de signalisation, et permettant en outre de désinfecter en permanence la poignée.

Dans une chambre d'hôpital ou un lieu de vie d'une personne handicapée, notamment affecté de sénilité (maladie d'Alzheimer) ou de troubles de la vision, une porte (conduisant vers la sortie, vers les toilettes ou vers une salle de bain) est un élément qui devient un repère essentiel. Il importe donc d'en favoriser la localisation en toutes circonstances. L'invention permet de focaliser l'attention sur la poignée de cette porte en accentuant sa visibilité, de jour comme de nuit.

Plus particulièrement, l'invention concerne une porte comprenant un chambranle et un battant articulé audit chambranle et muni d'une poignée, caractérisée en ce que ladite poignée est éclairée par au moins une source lumineuse spécifique placée au voisinage de celle-ci au moins en position de fermeture dudit battant.

Ladite source lumineuse spécifique peut comprendre au moins une simple lampe d'éclairage émettant dans le spectre de la lumière visible. Dans ce cas, cette lampe illumine la poignée. De jour, elle augmente le contraste entre la poignée et la porte, de nuit, elle met en évidence la poignée elle-même.

Avantageusement, la matière de la poignée est choisie pour accentuer sa visibilité. On peut prévoir par exemple une poignée en matériau transparent ou translucide et/ou comportant des zones réfléchissantes. On peut aussi obtenir ou combiner la conduction et/ou la

réflexion de la lumière par la poignée elle-même, par exemple en y prévoyant d'y agencer des prismes réfléchissants.

Une ou plusieurs sources lumineuses miniaturisées telles que des diodes électroluminescentes dites LED peuvent avantageusement être utilisées. Elles peuvent être intégrées soit dans la poignée, ou à proximité immédiate dans la porte et/ou le chambranle.

Par exemple, la source lumineuse spécifique peut être montée sur le battant de la porte en regard de la poignée.

Selon une autre possibilité, ladite source lumineuse spécifique peut être installée sur le chambranle de ladite porte, en regard de ladite poignée lorsque le battant est fermé.

Selon une caractéristique avantageuse, la source lumineuse spécifique peut être logée dans l'épaisseur du battant en étant optiquement couplée à ladite poignée en matériau transparent. Ainsi, la poignée transparente, par exemple en méthacrylate, guide la lumière. Sa diffusion le long de la poignée peut être améliorée en prévoyant des formes prismatiques le long et à la surface de celle-ci de façon à réfléchir la lumière dans toutes les directions.

Selon une autre possibilité, la source lumineuse spécifique est ou comporte une source de rayonnement ultraviolet tandis qu'au moins une zone photoluminescente à la longueur d'onde de ladite source est agencée sur ladite poignée.

Dans ce cas, la poignée est visible même dans l'obscurité. Par exemple le matériau ou le revêtement de la poignée (ou certaines marques rapportées sur celle-ci) peut être de couleur blanche, réagissant à un rayonnement ultraviolet. La surface de la poignée peut aussi être texturée pour augmenter le contraste entre la poignée et la porte de façon à obtenir le maximum d'effet photoluminescent, de nuit.

Dans tous les cas, la couleur de la porte ou celle d'une contre-plaque montée sur la porte en regard de la poignée peut être choisie pour augmenter le contraste entre la poignée et son fond. Dans le cas d'une contre-plaque, la forme, les dimensions et même la matière de celle-ci sont choisies pour optimiser ce contraste.

Enfin, dans le cas d'un "éclairage" par ultraviolet, la source de rayonnement ultraviolet peut être d'une puissance suffisante pour exercer une action bactéricide sur la poignée.

En effet, les poignées de porte sont l'un des principaux vecteurs de propagation des maladies nosocomiales. Dans le cas d'une signalisation de nuit, du type mentionné ci-dessus (qui peut se combiner avec une signalisation de jour) il suffit d'adapter la puissance du rayonnement ultraviolet pour obtenir une désinfection permanente de la poignée.

L'invention sera mieux comprise et d'autres avantages de celle-ci apparaîtront plus clairement à la lumière de la description qui va suivre, donnée uniquement à titre d'exemple et faite en référence aux dessins annexés dans lesquels :

- la figure 1 illustre une porte équipée du perfectionnement selon l'invention ;
- la figure 2 illustre une première variante ;
- la figure 3 est une vue de détail illustrant une seconde variante ;
- la figure 4 est une vue de détail illustrant une troisième variante ; et
- la figure 5 est une vue de détail illustrant une quatrième variante.

La figure 1 représente la porte 11 d'un local tel que par exemple une chambre. Cette porte comporte classiquement un chambranle 12 et un battant 13 articulé au chambranle. Le battant est muni d'une poignée 14.

Selon une caractéristique importante de l'invention, la poignée 14 est éclairée par une source lumineuse spécifique 16 placée au voisinage de celle-ci. Dans l'exemple de la figure 1, la source lumineuse 16 est montée sur le battant 13 et son faisceau lumineux éclaire la poignée.

De plus, le battant comporte une contre-plaque 18 de couleur relativement sombre, placée en regard de la poignée. On augmente ainsi le contraste entre la poignée et son fond visuel.

Selon l'exemple, la source lumineuse 16 est une lampe classique émettant dans le spectre de la lumière visible. La source peut être constituée d'une ou plusieurs diodes électroluminescentes.

Dans le mode de réalisation de la figure 2, la source lumineuse 26 est installée sur le chambranle 12 de la porte ou sur le champ de la cloison adjacente, à proximité de la poignée 14a dans la position de fermeture de la porte. La poignée est texturée avec de légers reliefs pour

augmenter le contraste, par réflexion de la lumière dans de multiples directions.

Dans le mode de réalisation de la figure 3, la poignée 14b est en matériau transparent ou au moins translucide et pourvue, sur au moins une de ses faces, de facettes prismatiques 28. En outre, la source lumineuse 36 (constituée d'une ou plusieurs lampes miniatures comme par exemple des diodes électroluminescentes) est logée dans l'épaisseur du battant et optiquement couplée à la poignée. Ainsi, la lumière émise se propage dans le corps de la poignée formant guide de lumière. Les facettes prismatiques 28 permettent de diffuser la lumière dans toutes les directions et d'augmenter le contraste de la poignée par rapport au fond constitué par le battant 13.

Dans l'exemple de la figure 4, la source lumineuse 46 est fixée sur le chambranle 12 à la hauteur de la poignée 14c et comporte deux lampes dirigées vers celle-ci. Eventuellement, l'une des lampes peut émettre dans le domaine de la lumière visible, et l'autre dans le domaine des ultraviolets. La lampe émettant dans le domaine de la lumière visible éclaire la poignée de jour et l'autre lampe émettant dans le domaine des ultraviolets "éclaire" la poignée pendant la nuit. Avantageusement, le corps de la poignée peut être de couleur blanche. Il ressort ainsi par rapport à la contre-plaque 18 de couleur plus foncée, pendant la journée. La poignée peut comporter aussi des petites surfaces réfléchissantes 48, ici sous forme de points. La nuit, la poignée blanche devient photoluminescente sous l'effet du rayonnement ultraviolet. Dans l'exemple de la figure 5, la source lumineuse spécifique 56 est montée sur le battant 13 de la porte et comporte des lampes émettant dans le domaine de la lumière visible et/ou dans le domaine des ultraviolets. Ces lampes sont dirigées sur une poignée 14d en matériau transparent dont la face avant est munie de facettes prismatiques 28. Certaines faces de la poignée peuvent être garnies d'un revêtement blanc assurant la visibilité de nuit, sous l'action du rayonnement ultraviolet.

Les dispositifs qui viennent d'être décrits peuvent être équipés uniquement de lampes à ultraviolet pour une utilisation exclusivement en vieille nocturne.

Dans les exemples des figures 1, 2, 4 et 5 et sous rayonnement ultraviolet, il est possible de prévoir au moins une lampe lumineuse dans

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le domaine des ultraviolets de puissance suffisante pour tuer certains microorganismes présent sur la poignée. Ainsi, une simple adaptation de puissance du rayonnement ultraviolet permet de lutter efficacement et en permanence contre la propagation des maladies nosocomiales.

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REVENDICATIONS

1. Porte comprenant un chambranle et un battant (13) articulé audit chambranle et muni d'une poignée (14), caractérisée en ce que ladite poignée est éclairée par au moins une source lumineuse (16, 26, 36, 46, 56) spécifique placée au voisinage de celle-ci au moins en position de fermeture dudit battant.

2. Porte selon la revendication 1, caractérisée en ce que ladite source lumineuse (16, 26, 46, 56) émet un rayonnement ultraviolet et en ce qu'au moins une zone photoluminescente à la longueur d'onde de ladite source est agencée sur ladite poignée.

3. Porte selon la revendication 2, caractérisée en ce que ladite source de rayonnement ultraviolet (16, 26, 46, 56) a une puissance suffisante pour exercer une action bactéricide sur ladite poignée.

4. Porte selon l'une des revendications 1 à 3, caractérisée en ce que ladite source lumineuse spécifique (16, 56) est montée sur le battant de porte en regard de ladite poignée.

5. Porte selon l'une des revendications 1 à 3, caractérisée en ce que ladite source lumineuse spécifique (26, 46) est installée sur le chambranle de ladite porte en regard de ladite poignée, lorsque ledit battant est fermé.

6. Porte selon la revendication 1, caractérisée en ce que ladite poignée (14b, 14d) est en matériau transparent ou translucide.

7. Porte selon la revendication 6, caractérisée en ce que ladite source lumineuse spécifique (36) est logée dans l'épaisseur dudit battant et optiquement couplée à ladite poignée.

8. Porte selon l'une des revendications précédentes, caractérisée en ce que ladite poignée est munie de facettes prismatiques (28) réfléchissant la lumière.

9. Porte selon l'une des revendications précédentes, caractérisée en ce qu'elle comporte une contre-plaque (18) placée en regard de la poignée sur le battant, la couleur et/ou la matière de la contre-plaque étant choisie pour accentuer le contraste avec la poignée.

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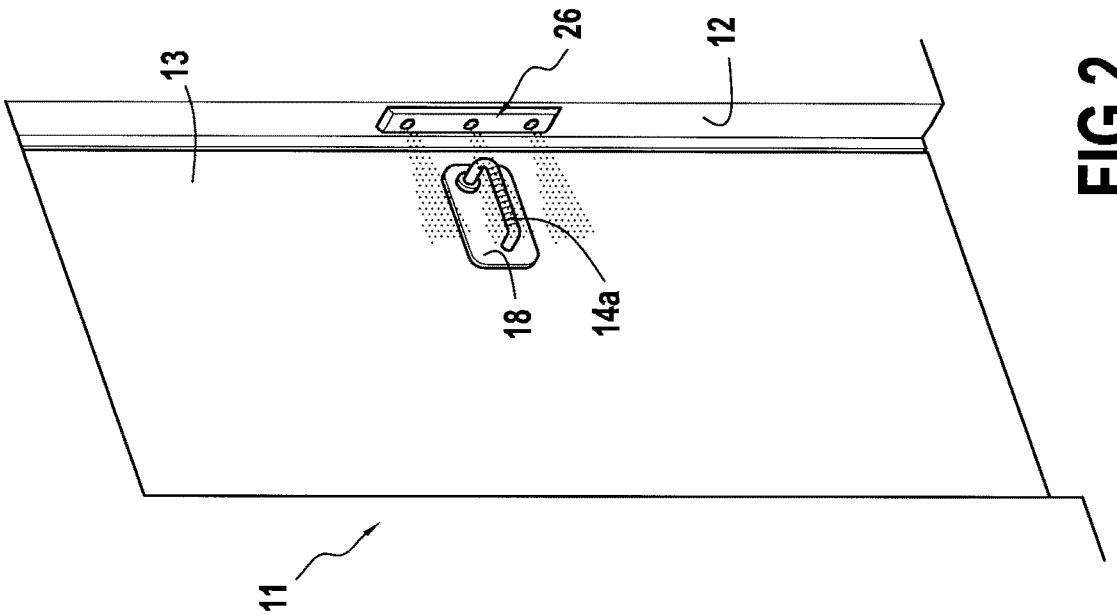


FIG.2

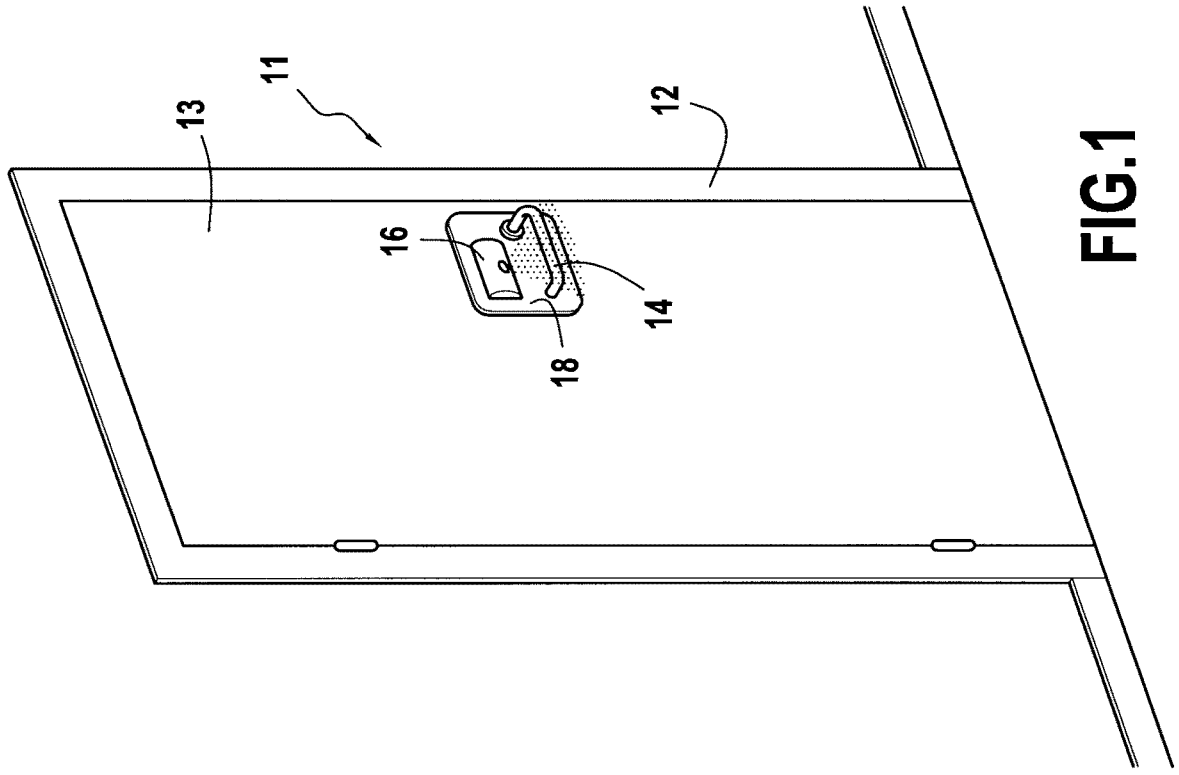


FIG.1

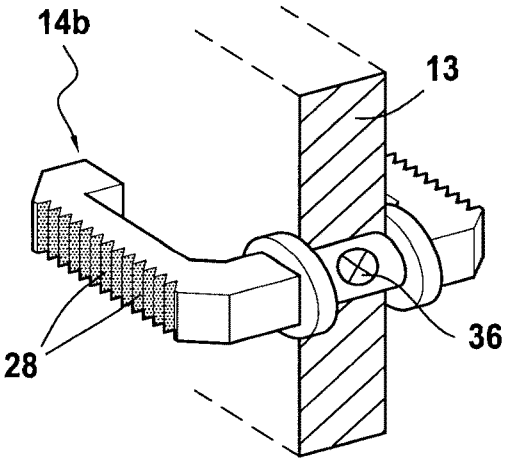


FIG.3

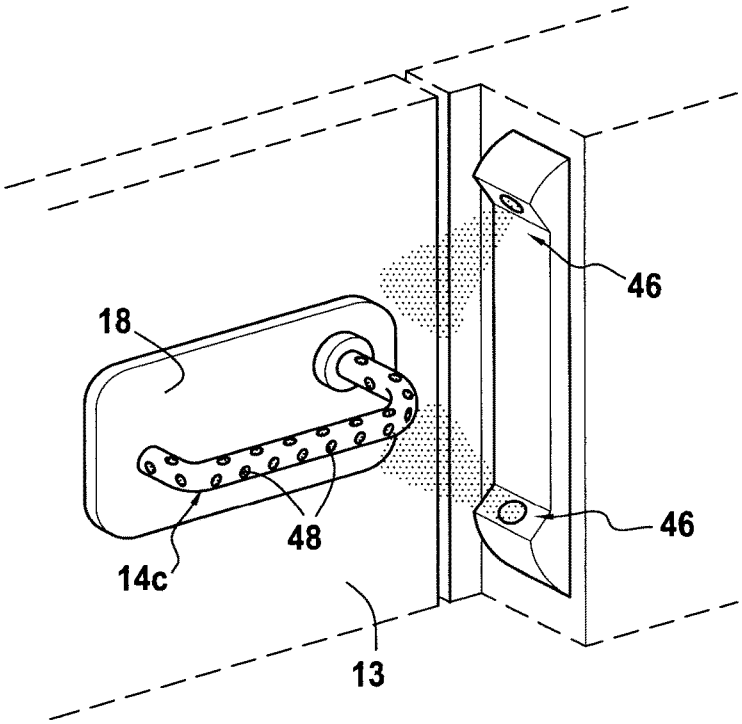


FIG.4

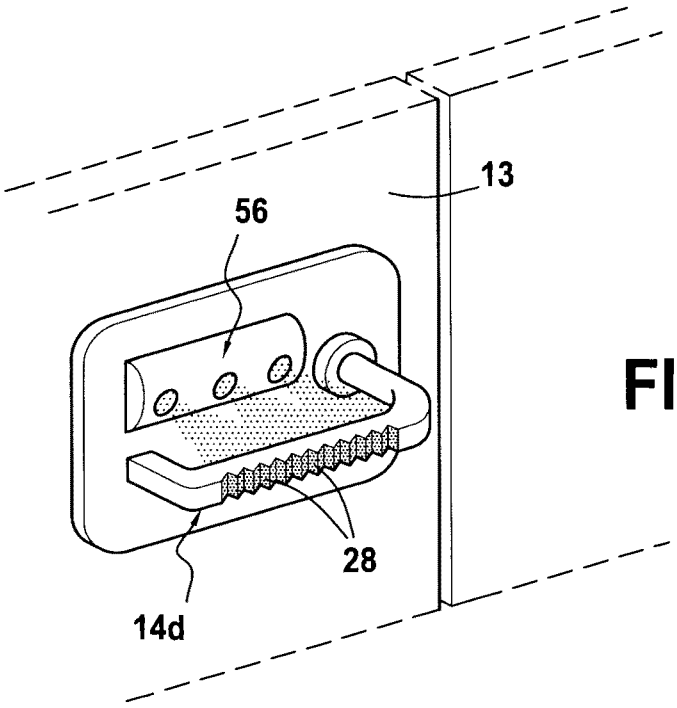


FIG.5

등록실용 20-0410373

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요약

본 고안은 문 손잡이를 살균 및 온풍 건조시키는 것을 특징으로 하는 문 손잡이용 살균건조기에 관한 것으로서, 여러 사용자가 사용하는 장소나 공공 화장실 등과 같이 위생문제가 민감한 문에 설치되어 있는 문 손잡이에 이격되게 장착시켜, 문 손잡이에 생길 수 있는 세균의 살균과, 문 손잡이의 물이나 땀과 같은 이물질 등을 건조시켜, 위생적으로 안전하게 사용할 수 있도록 한 문 손잡이용 살균건조기에 관한 것이다.

대표도

도 1

색인어

문 손잡이, 도어, UV램프, 살균건조, 온풍건조

명세서

도면의 간단한 설명

도 1은 본 고안에 따른 문 손잡이용 살균건조기의 구성도.

도 2는 본 고안에 따른 문 손잡이용 살균건조기의 내부 구성도.

도 3은 본 고안에 따른 문 손잡이용 살균건조기의 일 실시 예.

도 4는 본 고안에 따른 문 손잡이용 살균건조기의 다른 실시 예.

도 5는 본 고안에 따른 문 손잡이용 살균건조기의 작동 상태도.

도 6은 본 고안에 따른 문 손잡이용 살균건조기의 작동 흐름도.

도면의 주요부분에 대한 부호의 설명

10 : 문 손잡이 100 : 문 손잡이용 살균건조기

110 : 통풍홀 120 : 하우징부

130 : 반사판 150 : 감지 센서

210 : UV램프 220 : 발열 수단

230 : 송풍 수단

고안의 상세한 설명

고안의 목적

고안이 속하는 기술 및 그 분야의 종래기술

본 고안은 문 손잡이를 살균 및 온풍 건조시키는 것을 특징으로 하는 문 손잡이용 살균건조기에 관한 것으로서, 여러 사용자가 사용하는 장소나 공공 화장실 등과 같이 위생문제가 민감한 문에 설치되어 있는 문 손잡이에 이격되게 장착시켜, 문 손잡이에 생길 수 있는 세균의 살균과, 문 손잡이의 물이나 땀과 같은 이물질 등을 건조시켜, 위생적으로 안전하게 사용할 수 있도록 한 문 손잡이용 살균건조기에 관한 것이다.

일반 사무실 건물 내의 화장실이나, 일반 야외에 설치되어 있는 공중 화장실에 있어서, 문에 형성되는 문 손잡이의 경우, 여러 사람이 공동으로 사용하기 때문에 위생적으로 매우 민감한 부분이다. 또한, 화장실뿐만 아니라, 건물의 출입문에 설치되는 문 손잡이나 문고리의 경우에도 그 위생 상태에 대하여 민감하게 인식되는 문제점이다.

또한, 상기 화장실의 문 손잡이의 경우에는 거의 매일 물기가 묻어 있는 실정이며, 사용자가 손의 물기를 닦아도 문 손잡이에 묻어 있는 물 때문에 다시 손에 물이 묻곤 한다. 그리고 일반 겨울철에는 외부 온도 때문에 문 손잡이가 차갑게 되는 경우가 많으며 특히, 외기에 노출되어 있는 상태인 현관문 등의 문 손잡이는 매우 차가워서 손으로 파지하기가 매우 어려운 문제점이 있어 왔다.

이에, 문 손잡이의 도금 층 표면에 자외선에 의해 광 산화작용이 일어나면서 항균 탈취 작용을 하는 이산화티타늄과 항균작용을 하는 나노실버가 함유된 무기항균제로 코팅된 항균코팅층이 형성되어 구성된 것을 특징으로 하는 자물쇠용 항균 손잡이가 제안되어 있다. 하지만, 상기 항균 손잡이는 일반적인 문 손잡이에 부가적으로 코팅층이 형성되기 때문에 일반적으로 사용하는 문 손잡이를 새로이 교체하여야 하기 때문에 설치 비용의 증대를 가져오며, 문 손잡이의 습기를 제거하지 못하므로, 이에 따른 살균 효과 또한 기대하기 어렵다는 문제점이 있다.

또한, 발열 기능이 있는 문 손잡이가 제안되어 있는데, 이는 겨울철에도 편안하게 잡아서 문을 개방하거나 폐쇄할 수 있도록, 문 손잡이의 파지부내에 열선을 삽입하고 상기 열선의 제어부를 문 내부에 인접하여 장착시키는 기술이 제공되어 있으나, 이것 또한, 상술한 문제와 동일하게 사용중인 문과 문 손잡이부를 교체하여야 하는 번거로움과 활용범위가 좁은 단점이 지적되고 있다.

고안이 이루고자 하는 기술적 과제

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본 고안은 상기와 같은 문제점을 해결하기 위하여 안출된 것으로서, 문 손잡이의 물이나 땀과 같은 이물질 등을 건조시키고 자외선을 조사시켜 살균시킴으로써, 문 손잡이를 항시 위생적으로 사용할 수 있도록 한 문 손잡이용 살균건조기를 제공함에 그 목적으로 한다.

고안의 구성 및 작용

상기와 같은 목적을 달성하기 위하여 본 고안에 따른 문 손잡이용 살균건조기는, 문 손잡이의 일측에 이격되어 장착되며 상기 문 손잡이와 인접하는 일 측면에 복수의 통풍홀이 구비되는 하우징부와, 상기 하우징부의 내부에 수용되고 세균 등을 살균할 수 있는 자외선을 상기 문 손잡이에 발하는 UV램프와, 상기 하우징부의 내부에 수용되고 상기 UV램프와 인접하여 설치되어 전기저항을 이용하여 온도를 조절할 수 있는 발열 수단과, 상기 하우징부의 내부에 수용되며, 상기 발열 수단에 인접하여 설치되며 공기 흐름을 생성하여 상기 발열 수단으로 송풍시켜 상기 문 손잡이를 온풍 건조시키는 송풍수단으로 구성되는 것을 특징으로 하는 문 손잡이용 살균건조기를 제공한다.

또한, 상기 통풍홀의 일측에는 감지 센서가 더욱 부가되도록 하여, 사용자에 의한 문 손잡이의 파지가 감지되면 상기 문 손잡이용 살균건조기의 작동을 선택적으로 가능하게 한 것을 특징으로 하는 문 손잡이용 살균건조기를 제공한다.

또한, 문 손잡이의 타측에는 일정 높이를 가지는 반사판이 더욱 부가되어, 송풍 되는 살균 온풍을 문 손잡이 쪽으로 반사시킬 수 있는 것을 특징으로 하는 문 손잡이용 살균건조기를 제공한다.

이하, 본 고안에 따른 바람직한 각 실시 예를 첨부된 도면을 참조하여 상세히 살펴보면 다음과 같은데, 본 고안을 설명함에 있어서 관련된 공지기술 또는 구성에 대한 구체적인 설명이 본 고안의 요지를 불필요하게 흐릴 수 있다고 판단되는 경우에는 그 상세한 설명은 생략하기로 한다.

도 1 내지 도 2 각각은 본 고안에 따른 문 손잡이용 살균건조기의 구성도 및 내부 구성도이다.

도 1 내지 도 2 각각에서 보이는 것과 같이, 본 고안에 따른 문 손잡이용 살균건조기(100)는 일 측면에 복수의 통풍홀(110)이 구비되는 하우징부(120)와, 자외선을 상기 문 손잡이(10)에 발하는 UV램프(210)와, 전기저항을 이용하여 온도를 조절할 수 있는 발열 수단(220)과, 문 손잡이(10)를 건조시키는 송풍수단(230)으로 구성되며, 상기 통풍홀(110)의 일측에는 감지 센서(150)와, 문 손잡이(10)의 타측에 일정 높이를 가지는 반사판(130)이 더욱 부가되어 구성될 수 있다.

상기 하우징부(120)는 내부 수용부를 가지며, 문 손잡이(10)의 일측에 이격되어 장착되며, 상기 문 손잡이(10)와 인접하는 일 측면에는 복수의 통풍홀(110)이 구비되도록 구성된다.

상기 통풍홀(110)은 상기 UV램프(210)에서 조사되는 자외선을, 상기 발열 수단(220)에서 발생하는 열을, 상기 송풍수단(230)에서 발생하는 풍향을 각각 문 손잡이(10)에 가이드 하기 위해, 문 손잡이에 대향 되도록 구성하는 것이 바람직하다.

상기 하우징부(120)는 상기 UV램프(210), 발열 수단(220), 송풍수단(230) 등의 구성요소를 포함하여 보호하는 목적으로 설치되는 문과 그 재질을 유사하게 구성할 수 있음은 물론이고, 다양한 재질과 디자인으로 선택하여 구성할 수 있다.

상기 UV램프(210)는 일반적인 수은등을 사용하면 충분하며, 하우징부(120)의 내부에 수용되고 세균 등을 살균할 수 있는 자외선을 상기 문 손잡이에 발하도록 하며, 설치되는 문의 사용 상태에 따라 그 조사되는 빛의 세기를 조절하여 구성하는 것이 바람직하다.

상기 발열 수단(220)은 상기 하우징부(120)의 내부에 수용되도록 구성하고, 일반적인 전기저항을 이용하여 온도를 조절할 수 있는 단순한 구조를 이용하여 설치 부피를 최소화하는 것이 바람직하며, 설치되는 문의 사용 상태에 따라 그 발산되는 열의 세기를 조절하여 구성하는 것이 바람직하다.

상기 송풍수단(230)은 상기 하우징부의(120) 내부에 수용되도록 구성하고, 상기 발열 수단(220)에 인접하여 설치되도록 하여 공기 흐름을 생성하여 상기 발열 수단(220)으로 송풍시켜 상기 문 손잡이를 온풍 건조할 수 있도록 설치 구성하는 것이 바람직하다. 또한, 상기 송풍수단(230)은 팬과 모터로 구성되도록 하는 것이 바람직하며, 문의 사용 상태에 따라 그 생산되는 풍향을 조절하여 구성하는 것이 바람직하다.

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특히, 상기 통풍홀(110)의 일측에는 감지 센서(150)가 더욱 부가되도록 하여, 사용자에 의한 문 손잡이(10)의 파지가 감지되면 상기 문 손잡이용 살균건조기(100)의 작동을 선택적으로 가능하게 구성할 수 있다.

상기 감지 센서(150)는 문 손잡이(10)와 연결되어 사용자의 동작을 감지하거나, 사용자의 손의 유무를 감지하도록 하는 등의 구성이면 충분하다.

또한, 상기 문 손잡이(10)의 타측에는 일정 높이를 가지는 반사판(130)이 더욱 부가되도록 하여, 상기 송풍홀(110)을 지나 문 손잡이(10)를 거쳐 지나는 살균 온풍을 문 손잡이(10) 쪽으로 다시 되돌려 보낼 수 있도록 한다.

상기 반사판(130)은 상기 하우징부(120)과 일체로 하여 구성할 수도 있으며, 상기 UV램프에서 조사되는 자외선을 반사시킬 수 있는 재질을 선택하도록 구성하는 것이 바람직하다.

도 3 내지 도 4 각각은 본 고안에 따른 문 손잡이용 살균건조기의 실시 예들을 보여주는 것으로 상기 반사판(130)의 유무에 따른 각 실시 예이다.

도 5는 본 고안에 따른 문 손잡이용 살균건조기의 작동 상태도로서, 송풍수단(230)에서 발생시킨 풍향이 발열 수단(220)을 거치고, UV램프(210)는 자외선을 조사시킴으로써, 복수의 통풍홀(110)을 통해 상기 문 손잡이(10)로 가이드 된다. 또한, 상기 문 손잡이(10)의 타측에 설치된 반사판(130)에 의해 상기 문 손잡이(10)를 지나는 자외선이나 온풍을 다시 문 손잡이(10)로 되돌려 보내져, 살균 온풍건조의 효과를 더욱 올릴 수 있도록 구성된다.

도 6은 본 고안에 따른 문 손잡이용 살균건조기의 작동 흐름도로서, 상술한 감지 센서(150)를 구성하였을 경우, 문 손잡이용 살균건조기(10)의 작동을 나타낸 것으로서, 사용자의 문 손잡이의 파지나 사용자의 손의 유무를 상기 감지 센서(150)가 감지한 후, 상기 각 구성요소들(UV램프, 발열 수단, 송풍 수단)에게 전원을 공급하여 동작을 개시시키도록 구성된다.

상기에서는 본 고안에 따른 바람직한 실시한 예에 한정하여 상술하였으나, 상기 문 손잡이용 살균건조기가 문 손잡이와 일체로 구성하는 것과 같이, 본 고안이 상기 실시예에 한정되지 않고 다양하게 변경 또는 수정될 수 있음은 당업자에 자명하다 할 것이다.

고안의 효과

본 고안은 사용자가 손으로 잡는 손잡이에 살균 및 탈취 환경이 유지되도록 하여 각종 세균 및 악취 등에 의해 오염되는 것을 방지함으로써 더욱 위생적인 환경을 유지 및 조성할 수 있는 이점과, 겨울철에도 사용자가 편안하게 잡아서 문을 개방하거나 폐쇄할 수 있도록 적정 온도를 유지할 수 있는 이점이 있다.

또한, 본 고안은 현재 사용 중인 문 손잡이에 구조 변경 없이, 문 손잡이용 살균건조기 간단히 설치 부가시킴으로써, 효율적인 비용의 절감을 가지는 이점이 있다.

(57) 청구의 범위

청구항 1.

문 손잡이의 일측에 이격되어 장착되며, 상기 문 손잡이와 인접하는 일 측면에 복수의 통풍홀이 구비되는 하우징부와,

상기 하우징부의 내부에 수용되고 세균 등을 살균할 수 있는 자외선을 상기 문 손잡이에 발하는 UV램프와,

상기 하우징부의 내부에 수용되고 상기 UV램프와 인접하여 설치되어 전기저항을 이용하여 온도를 조절할 수 있는 발열 수단과,

상기 하우징부의 내부에 수용되며, 상기 발열 수단에 인접하여 설치되며 공기 흐름을 생성하여 상기 발열 수단으로 송풍시켜 상기 문 손잡이를 온풍 건조시키는 송풍수단으로 구성되는 것을 특징으로 하는 문 손잡이용 살균건조기.

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청구항 2.

제 1항에 있어서,

상기 통풍홀의 일측에는 감지 센서가 더욱 부가되도록 하여, 사용자에 의한 문 손잡이의 파지가 감지되면 상기 문 손잡이용 살균건조기의 작동을 선택적으로 가능하게 한 것을 특징으로 하는 문 손잡이용 살균건조기.

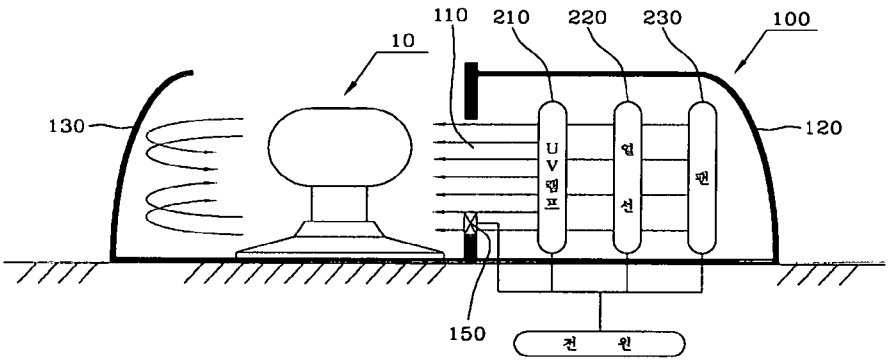
청구항 3.

제 1항 또는 제 2항 선택되는 어느 하나의 항에 있어서,

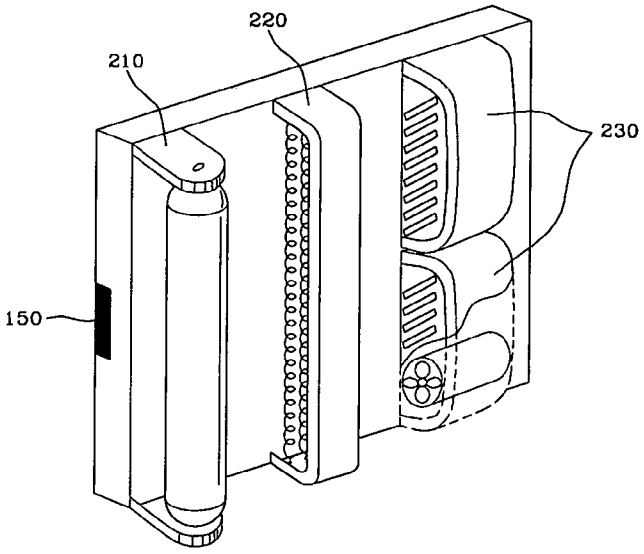
문 손잡이의 타측에는 일정 높이를 가지는 반사판이 더욱 부가되어, 송풍 되는 살균 온풍을 문 손잡이 쪽으로 반사시킬 수 있는 것을 특징으로 하는 문 손잡이용 살균건조기.

도면

도면1

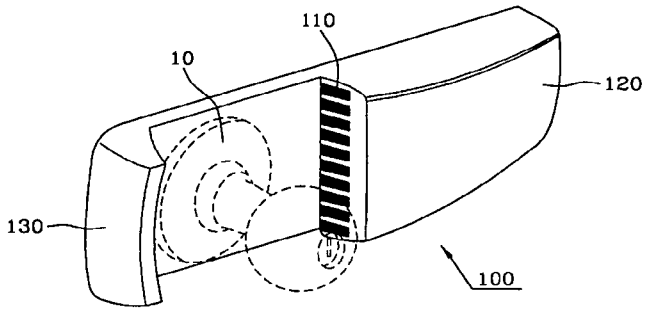


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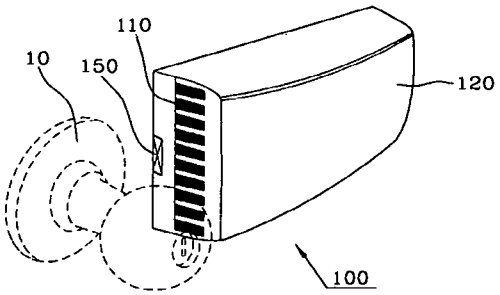


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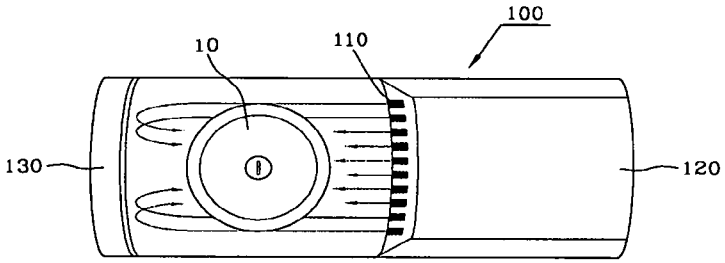
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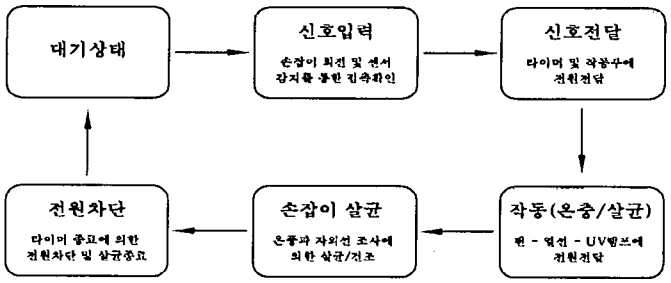
도면4



도면5



도면6



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DESCRIPTION KR200410373Y1

11 Sterilization dryer for door handle {Drying Devices Having Disinfection Function For Door Knob}

[1]

16 1 is a block diagram of a sterilization dryer for a door handle according to the present invention.

[2]

21 Figure 2 is an internal configuration diagram of the sterilization dryer for a door handle according to the present invention.

[3]

26 3 is an embodiment of a sterilization dryer for a door handle according to the present invention.

[4]

31 Figure 4 is another embodiment of the sterilization dryer for a door handle according to the present invention.

[5]

36 Figure 5 is an operating state diagram of the sterilization dryer for a door handle according to the present invention.

[6]

41 Figure 6 is an operation flow chart of the sterilization dryer for a door handle according to the present invention.

[7]

46 *Explanation of symbols for main parts of the drawing*

[8]

50 10 : Door handle 100 : Sterilization dryer for door handle

[9]

54 110 : ventilation hole 120: housing part

[10]

58 130 : reflector 150 : detection sensor

[11]

62 210 : UV lamp 220 : heating means

[12]

66 230 : blowing means

[]

70 The present invention relates to a door handle sterilization dryer, characterized in that it sterilizes and dries the door handle with warm air. It relates to a sterilization dryer for a door handle that can be used hygienically and safely by sterilizing bacteria that may occur on the door handle and drying foreign substances such as water or sweat on the door handle. In a toilet in a general office building or a public toilet installed outdoors, a door handle formed on a door is a hygienically sensitive part because several people use it jointly. In addition, in the case of a door handle or a doorknob installed on the door of a building as well as a toilet, it is a problem that is sensitively recognized with respect to the sanitary state. In addition, in the case of the door handle of the bathroom, the situation is that the water is stained almost every day,

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and even if the user wipes the water of the hand, the hand is often wet again because of the water attached to the door handle. And in general winter, the door handle is often cold due to the outside temperature. In particular, the door handle, such as a front door, which is exposed to the outside air, is very cold and has a problem that it is very difficult to grip by hand. Accordingly, an antibacterial coating layer coated with an inorganic antibacterial agent containing titanium dioxide, which has an antibacterial and deodorizing action, and nanosilver, which has an antibacterial action, is formed on the surface of the plating layer of the door handle, characterized in that it is formed An antibacterial handle for locks has been proposed. However, since the antibacterial handle has an additional coating layer formed on the general door handle, the installation cost increases because the door handle generally used must be newly replaced, and the moisture of the door handle cannot be removed. There is also a problem that it is difficult to expect a sterilization effect. In addition, a door handle having a heating function has been proposed, which inserts a heating wire into the grip portion of the door handle and mounts the heating wire control unit adjacent to the inside of the door so that the door can be opened or closed by holding it comfortably even in winter. Although the technology is provided, this also points to the inconvenience of replacing the door and the door handle in use in the same way as the above - mentioned problem and the disadvantage of a narrow application range.

99 The present invention has been devised to solve the above problems, and by drying foreign substances such as water or sweat on the door handle and sterilizing it by irradiating ultraviolet rays, it is possible to use the door handle hygienically at all times. It is intended for the purpose of providing

103 In order to achieve the above object, the sterilization dryer for a door handle according to the present invention includes a housing part mounted to be spaced apart from one side of the door handle and provided with a plurality of ventilation holes on one side adjacent to the door handle, and the housing; A UV lamp accommodated inside the unit and emitting ultraviolet rays capable of sterilizing bacteria and the like to the door handle, and a heating means accommodated in the housing unit and installed adjacent to the UV lamp to control the temperature using electrical resistance and a blowing means accommodated in the housing part, installed adjacent to the heating means, generating an air flow and blowing to the heating means to dry the door handle with warm air. provides In addition, a detection sensor is further added to one side of the ventilation hole, and when gripping of the door handle is sensed by the user, it is possible to selectively operate the sterilization dryer for the door handle. do. In addition, a reflective plate having a predetermined height is further added to the other side of the door handle to provide a sterilizing dryer for a door handle, characterized in that it can reflect the sterilized warm air to the door handle. Hereinafter, each preferred embodiment according to the present invention will be described in detail with reference to the accompanying drawings as follows. In describing the present invention, it is determined that a detailed description of a related known technology or configuration may

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unnecessarily obscure the gist of the present invention. In this case, a detailed description thereof will be omitted. 1 to 2 are each a configuration diagram and an internal configuration diagram of a sterilization dryer for a door handle according to the present invention. 1 to 2, the sterilization dryer 100 for a door handle according to the present invention includes a housing unit 120 having a plurality of ventilation holes 110 on one side thereof, and ultraviolet rays to the door handle (10) is composed of a UV lamp 210, a heating means 220 capable of controlling the temperature using electrical resistance, and a blowing means 230 for drying the door handle 10, and the ventilation hole 110) may be configured by further adding a detection sensor 150 and a reflective plate 130 having a predetermined height to the other side of the door handle 10 .

133 The housing part 120 has an internal receiving part, is mounted to be spaced apart from one side of the door handle 10 , and is configured to be provided with a plurality of ventilation holes 110 on one side adjacent to the door handle 10 . The ventilation hole 110 guides the ultraviolet rays irradiated from the UV lamp 210 , the heat generated by the heating means 220 , and the wind direction generated by the blowing means 230 to the door handle 10 , respectively. In order to do so, it is preferable to configure so as to be opposite to the door handle. The housing unit 120 can be configured similarly to a door installed for the purpose of protection, including components such as the UV lamp 210, the heating means 220, and the blowing means 230, and the material thereof. and can be configured by selecting from a variety of materials and designs. As the UV lamp 210, it is sufficient to use a general mercury lamp, and it is accommodated in the housing 120 and emits ultraviolet rays capable of sterilizing bacteria and the like to the door handle, and depending on the usage state of the installed door It is preferable to configure by adjusting the intensity of the irradiated light. The heating means 220 is configured to be accommodated inside the housing 120, and it is preferable to minimize the installation volume by using a simple structure that can control the temperature using general electrical resistance, and use the installed door. It is preferable to configure by adjusting the intensity of the emitted heat according to the state. The blowing means 230 is configured to be accommodated in the housing part 120 and installed adjacent to the heating means 220 to generate an air flow and blow it to the heating means 220 to open the door handle. It is preferable to install and configure so that it can be dried with warm air. In addition, it is preferable that the blowing means 230 is composed of a fan and a motor, and it is preferable to configure the wind direction to be adjusted according to the use state of the door. In particular, a detection sensor 150 is further added to one side of the ventilation hole 110 so that when the user senses the grip of the door handle 10 , the operation of the door handle sterilization dryer 100 is selectively possible can be configurable.

161 It is sufficient if the detection sensor 150 is connected to the door handle 10 to detect a user's motion or to detect the presence or absence of a user's hand. In addition, a reflective plate 130 having a predetermined height is further added to the

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other side of the door handle 10 so that the sterilizing warm air passing through the blow hole 110 and the door handle 10 is directed toward the door handle 10 . to be able to send it back. The reflective plate 130 may be configured integrally with the housing part 120 , and it is preferable to select a material capable of reflecting the ultraviolet rays irradiated from the UV lamp. 3 to 4 each show an embodiment of a sterilization dryer for a door handle according to the present invention, and each embodiment is according to the presence or absence of the reflector 130 . 5 is an operation state diagram of the sterilization dryer for a door handle according to the present invention, wherein the wind direction generated by the blowing means 230 passes through the heat generating means 220, and the UV lamp 210 irradiates ultraviolet rays to a plurality of ventilation holes. It is guided to the door handle 10 through 110 . In addition, the ultraviolet rays or warm air passing through the door handle 10 are sent back to the door handle 10 by the reflecting plate 130 installed on the other side of the door handle 10, so that the effect of sterilization and warm air drying can be further increased. is composed 6 is an operation flowchart of the sterilization dryer for a door handle according to the present invention, and shows the operation of the sterilization dryer 10 for a door handle when the above-described detection sensor 150 is configured. After the detection sensor 150 detects the presence or absence of the user's hand, it is configured to supply power to each of the components (UV lamp, heat generating means, and blowing means) to start the operation. In the above description, the present invention is limited to a preferred embodiment according to the present invention, but as the sterilization dryer for a door handle is integrally configured with a door handle, the present invention is not limited to the above embodiment and can be variously changed or modified. will be apparent to those skilled in the art.

189 The present invention has the advantage of maintaining and creating a more sanitary environment by preventing contamination by various bacteria and odors by maintaining a sterilization and deodorizing environment on the handle held by the user, and that the user can comfortably hold it even in winter. It has the advantage of maintaining the proper temperature so that the door can be opened or closed. In addition, the present invention has the advantage of having an efficient cost reduction by simply installing and adding a sterilization dryer for a door handle without changing the structure of the door handle currently in use.

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(19)中华人民共和国国家知识产权局

(12)实用新型专利

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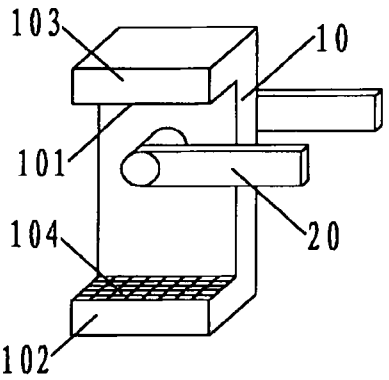
权利要求书 1 页 说明书 2 页 附图 2 页

(54)实用新型名称

一种自动消毒的门把手

(57)摘要

本实用新型涉及一种自动消毒的门把手，包括门把手底座板(10)及门把手(20)，门把手(20)固定在门把手底座板(10)上，门把手底座板(10)上下各设有一块凸出板(102、103)，凸出板(102)的上底面和凸出板(103)的下底面各设有一层紫外线发射区(104)。本实用新型结构简单，使用方便，开门的同时对门把手及手进行消毒，保障了门把手和手的卫生，切断了通过把门手传播各种细菌疾病的通道，使得人们的生活更加干净卫生。



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1. 一种自动消毒的门把手，包括门把手底座板 (10) 及门把手 (20)，其特征是：所述门把手 (20) 固定在门把手底座板 (10) 上，门把手底座板 (10) 上下各设有一块凸出板 a(102)、凸出板 b(103)，凸出板 a(102) 的上底面和凸出板 b(103) 的下底面各设有一层紫外线发射区。

2. 根据权利要求 1 所述的一种自动消毒的门把手，其特征是：所述门把手 (20) 的长度不超出门把手 (20) 到凸出板 b(103) 之间的垂直距离。

3. 根据权利要求 1 所述的一种自动消毒的门把手，其特征是：所述门把手 (20) 位于门把手底座板 (10)、凸出板 a(102) 及凸出板 b(103) 三者组成半包围圈内。

一种自动消毒的门把手

技术领域：

[0001] 本实用新型涉及一种门把手，更具体地说涉及一种自动消毒的门把手。

背景技术：

[0002] 门把手，是门上的重要部件，是开启门的时的关键部件，公共场合的门把手是非常常见的，但公共场合的门把手一天都经过无数人的使用，每个人身上必定会带有一定的细菌，甚至是病毒，每个人都使用门把手，细菌、病毒势必会通过门把手进行传播，危害到人们的身体健康，而目前市面上的门把手没有一种是可消毒杀菌的，如果能有一种自动消毒杀菌的门把手就可以解决这个问题，所以设计一种自动消毒的门把手是十分有益的。

实用新型内容：

[0003] 本实用新型的目的就是针对现有技术的不足，而提供一种自动消毒的门把手。本实用新型具有结构简单，使用方便，开门的同时对门把手及手进行消毒，保障了门把手和手的卫生，切断了通过把门手传播各种细菌疾病的通道，使得人们的生活更加干净卫生的优点。

[0004] 本实用新型的技术解决措施如下：

[0005] 一种自动消毒的门把手，包括门把手底座板及门把手，所述门把手固定在门把手底座板上，门把手底座板上下各设有一块凸出板 a、凸出板 b，凸出板 a 的上底面和凸出板 b 的下底面各设有一层紫外线发射区，紫外线发射区对门把手每时每刻进行消毒。

[0006] 上述技术方案中，所述门把手的长度不超出门把手到凸出板 b 之间的垂直距离，这样的话，门把手在开门时，旋转 90 度后，不会碰到凸出板的下底面。

[0007] 上述技术方案中，所述门把手位于门把手底座板、凸出板 a 及凸出板 b 三者组成半包围圈内。

[0008] 本实用新型的有益效果在于：

[0009] 本实用新型结构简单，使用方便，开门的同时对门把手及手进行消毒，保障了门把手和手的卫生，切断了通过把门手传播各种细菌疾病的通道，使得人们的生活更加干净卫生。

附图说明：

[0010] 图 1 为本实用新型整体结构示意图；

[0011] 图 2 为本实用新型侧视结构示意图。

[0012] 图中：10、门把手底座板；101、紫外线发射区；102、凸出板 a；103、凸出板 b；104、紫外线发射区；20、门把手。

具体实施方式：

[0013] 以下所述仅为本实用新型的较佳实施例，并非对本实用新型的范围进行限定。

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[0014] 实施例：见图 1 及图 2 所示，一种自动消毒的门把手，包括门把手底座板 10 及门把手 20，所述门把手 20 固定在门把手底座板 10 上，门把手底座板 10 上下各设有一块凸出板 a102、凸出板 b103，凸出板 a102 的上底面和凸出板 b103 的下底面各设有一层紫外线发射区 101、104。

[0015] 所述门把手 20 的长度不超出门把手 20 到凸出板 b103 之间的垂直距离。

[0016] 所述门把手 20 位于门把手底座板 10、凸出板 a102 及凸出板 b103 三者组成半包围圈内。

[0017] 工作原理：

[0018] 一种自动消毒的门把手，门把手 20 固定在门把手底座板 10 上，门把手底座板 10 上下各设有一块凸出板 a102、凸出板 b103，凸出板 a102 的上底面和凸出板 b103 的下底面各设有一层紫外线发射区 101、104，门把手 20 位于门把手底座板 10、凸出板 a102 及凸出板 b103 三者组成半包围圈内，门把手 20 始终处于紫外线照射中，时时刻刻处于杀毒状态，保证了门把手的无菌状态。

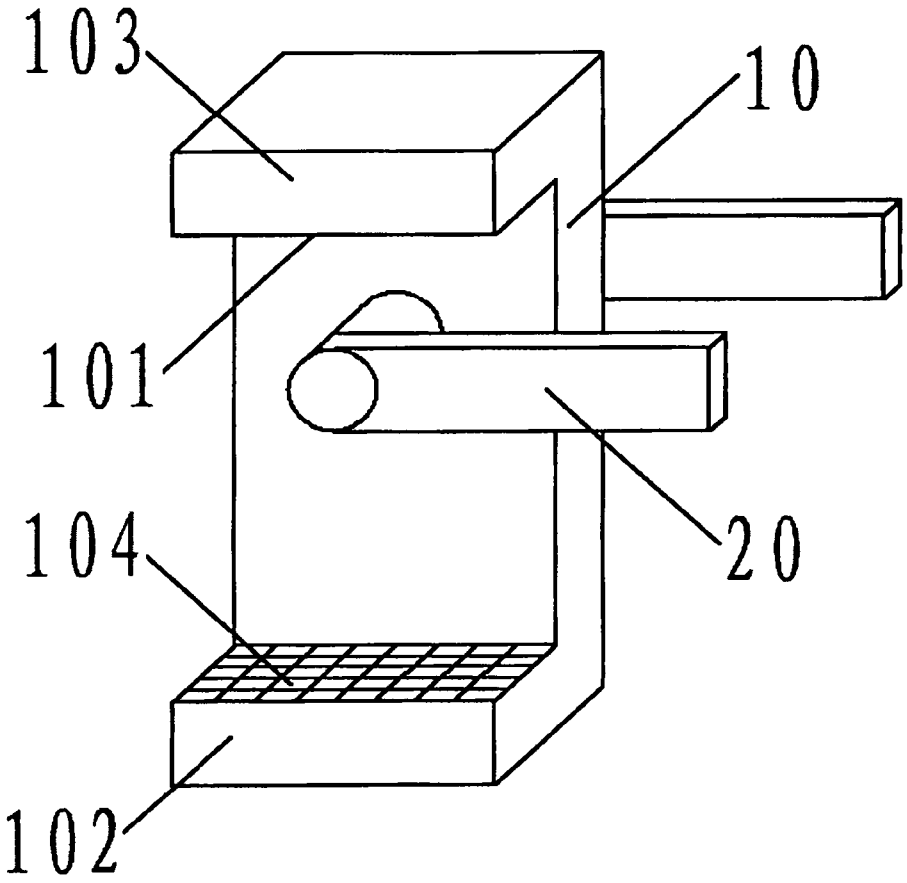


图 1

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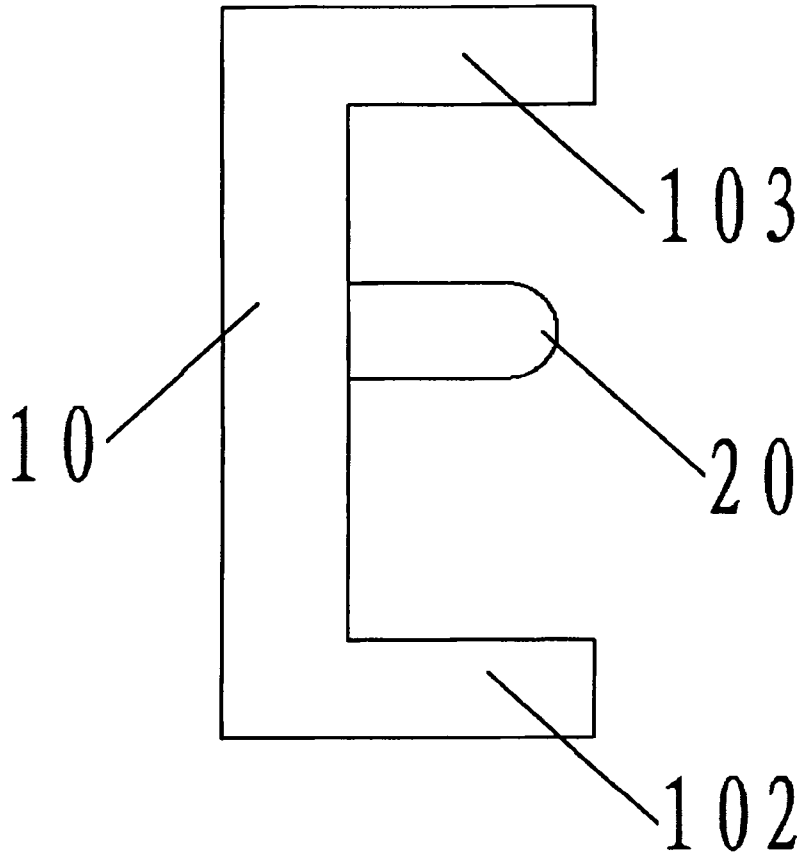


图 2

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DESCRIPTION CN202672848U

10 Door handle with automatic disinfection

[0001]

14 Technical field:

[0002]

18 The utility model relates to a door handle, more specifically to an automatic disinfection door handle.

[0003]

22 Background technique:

[0004]

26 The door handle is an important part of the door and the key part when opening the door. The door handle in public places is very common, but the door handle in public places is used by countless people a day, and everyone must have Certain bacteria, even viruses, everyone uses doorknobs. Bacteria and viruses will inevitably spread through doorknobs and endanger people ' s health. However, none of the doorknobs on the market can be sterilized. If A door handle with automatic disinfection and sterilization can solve this problem, so it is very beneficial to design a door handle with automatic disinfection.

[0005]

35 Utility model content:

[0006]

39 The purpose of the utility model is to provide an automatic disinfection door handle in view of the shortcomings of the prior art.

41 The utility model has the advantages of simple structure and convenient use. The door handle and hands are disinfected at the same time as the door is opened, which ensures the hygiene of the door handle and hands, cuts off the passage of various bacterial diseases through the door handle, and makes people's lives cleaner and sanitary. advantage.

[0007]

48 The technical solutions of the utility model are as follows:

[0008]

52 An automatically sterilized door handle includes a door handle base plate and a door handle. The door handle is fixed on the door handle base plate. The door handle base plate is provided with a protruding plate a and a protruding plate b. The upper bottom surface of the board a and the lower bottom surface of the protruding board b are each provided with a layer of ultraviolet emission areas, and the ultraviolet emission areas sterilize the door handles all the time.

[0009]

60 In the above technical solution, the length of the door handle does not exceed the vertical distance between the door handle and the protruding plate b. In this case, the door handle will not touch the bottom surface of the protruding plate after turning 90 degrees when the door is opened. .

[0010]

66 In the above technical solution, the door handle is located in a half-enclosed circle composed of the door handle base plate, the protruding plate a, and the protruding plate b.

[0011]

71 The beneficial effects of the utility model are:

[0012]

75 The utility model has the advantages of simple structure and convenient use. The door handle and hands are sterilized when the door is opened, the hygiene of the door handle and hands is ensured, the passage of various bacterial diseases transmitted through the door handle is cut off, and people's lives are cleaner and sanitary.

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[0013]

81 Description of the drawings:

[0014]

85 Figure 1 is a schematic diagram of the overall structure of the utility model;

[0015]

89 Figure 2 is a schematic side view of the structure of the utility model.

[0016]

93 In the figure: 10, door handle base plate; 101, ultraviolet emitting area; 102, protruding plate a; 103, protruding plate b; 104, ultraviolet emitting area; 20, door handle.

[0017]

98 Detailed ways:

[0018]

102 The following descriptions are only preferred embodiments of the present utility model, and do not limit the scope of the present utility model.

[0019]

107 Example: As shown in Figures 1 and 2, an automatically sterilized door handle includes a door handle base plate 10 and a door handle 20, the door handle 20 is fixed on the door handle base plate 10, and the door handle base plate 10 A protruding plate a102 and a protruding plate b103 are respectively provided on the upper and lower sides. The upper bottom surface of the protruding plate a102 and the lower bottom surface of the protruding plate b103 are respectively provided with a layer of ultraviolet emitting regions 101 and 104.

[0020]

116 The length of the door handle 20 does not exceed the vertical distance between the door handle 20 and the protruding plate b103.

[0021]

121 The door handle 20 is located in a semi-enclosed circle formed by the door handle base plate 10, the

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protruding plate a102, and the protruding plate b103.

[0022]

126 working principle:

[0023]

130 A door handle for automatic disinfection. The door handle 20 is fixed on the door handle base plate 10. The upper and lower sides of the door handle base plate 10 are provided with a protruding plate a102 and a protruding plate b103. The bottom surface of the board b103 is provided with a layer of ultraviolet emission areas 101 and 104. The door handle 20 is located in the half-enclosed circle composed of the door handle base plate 10, the protruding plate a102 and the protruding plate b103, and the door handle 20 is always exposed to ultraviolet rays. , It is in the anti-virus state all the time, ensuring the sterile state of the door handle.

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DESCRIPTION DE102008063887A1

[0001]

The present invention relates to a device such as a door or a window, having a fitting with at least one manually operable element.

[0002]

The wing elements of doors or windows have fittings that have manually operated elements to operate the wing elements.

The elements that can be operated manually can be door handles, doorknobs, gripping elements or flat operating elements. These operating elements can consist of a metallic material or a plastic and are operated by a large number of people depending on the place of use.

[0003]

In recent years, specific infection problems that can be transmitted through contact with manually operated elements have increased.

If the device is used like a door in a public building, a public toilet, in a hospital, in a hotel, in a retirement home or, for example, in a doctor's surgery, the specific infection problem can occur more frequently. The risk of infection can be reduced if materials that produce a bactericidal effect are used.

[0004]

DE 103 05 142 A1 discloses a door handle with a surface that has a germicidal effect.

Show Alternative Close

The surfaces are treated with substances that have a bactericidal effect. However, these substances have the disadvantage that they are either more or less toxic, or the germicidal effect is too low. With regular use of the manually operated element, abrasion of the substances can be observed, so that the germicidal effect does not last long. It is also proposed that the manually operable element be encased in a metal body that can be replaced after the germicidal surface has worn off. However, this results in a considerable maintenance effort.

[0005]

It is therefore the object of the present invention to design a device such as a door or a window with a fitting whose manually operable element has a permanently germ-reduced or germ-free surface to reduce the risk of infection.

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[0006]

This object is achieved based on a device such as a door or a window according to the preamble of claim 1 in conjunction with the characterizing features.

Advantageous developments of the invention are specified in the dependent claims.

[0007]

The invention includes the technical teaching that the device has at least one UV radiation source which is designed for bactericidal UV irradiation of the at least one manually operable element.

[0008]

According to the invention, the device is equipped with a UV radiation source, which is provided for the permanent or temporary irradiation of the manually operable element.

From the disinfection of air, surfaces and water it is known that the use of ultraviolet radiation is suitable for the efficient and environmentally friendly control of bacteria, viruses and other microorganisms.

The high-energy ultraviolet radiation paralyzes harmful germs in fractions of a second.

[0009]

The treatment of surfaces with UV radiation, also known as physical disinfection, can replace the use of chemical agents, with the advantage that no resistance to the radiation can develop.

Therefore, within the meaning of the present invention, the device is designed with a UV radiation source that is arranged on the operable element or can be moved towards it in such a way that bactericidal irradiation of the surfaces of the manually operable elements is at least temporarily possible.

[0010]

A particularly advantageous arrangement of the UV radiation source is given by the integration of the UV radiation source in the manually operable element.

If the manually operable element is designed, for example, as a door handle or as a door operating rod, the UV radiation source, which is usually elongate in the form of a glass bulb, can be integrated into the manually operable element.

The material of the manually operable element is to be selected in such a way that it is transparent to UV radiation. For example, the door handle can be made of a glass material or a transparent plastic material such as an acrylic, so that the UV radiation source can be integrated into the portion of the door handle that can be enclosed by hand.

[0011]

If the UV radiation source is switched on, the UV radiation can pass through the transparent material of the door handle.

The outer surface of the handle, which is contaminated with germs, is consequently illuminated by the UV radiation from the inside of the door handle, so that the UV radiation can develop a bactericidal effect. This solution has the advantage that the UV radiation source does not have to be arranged at at least one other location outside of the manually operable element. Furthermore, usually horizontally or vertically extending door operating rods are known for the operation of wing elements, which are usually made of a stainless steel material. If the door operating rods are made from a transparent plastic or from a glass material, the UV radiation source can be integrated into the push rods. The UV radiation sources can be operated when the facility such as the door or window is not in use.

[0012]

If the UV radiation source is not arranged in the manually operable element itself, provision can be made for the UV radiation source to be arranged on the wing element of the device itself.

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The leaf element relates to the door leaf or, for example, the window leaf, on which the manually operated element to be sterilized is present in addition to the UV radiation source.

[0013]

If the manually operable element is designed as a door handle, a door knob or a grip element, two radiation sources can be arranged close to the door handle or the door knob.

The arrangement is such that a first UV radiation source irradiates the door handle from a first direction and a second UV radiation source irradiates the door handle from a second direction, preferably opposite the first direction. For example, a first UV radiation source can be arranged stationary above and a second UV radiation source below the door handle in and/or on the leaf element. The stationary arrangement of the UV radiation sources describes an arrangement that does not change between an idle state and an irradiation state of the UV radiation source for irradiating the operable element.

[0014]

For the stationary arrangement of the UV radiation sources on the wing element, the radiation sources can have associated lamp holders for receiving at least one UV radiation agent.

The UV radiation sources can be arranged in a stationary manner in or on the wing element or embedded in the wing element. The lamp holders have an opening pointing in the direction of the door handle to be irradiated in such a way that direct irradiation of the manually operable element by the radiation sources from two directions is made possible. For example, a first UV radiation source can be provided on the top side of the door handle and a second UV radiation source can be provided on the bottom side. If the manually operable element is arranged vertically on the wing element, a left-hand and a right-hand arrangement of a respective UV radiation source is possible.

[0015]

Furthermore, a reflector can be provided, in which the UV radiation agent is accommodated.

The reflector is movably arranged in the lamp holder in such a way that it can be aligned with the door handle in order to irradiate it. The reflector can preferably form the back of the opening in the lamp holder, with the UV radiation agent being used between the reflector and the opening.

[0016]

Furthermore, it can be provided that the at least one lamp holder is made in one piece with a fitting plate, which can be part of the fitting of the device.

The fitting plate, also referred to as a door plate, usually has a vertical extension, with the door handle assuming a horizontal position in the reset position. The lamp holders can be angled horizontally from the escutcheon plate, so that the lengthwise extension of the lamp holder corresponds to the direction of extension of the door handle. The lamp holder can be embedded in the body of the door leaf, so that it has, for example, cutouts that allow the lamp holder to be accommodated. To protect the UV radiation medium, pane elements can cover the openings in the lamp holders.

[0017]

According to a further embodiment, the UV radiation source can be movably arranged on the wing element and can be moved between a rest position and an irradiation position.

The movement of the UV radiation source can be made possible, for example, by a pivoting movement. The lamp holder can have a housing part and a cover part, the housing part being received in a stationary manner in or on the wing element and the cover part being movably arranged on the stationary housing part. The UV radiation source is used in the movable cover part.

[0018]

The pivoting movement of the cover part relative to the housing part can be implemented by an articulated connection, the articulated connection between the cover part and the housing part being arranged on the side facing away from the manually

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operable element in the lamp holder.

As a result, when the cover part is pivoted, an opening is created in the lamp holder, which extends between the cover part and the housing part and points in the direction of the manually operable element.

[0019]

If the UV radiation sources are in the idle state, the cover part is arranged in a closing manner on the housing part.

If the UV radiation source is put into operation, the movable cover part moves up around the articulated connection and the opening in the lamp holder is created in the direction of the element to be irradiated. After the end of the irradiation, the UV radiation source is switched off and the cover part moves back into the closed position on the housing part.

[0020]

The cover part can be moved between the rest position and the irradiation position by means of a drive unit.

The drive unit can have at least one motor, one gear, one encoder and/or one controller. Furthermore, a gear wheel segment can be arranged in the cover part, with a gear wheel being drivingly accommodated on the transmission and brought into meshing engagement with the gear wheel segment. By operating the motor, the gear wheel can be driven via the gearing in order to carry out the pivoting movement of the cover part between the rest position and the irradiation position via the gear wheel segment. The drive unit can be started up via the controller, which then puts the drive unit into operation, for example, when the UV radiation source is switched on. If this is switched off again, the movement of the cover part back into the closed position on the housing part is reversed.

[0021]

According to a further possible embodiment, the lamp holder can be arranged on the wing element so that it can move between the rest position and the irradiation position via a linear movement unit.

According to this embodiment, the UV radiation source does not perform a pivoting movement but a linear movement. In order to arrange the linear movement unit on the wing element, it can have a base body which is arranged in a stationary manner on the wing element. In addition to the base body, the linear movement unit has at least one guide element, via which the lamp holder is arranged on the base body so that it can move linearly, preferably with an electric drive.

[0022]

The linear movement unit can be arranged laterally on the manually operable element, so that the lamp holder is arranged next to the operable element in the rest position and above the operable element in the irradiation position.

For example, the manually operable element can be designed as a door handle with a main direction of extension, the main direction of extension being formed by the section of the door handle that can be grasped by hand. At the same time, the direction of movement of the lamp holder can be predetermined by the guide element in the main direction of extension, so that the lamp holder can be moved laterally over the door handle.

[0023]

Two UV radiation means, which are each arranged opposite one another in reflectors, can in turn be accommodated within the lamp carrier.

If the lamp holder is in the irradiation position, the two UV radiation means can irradiate the door handle from two sides, with the two UV radiation means and the door handle forming a triangular arrangement. The lamp holder may be box-shaped and have an opening side facing towards the door panel. If the door handle is irradiated, the lamp holder runs over the door handle in the irradiation position and the UV radiation cannot or only slightly escape between the lamp holder and the door leaf.

[0024]

The electrical drive for moving the lamp holder between the rest position and the irradiation position can comprise a linear motor, in which case a spindle drive or a traction drive can also be provided.

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According to this embodiment, too, the drive unit can have at least one motor, one gear and one encoder, and a controller for operating the drive unit can also be present.

[0025]

According to yet another embodiment of the present device according to the invention, the manually operable element can be designed in the form of a surface.

For example, wing elements of door assemblies are known which have pressure surfaces against which the hand can be pressed. In order to irradiate the planar, operable element with a UV radiation source for disinfection, it can be moved over the planar, operable element. The UV radiation source can be moved in the manner of a scanner movement, as is already known in the case of flatbed scanners. The UV radiation source can have an elongated extension that emits a kind of light curtain. This is moved transversely to the longitudinal extent of the UV radiation source.

[0026]

The UV radiation source can be accommodated in a movement unit extending transversely to the direction of movement.

Longitudinal guide elements can be provided laterally to the operable element arranged in the form of a surface, which serve to guide the movement unit extending transversely between them. The movement system consequently enables a planar irradiation of the planar, operable element with UV light, in that the movement unit is moved away in a scanner-like manner, for example, from the upper end of the door leaf to the lower end of the door leaf. As a result, the entire surface of the door leaf can be irradiated and consequently disinfected. If, for example, there are further operating elements on the operable element designed in the form of a surface, these can also be exposed to the radiation.

[0027]

To move the movement unit, an electric drive can be provided, which is integrated, for example, in the longitudinal guide elements.

This electric drive can comprise a traction drive or a spindle drive, with a linear motor being able to be used in a particularly advantageous manner, which can be accommodated in the longitudinal guide elements designed as a continuously cast profile.

[0028]

Depending on the intensity of the UV radiation used, it is necessary to detect people in the vicinity of the facility.

If there are people in the vicinity of the facility, the UV radiation source will not be activated. A sensor can be provided to detect the persons in the vicinity of the device, the sensor being connected to a controller with which the UV radiation from the UV radiation sources can be controlled. The sensor can be located on the UV radiation source, on the door leaf, or elsewhere on or near the facility such as the door or window.

[0029]

It is of particular advantage if the UV radiation source emits electromagnetic radiation with a wavelength of 50 nm to 400 nm, preferably 75 nm to 300 nm and particularly preferably 100 nm to 280 nm.

UV radiation, also known as UVC radiation, in the wavelength range from 100 nm to 280 nm has a particularly intensive antibacterial effect. Radiation in the short-wave UVC band has an excellent germicidal effect, the power of the UV radiation source being between 50 W and 250 W, preferably between 100 W and 150 W and particularly preferably around 125 W.

[0030]

Another advantage is a UV radiation source that emits pulsed UV radiation.

In this case, a pulse increase can take place, so that the peak power of the UV radiation in the pulse is a multiple of the power specified above, for example 50 W to 250 W. It has been shown that pulsed UV radiation achieves a further improvement in the germicidal effect.

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[0031]

Furthermore, an additional treatment of the surfaces to be sterilized can take place during the UV irradiation with iron salts in a solution.

It has been shown that iron ions preferentially absorb UV radiation. As a result, an antibacterial effect of the UV radiation can be further improved. The iron salt solution can, for example, be sprayed onto the surfaces to be sterilized using an aerosol dispenser, which is automatically activated when the UV radiation source is switched on.

[0032]

Further measures improving the invention are presented in more detail below together with the description of a preferred exemplary embodiment of the invention with reference to the figures.

[0033]

Show it:

[0034]

1: a perspective view of a first exemplary embodiment of a door handle which is mounted on a leaf element, with a UV radiation source being accommodated in the door handle,

[0035]

2: a perspective view of a second embodiment of a door leaf with a door handle and stationary UV radiation sources arranged in the door leaf in a non-activated state,

[0036]

3: an enlarged view of the door handle and the UV radiation sources in the door leaf according to the embodiment in FIG. 2, the UV radiation sources being shown in the non-activated state,

[0037]

4: a perspective view of the door handle and the UV radiation sources in the door leaf according to the exemplary embodiment in FIGS. 2 and 3, the UV radiation sources being shown in the activated state,

[0038]

5: a side view of the arrangement of the UV radiation sources relative to the door handle according to the embodiment in FIGS. 2 to 4,

[0039]

6: a perspective view of the arrangement of the lamp holders for accommodating the UV radiation sources and the door handle according to the exemplary embodiment in FIGS. 2 to 5,

[0040]

7: a third exemplary embodiment of the arrangement of UV radiation sources for irradiating a door handle in a non-activated state,

[0041]

8: a view of the arrangement of the UV radiation sources according to the embodiment in FIG. 7 in an activated state,

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[0042]

9: a detailed view of a lamp holder with a housing part and a cover part in an open state according to the exemplary embodiment in FIGS. 7 and 8,

[0043]

10: a detailed view of a cover part with a drive unit according to the exemplary embodiment in FIGS. 7, 8 and 9,

[0044]

11: the perspective view of a further exemplary embodiment of the arrangement of at least one UV radiation source relative to a door handle, the UV radiation source being arranged on the door leaf so that it can move linearly,

[0045]

Fig. 12: a detailed view of the movable arrangement of a UV radiation source on the door leaf according to the embodiment in Fig. 11 in a rest position,

[0046]

13: the arrangement of a UV radiation source on a door leaf in an irradiation state according to the exemplary embodiment in FIGS. 11 and 12,

[0047]

14: a rear perspective view of the arrangement of the UV radiation source relative to the door handle according to the embodiment in FIGS. 11 to 13,

[0048]

15: a further exemplary embodiment of the arrangement of a UV radiation source on a door leaf in the manner of a scanner,

[0049]

16: a side view of the scanner-like arrangement of the UV radiation source on the door leaf according to the embodiment in FIG. 15 and

[0050]

17: a perspective view of the door leaf and the scanner-like arrangement of the UV radiation source with a movement system according to the exemplary embodiment in FIGS. 15 and 16.

[0051]

1 shows a perspective view of an exemplary embodiment of a device 1 according to the invention in the form of a door 1 .

The door 1 has a fitting 10 in the form of a door handle 10 which includes an element 11 that can be operated manually.

The manually operable element 11 is attached to the door panel 13 of the door 1 .

A UV radiation source 12 is located on the inside in the straight section of the door handle 10 , which can be manually enclosed.

The material of the door handle 10 is made of a material that is transparent to UV radiation.

If the UV radiation source 12 is put into operation, it illuminates the door handle 10 from the inside.

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Microorganisms, bacteria and/or viruses that are deposited on the surface of the door handle 10 are effectively killed by the UV radiation.

According to this exemplary embodiment, the UV radiation source 12 does not require any further radiation means to be located adjacent to or in the vicinity of the manually operable element 11 .

[0052]

FIG. 2 shows a further exemplary embodiment of the arrangement of two UV radiation sources 12 which are arranged adjacent to a door handle 10 .

A first UV radiation source 12 is arranged above and a second UV radiation source 12 is arranged below the door handle 10 .

The door leaf 13 is shown in sections, with a sensor 14 being arranged above the door leaf 13 and used to detect people in the vicinity of the device 1 .

[0053]

FIG. 3 shows the exemplary embodiment of the door 1 according to FIG. 2 in an enlarged view.

A UV radiation source 12 is shown both above and below, each of which is accommodated in a lamp holder 15 .

The manually operable element 11 in the form of the door handle 10 extends from a fitting plate 18 .

This runs in the vertical direction, the direction of extension of the lamp holder 15 running horizontally.

The lamp holders 15 border on the top and bottom of the escutcheon 18 and can be made in one piece with it.

The UV radiation sources 12 are shown in a non-activated, resting state, with the lamp holders 15 being shown covered by transparent protective panes 35 .

[0054]

4 shows the exemplary embodiment of the door 1 with the UV radiation sources 12, which are shown in an irradiation state.

In order to show the UV radiation means 16, the protective panes 35 according to FIG. 3 have been removed.

It can be seen here that the UV radiation means 16 are accommodated in respective reflectors 17 .

These are movably arranged inside the lamp holder 15 and can be aligned in such a way that the UV radiation emitted by the UV radiation means 16 can be aligned with the manually operable element 11 in the form of the door handle 10 .

[0055]

FIG. 5 shows a further view of the exemplary embodiment of the stationary arrangement of the UV radiation sources 12 in a side view.

According to the illustration, the upper and lower lamp holder 15 is designed in one piece with the fitting shield 18 .

Show Alternative Close

The lamp holder 15 has openings pointing in the direction of the manually operable element 11 in the form of the door handle 10 .

Reflectors 17 are arranged inside the lamp holder 15 and serve to accommodate the UV radiation means 16 .

The reflectors 17 are aligned through the opening in the lamp holders 15 in such a way that the radiation emitted by the radiation means 16 can be directed onto the door handle 10 .

[0056]

6 repeatedly shows a perspective view of a fitting installation kit with two UV radiation sources 12 and a fitting plate 18 from which a door handle 10 extends.

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The installation kit is used for installation in a door leaf that has appropriate recesses into which the lamp holder 15 can be embedded.

[0057]

FIGS. 7 and 8 show a further exemplary embodiment of the arrangement of the UV radiation sources 12 on a door leaf 13 .

The UV radiation sources 12 are shown in FIG. 7 in a resting state, with FIG. 8 showing the UV radiation sources 12 in an operating state, which is indicated by the UV beam paths 36 .

At rest, the lamp holder 15 is closed and the element 11 in the form of the door handle 10 that can be manually operated is not irradiated.

According to FIG. 7, therefore, only a box-shaped element can be seen both above and below the door handle 10.

[0058]

In Fig. 8 the UV radiation sources 12 are activated.

The bulb holder 15 has at least one housing part 19 and one cover part 20 .

The cover part 20 is arranged on the housing part 19 in an articulated manner. The articulated connections are arranged on the back, so that when the cover parts 20 are opened, the inside of the lamp holder 15 points in the direction of the door handle 10 . The UV radiation means - no longer shown here - are located inside the cover part 20 . If these are switched on, a free beam path 36 results in the direction of the door handle 10, so that UV radiation is applied to it. When the UV radiation has ended, the cover parts 20 move back into the rest position by pivoting them back onto the housing parts 19, with the UV radiation sources 12 being switched off again.

[0059]

FIG. 9 shows a detailed view of the lamp holder 15 for accommodating a UV radiation means 16 .

The UV radiation means 16 is accommodated in a reflector 17 . The housing part 19 is shown on the underside, for example for mounting on the door leaf 13 , with the cover part 20 shown on the upper side being connected to the housing part 19 via an articulated connection 21 . A drive unit 22, which is shown in more detail in the following FIG. 10, is accommodated within the lamp holder 15. FIG.

[0060]

FIG. 10 shows a detailed view of the housing part 19 in which a drive unit 22 is provided for moving the cover part 20 .

The drive unit 22 has a motor 23 , a gear 24 , an encoder 25 , a controller 26 , a gear wheel segment 27 and a gear wheel 37 . The driving connection between gear 37 and gear segment 27 is shown in FIG. Motor 23 acts on gearbox 24 to drive gear 37 . The encoder 25 for detecting the movement position of the cover part 20 relative to the housing part 19 is arranged on the end of the motor 23 . On the rear side, the housing part 19 has two articulated connections 21, each with an associated articulated bolt 38, via which the cover part 20 is articulated on the housing part 19.

[0061]

FIGS. 11 and 12 show a further exemplary embodiment of the arrangement of the lamp holder 15 on the wing element 13 , with the arrangement being movable via a linear movement unit 28 between the rest position and the irradiation position.

The arrangement of the lamp holder 15 is shown in more detail in FIG. By arranging the lamp holder 15 via the linear movement unit 28, the lamp holder 15 can be moved relative to the door handle 10. Both in Fig. 11 and in Fig. 12 the lamp holder 15 is shown in the rest position. The linear movement unit 28 has a base body 29 which is arranged in a stationary manner on the wing element 13 . The lamp holder 15 can be moved via a guide element 30 on the base body 29, with the drive for the base body 29 being able to have an electric drive unit.

[0062]

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13 shows the arrangement of the lamp holder 15 via the linear movement unit 28 with the base body 29 and the guide element 30 in the irradiation position.

The fitting 10 is located inside the lamp holder 15 which has moved over the fitting 10 . The guide element 30 is guided within the base body 29 of the linear movement unit 28 , the lamp holder 15 being arranged on the guide element 30 . According to an exemplary section, a power and/or signal cable 39 is shown which is connected to the lamp carrier 15 and serves to supply the UV radiation source.

[0063]

FIG. 14 shows the irradiation position of the lamp holder 15 in a perspective view from the rear, in that it moves over the door handle 10 .

Two UV radiation means 16 are accommodated in respective reflectors 17 within the lamp carrier 15 . The lamp holder 15 is guided over the guide element 30 relative to the base body 29, the perspective viewing direction being from the direction of the door leaf, which is not shown in detail.

[0064]

15 shows a final exemplary embodiment of the arrangement of a UV radiation source 12 relative to the manually operable element 11 .

The manually operable element 11 is flat and represents the surface of the door leaf 13. According to this exemplary embodiment, this can be scanned by the UV radiation source 12 . For example, the manually operable element 11 can form a surface of the door leaf 13 that is operated manually. The UV radiation source 12 is movably guided by a movement system 32 . This has longitudinal guide elements 33 on the left and right, which are each attached to the edge of the door leaf 13 . A movement unit 34 for accommodating the UV radiation source 12 extends transversely to the longitudinal guide elements 33 . The movement unit 34 moves in the direction of the movement direction 40 shown. The UV radiation source 12 can extend over the entire width of the movement unit 34, so that when the scanner moves the movement unit 34 in the movement direction 40, the entire manually operable surface 11 is illuminated with UV radiation.

[0065]

FIG. 16 shows a side view of the arrangement of the UV radiation source 12 within the movement unit 34 .

The wing element 13 is shown on the underside. The longitudinal guide elements 33 are shown on the left and right, with a respective linear motor 41 being indicated by way of example, by which the movement unit 34 can be driven. The UV radiation means 16 is in turn accommodated in a reflector 17 which deflects the UV radiation in the direction of the wing element 13 .

[0066]

17 repeatedly shows the arrangement of the UV radiation source 12 within the movement unit 34 , the movement unit 34 being moved a little farther out from the longitudinal guide elements 33 for a better view.

It can be seen here that the UV radiation means 16 has an elongate extension and is accommodated in a reflector 17 . The radiation emitted by the UV radiation means 16 can thus be deflected in the direction of the wing element 13 .

[0067]

The invention is not limited in its implementation to the preferred exemplary embodiment given above.

Rather, a number of variants are conceivable which make use of the solution shown even in the case of fundamentally different designs. All of the features and/or advantages resulting from the claims, the description or the drawings, including structural details, spatial arrangements and method steps, can be essential to the invention both on their own and in a wide variety of combinations. In particular, the features of the respective exemplary embodiments of the arrangement of the UV radiation source 12 can be combined with one another as desired.

Reference List

[0068]

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1 Equipment/door 10 fitting/door handle 11 manually operated element 12 UV radiation source 13 leaf element/door leaf 14 sensor 15 lamp holder 16 UV radiation means 17 reflector 18 fitting plate 19 housing part 20 cover part 21 articulated connection 22 drive unit 23 motor 24 gear 25 encoder 26 control 27 gear wheel segment 28 Linear movement unit 29 base body 30 guide element 31 main extension direction 32 movement system 33 longitudinal guide element 34 movement unit 35 protective disk 36 UV radiation path 37 gear wheel 38 pivot pin 39 cable 40 direction of movement 41 linear motor

QUOTES INCLUDED IN DESCRIPTION

[0069]

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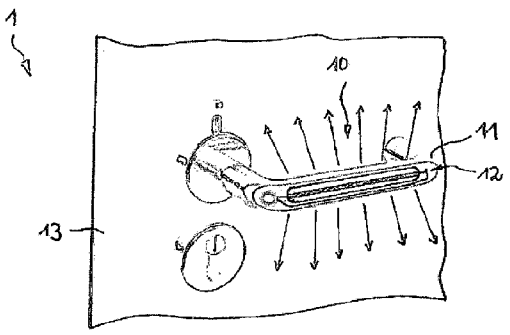
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Die folgenden Angaben sind den vom Anmelder eingereichten Unterlagen entnommen

(54) Bezeichnung: **Tür mit einem antibakteriellen Beschlag**

(57) Zusammenfassung: Die Erfindung betrifft eine Einrichtung (1) wie eine Tür (1) oder ein Fenster, aufweisend einen Beschlag (10) mit wenigstens einem manuell bedienbaren Element (11). Erfindungsgemäß ist vorgesehen, dass die Einrichtung (1) wenigstens eine UV-Strahlungsquelle (12) aufweist, die zur bakteriziden UV-Bestrahlung des bedienbaren Elementes (11) ausgebildet ist.



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Beschreibung

[0001] Die vorliegende Erfindung richtet sich auf eine Einrichtung wie eine Tür oder ein Fenster, aufweisend einen Beschlag mit wenigstens einem manuell bedienbaren Element.

[0002] Die Flügelelemente von Türen oder Fenstern besitzen Beschläge, die zur Bedienung der Flügelelemente manuell bedienbare Elemente aufweisen. Die manuell bedienbaren Elemente können Türdrücker, Türknaufe, Griffelemente oder flächenförmige Bedienelemente sein. Diese Bedienelemente können aus einem metallischen Werkstoff oder aus einem Kunststoff bestehen und werden in Abhängigkeit des Einsatzortes von einer Vielzahl von Personen bedient.

[0003] In den letzten Jahren haben spezifische Infektionsprobleme zugenommen, die durch Kontakt mit manuell bedienbaren Elementen übertragen werden können. Ist die Einrichtung wie eine Tür in einem öffentlichen Gebäude, einer öffentlichen Toilette, in einem Krankenhaus, in einem Hotel, in einem Altenheim oder beispielsweise einer Arztpraxis eingesetzt, kann das spezifische Infektionsproblem verstärkt auftreten. Die Gefahr einer Infektion kann verringert werden, sofern Materialien verwendet werden, die eine bakterizide Wirkung erzielen.

[0004] Aus der DE 103 05 142 A1 ist ein Türgriff mit einer Oberfläche bekannt, die eine keimtötende Wirkung besitzt. Die Oberflächen sind mit Substanzen behandelt, die eine bakterizide Wirkung besitzen. Diese Substanzen haben jedoch den Nachteil, dass sie entweder mehr oder weniger toxisch sind, oder die keimtötende Wirkung ist zu gering. Bei einem regelmäßigen Gebrauch des manuell bedienbaren Elementes ist ein Abrieb der Substanzen festzustellen, so dass die keimtötende Wirkung nicht lange anhält. Ferner wird vorgeschlagen, dass manuell bedienbare Element mit einem Metallkörper zu umhüllen, der nach Abrieb der keimtötenden Oberfläche ausgetauscht werden kann. Dies hat jedoch einen erheblichen Wartungsaufwand zur Folge.

[0005] Es ist daher die Aufgabe der vorliegenden Erfindung, eine Einrichtung wie eine Tür oder ein Fenster mit einem Beschlag auszuführen, dessen manuell bedienbares Element zur Verringerung einer Infektionsgefahr eine dauerhaft keimreduzierte oder keimfreie Oberfläche aufweist.

[0006] Diese Aufgabe wird ausgehend von einer Einrichtung wie einer Tür oder einem Fenster gemäß dem Oberbegriff des Anspruches 1 in Verbindung mit den kennzeichnenden Merkmalen gelöst. Vorteilhafte Weiterbildungen der Erfindung sind in den abhängigen Ansprüchen angegeben.

[0007] Die Erfindung schließt die technische Lehre ein, dass die Einrichtung wenigstens eine UV-Strahlungsquelle aufweist, die zur bakteriziden UV-Bestrahlung des wenigstens einen manuell bedienbaren Elementes ausgebildet ist.

[0008] Erfindungsgemäß ist die Einrichtung mit einer UV-Strahlungsquelle ausgestattet, die zur dauerhaften oder zeitweisen Bestrahlung des manuell bedienbaren Elementes vorgesehen ist. Aus der Entkeimung von Luft, Oberflächen und Wasser ist bekannt, dass die Verwendung ultravioletter Strahlung zur effizienten und umweltfreundlichen Bekämpfung von Bakterien, Viren und anderen Mikroorganismen geeignet ist. Die energiereiche ultraviolette Strahlung legt dabei schädliche Keime in Sekundenbruchteilen lahm.

[0009] Die auch als physikalische Entkeimung bezeichnete Behandlung von Oberflächen mit UV-Strahlung kann den Einsatz von chemischen Mitteln ersetzen, wobei der Vorteil entsteht, dass sich keine Resistenzen gegen die Strahlung entwickeln können. Daher ist im Sinne der vorliegenden Erfindung die Einrichtung mit einer UV-Strahlungsquelle ausgeführt, die so am bedienbaren Element angeordnet oder zu diesem hin bewegbar ist, dass eine bakterizide Bestrahlung der Oberflächen der manuell bedienbaren Elemente wenigstens zeitweise möglich ist.

[0010] Eine besonders vorteilhafte Anordnung der UV-Strahlungsquelle ist durch die Integration der UV-Strahlungsquelle in das manuell bedienbare Element gegeben. Ist das manuell bedienbare Element beispielsweise als Türdrücker oder als Türbedienstange ausgeführt, so kann die UV-Strahlungsquelle, die meist länglich in Gestalt eines Glaskolbens ausgeführt ist, in das manuell bedienbare Element integriert werden. Das Material des manuell bedienbaren Elementes ist dabei derart auszuwählen, dass dieses UV-strahlungstransparent ist. Beispielsweise kann der Türdrücker aus einem Glasmaterial oder einem transparenten Kunststoffmaterial wie einem Acryl bestehen, so dass die UV-Strahlungsquelle in den Abschnitt des Türdrückers integrierbar ist, der von Hand umschlossen werden kann.

[0011] Wird die UV-Strahlungsquelle eingeschaltet, so kann die UV-Strahlung durch das transparente Material des Türdrückers hindurch treten. Die mit Keimen belastete äußere Oberfläche der Handhabe wird folglich aus der Innenseite des Türdrückers von der UV-Strahlung beleuchtet, so dass die UV-Strahlung eine bakterizide Wirkung entfalten kann. Durch diese Lösung entsteht der Vorteil, dass die UV-Strahlungsquelle nicht außerhalb des manuell bedienbaren Elementes an wenigstens einem weiteren Ort angeordnet werden muss. Ferner sind meist horizontal oder senkrecht verlaufende Türbedienstangen zur Bedie-

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nung von Flügelelementen bekannt, die meist aus einem Edelstahlmaterial hergestellt sind. Werden die Türbedienstangen aus einem transparenten Kunststoff oder aus einem Glasmaterial hergestellt, so kann in die Druckstangen die UV-Strahlungsquelle integriert werden. Der Betrieb der UV-Bestrahlungsquellen kann dann vorgenommen werden, wenn die Einrichtung wie die Tür oder das Fenster nicht benutzt wird.

[0012] Ist die UV-Strahlungsquelle nicht im manuell bedienbaren Element selbst angeordnet, kann vorgesehen sein, dass die UV-Strahlungsquelle am Flügelelement der Einrichtung selbst angeordnet wird. Das Flügelelement betrifft dabei das Türblatt oder beispielsweise das Fensterblatt, an dem neben der UV-Strahlungsquelle das zu entkeimende manuell bedienbare Element vorhanden ist.

[0013] Ist das manuell bedienbare Element als Türdrücker, als Türknauf oder als Griffelement ausgeführt, können zwei Strahlungsquellen nahe dem Türdrücker oder dem Türknauf angeordnet werden. Die Anordnung erfolgt dabei derart, dass eine erste UV-Strahlungsquelle den Türdrücker aus einer ersten Richtung und eine zweite UV-Strahlungsquelle den Türdrücker aus einer zweiten vorzugsweise der ersten Richtung gegenüberliegenden Richtung bestrahlt. Beispielsweise kann eine erste UV-Strahlungsquelle oberhalb und eine zweite UV-Strahlungsquelle unterhalb des Türdrückers im und/oder am Flügelelement ortsfest angeordnet werden. Dabei beschreibt die ortsfeste Anordnung der UV-Strahlungsquellen eine Anordnung, die sich zwischen einem Ruhezustand und einem Bestrahlungszustand der UV-Strahlungsquelle zur Bestrahlung des bedienbaren Elementes nicht ändert.

[0014] Zur ortsfesten Anordnung der UV-Strahlungsquellen am Flügelelement können die Strahlungsquellen zugeordnete Lampenträger zur Aufnahme jeweils wenigstens eines UV-Strahlungsmittels aufweisen. Die UV-Strahlungsquellen können ortsfest im oder am Flügelelement angeordnet oder im Flügelelement eingelassen sein. Die Lampenträger weisen dabei eine Öffnung auf, die derart in Richtung zum zu bestrahlenden Türdrücker weisen, dass eine direkte Bestrahlung des manuell bedienbaren Elementes durch die Strahlungsquellen aus zwei Richtungen ermöglicht ist. Beispielsweise kann oberseitig des Türdrückers eine erste UV-Strahlungsquelle und unterseitig eine zweite UV-Strahlungsquelle vorgesehen sein. Ist das manuell bedienbare Element senkrecht am Flügelelement angeordnet, ist eine linksseitige und eine rechtsseitige Anordnung einer jeweiligen UV-Strahlungsquelle möglich.

[0015] Ferner kann ein Reflektor vorgesehen sein, in den das UV-Strahlungsmittel aufgenommen ist. Der Reflektor ist derart beweglich im Lampenträger angeordnet, dass dieser zur Bestrahlung des Türdrückers auf diesen ausrichtbar ist. Der Reflektor kann vorzugsweise die Rückseite der im Lampenträger vorhandenen Öffnung bilden, wobei zwischen Reflektor und Öffnung das UV-Strahlungsmittel eingesetzt wird.

[0016] Weiterführend kann vorgesehen sein, dass der wenigstens eine Lampenträger mit einem Beschlagschild einteilig ausgeführt ist, der Bestandteil des Beschlages der Einrichtung sein kann. Das Beschlagschild, ebenfalls als Türschild bezeichnet, weist zumeist eine senkrechte Erstreckung auf, wobei der Türdrücker in der Rückstellposition eine Horizontallage einnimmt. Die Lampenträger können horizontal abgewinkelt vom Beschlagsschild ausgeführt sein, so dass die längliche Erstreckung der Lampenträger mit der Erstreckungsrichtung des Türdrückers übereinstimmt. Die Lampenträger können in den Körper des Türblattes eingelassen sein, so dass dieser beispielsweise Ausfräsungen besitzt, die eine Aufnahme der Lampenträger ermöglichen. Zum Schutz des UV-Strahlungsmittels können Scheibenelemente die Öffnungen der Lampenträger abdecken.

[0017] Gemäß einer weiteren Ausführungsform kann die UV-Strahlungsquelle beweglich am Flügelelement angeordnet werden und zwischen einer Ruheposition und einer Bestrahlungsposition bewegbar sein. Die Bewegung der UV-Strahlungsquelle kann beispielsweise durch eine Schwenkbewegung ermöglicht werden. Der Lampenträger kann einen Gehäuseteil und einen Deckelteil besitzen, wobei der Gehäuseteil ruhend im oder am Flügelelement aufgenommen und der Deckelteil beweglich am ruhenden Gehäuseteil angeordnet ist. Die UV-Strahlungsquelle ist dabei im beweglichen Deckelteil eingesetzt.

[0018] Die Schwenkbewegung des Deckelteils gegenüber dem Gehäuseteil kann durch eine Gelenkverbindung umgesetzt werden, wobei die Gelenkverbindung zwischen dem Deckelteil und dem Gehäuseteil auf der dem manuell bedienbaren Element abgewandten Seite im Lampenträger angeordnet ist. Dadurch wird erreicht, dass beim Verschwenken des Deckelteils eine Öffnung im Lampenträger entsteht, die sich zwischen dem Deckelteil und dem Gehäuseteil erstreckt und in Richtung zum manuell bedienbaren Element weist.

[0019] Befinden sich die UV-Strahlungsquellen im Ruhezustand, ist der Deckelteil schließend auf dem Gehäuseteil angeordnet. Wird die UV-Strahlungsquelle in Betrieb genommen, fährt der bewegliche Deckelteil um die Gelenkverbindung auf und die Öffnung im Lampenträger entsteht in Richtung zum bestrahlenden Element. Nach Beendigung der Bestrahlung wird die UV-Strahlungsquelle abgeschaltet und der Deckelteil bewegt sich wieder in die Verschlussposition auf dem Gehäuseteil.

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[0020] Der Deckelteil kann mittels einer Antriebseinheit zwischen der Ruheposition und der Bestrahlungsposition beweglich sein. Dabei kann die Antriebseinheit wenigstens einen Motor, ein Getriebe, einen Encoder und/oder eine Steuerung aufweisen. Ferner kann im Deckelteil ein Zahnradsegment angeordnet sein, wobei am Getriebe ein Zahnrad antreibend aufgenommen ist, das mit dem Zahnradsegment in Zahneingriff gebracht ist. Durch Betrieb des Motors kann über das Getriebe das Zahnrad angetrieben werden, um die Schwenkbewegung des Deckelteils zwischen der Ruheposition und der Bestrahlungsposition über das Zahnradsegment auszuführen. Die Inbetriebnahme der Antriebseinheit kann über die Steuerung erfolgen, die beispielsweise dann die Antriebseinheit in Betrieb setzt, wenn die UV-Strahlungsquelle eingeschaltet wird. Wird diese wieder ausgeschaltet, wird die Bewegung des Deckelteils zurück in die Verschlussposition auf dem Gehäuseteil umgekehrt ausgeführt.

[0021] Gemäß einer weiteren möglichen Ausführungsform kann der Lampenträger über eine Linearbewegungseinheit beweglich zwischen der Ruheposition und der Bestrahlungsposition am Flügelelement angeordnet sein. Gemäß dieser Ausführungsform führt die UV-Strahlungsquelle keine Schwenkbewegung sondern eine Linearbewegung aus. Zur Anordnung der Linearbewegungseinheit am Flügelelement kann diese einen Grundkörper besitzen, der ortsfest am Flügelelement angeordnet ist. Neben dem Grundkörper besitzt die Linearbewegungseinheit wenigstens ein Führungselement, über das der Lampenträger am Grundkörper vorzugsweise mit einem elektrischen Antrieb linearbeweglich angeordnet ist.

[0022] Die Linearbewegungseinheit kann seitlich am manuell bedienbaren Element angeordnet sein, so dass der Lampenträger in der Ruheposition neben dem bedienbaren Element und in der Bestrahlungsposition über dem bedienbaren Element angeordnet wird. Beispielsweise kann das manuell bedienbare Element als Türdrücker mit einer Haupterstreckungsrichtung ausgebildet sein, wobei die Haupterstreckungsrichtung durch den mit der Hand umgreifbaren Abschnitt des Türdrückers gebildet wird. Zugleich kann die Bewegungsrichtung des Lampenträgers durch das Führungselement in der Haupterstreckungsrichtung vorgegeben sein, so dass der Lampenträger seitlich über den Türdrücker fahrbar ist.

[0023] Innerhalb des Lampenträgers können wiederum zwei UV-Strahlungsmittel aufgenommen sein, die jeweils in Reflektoren gegenüberliegend angeordnet sind. Befindet sich der Lampenträger in der Bestrahlungsposition, so können die beiden UV-Strahlungsmittel den Türdrücker von zwei Seiten bestrahlen, wobei die beiden UV-Strahlungsmittel und der Türdrücker eine Dreiecksanordnung bilden. Der Lampenträger kann kastenförmig ausgeführt sein und eine Öffnungsseite besitzen, die in Richtung zum Türblatt weist. Findet die Bestrahlung des Türdrückers statt, so überfährt der Lampenträger in der Bestrahlungsposition den Türdrücker, und die UV-Strahlung kann nicht oder nur geringfügig zwischen dem Lampenträger und dem Türblatt austreten.

[0024] Der elektrische Antrieb zur Bewegung des Lampenträgers zwischen der Ruheposition und der Bestrahlungsposition kann einen Linearmotor umfassen, wobei ferner ein Spindeltrieb oder ein Zugmitteltrieb vorgesehen sein kann. Auch gemäß dieser Ausführungsform kann die Antriebseinheit wenigstens einen Motor, ein Getriebe und einen Encoder besitzen, wobei ferner eine Steuerung zum Betrieb der Antriebseinheit vorhanden sein kann.

[0025] Gemäß einer noch weiteren Ausführungsform der vorliegenden erfindungsgemäßen Einrichtung kann das manuell bedienbare Element flächenförmig ausgebildet sein. Beispielsweise sind Flügelelemente von Türanordnungen bekannt, die über Druckflächen verfügen, gegen die mit der Hand gedrückt werden kann. Um das flächenförmige, bedienbare Element zur Desinfektion mit einer UV-Strahlungsquelle zu bestrahlen, kann dieses über das flächenförmige, bedienbare Element bewegt werden. Die Bewegung der UV-Strahlungsquelle kann nach Art einer Scannerbewegung erfolgen, wie diese bei Flachbettscannern bereits bekannt ist. Dabei kann die UV-Strahlungsquelle eine längliche Erstreckung aufweisen, die eine Art Lichtvorhang emittiert. Dieser wird quer zur Längserstreckung der UV-Strahlungsquelle bewegt.

[0026] Die UV-Strahlungsquelle kann in einer sich quer zur Bewegungsrichtung erstreckenden Bewegungseinheit aufgenommen sein. Seitlich zum flächenförmig angeordneten bedienbaren Element können Längsführungselemente vorgesehen werden, die zur Führung der sich zwischen diesen quer erstreckenden Bewegungseinheit dienen. Das Bewegungssystem ermöglicht folglich eine flächenförmige Bestrahlung des flächenförmigen, bedienbaren Elementes mit UV-Licht, indem die Bewegungseinheit beispielsweise vom oberen Ende des Türblattes bis zum unteren Ende des Türblattes scannerartig hinwegbewegt wird. Im Ergebnis ist das Türblatt vollflächig bestrahlbar und folglich desinfiziert. Befinden sich beispielsweise weitere Bedienelemente auf dem flächenförmig ausgebildeten, bedienbaren Element, so können diese ebenfalls der Bestrahlung ausgesetzt werden.

[0027] Zur Bewegung der Bewegungseinheit kann ein elektrischer Antrieb vorgesehen sein, der beispielsweise in den Längsführungselementen integriert ist. Dieser elektrische Antrieb kann einen Zug-

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mitteltrieb oder einen Spindeltrieb umfassen, wobei auf besonders vorteilhafte Weise ein Linearmotor eingesetzt werden kann, der in den als Stranggussprofil ausgeführten Längsführungselementen aufnehmbar ist.

[0028] In Abhängigkeit der Intensität der eingesetzten UV-Strahlung ist erforderlich, Personen in der Nähe der Einrichtung zu detektieren. Befinden sich Personen in der Nähe der Einrichtung, so wird die UV-Strahlungsquelle nicht in Betrieb gesetzt. Zur Detektion der Personen in der Nähe der Einrichtung kann ein Sensor vorgesehen sein, wobei der Sensor mit einer Steuerung verbunden ist, mit der die UV-Bestrahlung durch die UV-Strahlungsquellen steuerbar ist. Der Sensor kann sich auf der UV-Strahlungsquelle, auf dem Türblatt oder an einer sonstigen Stelle an oder nahe der Einrichtung wie der Tür oder dem Fenster befinden.

[0029] Es ist von besonderem Vorteil, wenn die UV-Strahlungsquelle elektromagnetische Strahlung mit einer Wellenlänge von 50 nm bis 400 nm, bevorzugt von 75 nm bis 300 nm und besonders bevorzugt von 100 nm bis 280 nm emittiert. Die auch als UVC-Strahlung bezeichnete UV-Strahlung im Wellenlängenbereich von 100 nm bis 280 nm weist eine besonders intensive antibakterielle Wirkung auf. Strahlung im kurzwelligen UVC-Band verfügt über eine hervorragende keimtötende Wirkung, wobei die Leistung der UV-Strahlungsquelle zwischen 50 W bis 250 W, vorzugsweise zwischen 100 W und 150 W und besonders bevorzugt etwa 125 W beträgt.

[0030] Von weiterem Vorteil ist eine UV-Strahlungsquelle, die gepulste UV-Strahlung emittiert. Dabei kann eine Pulsüberhöhung stattfinden, so dass die Spitzenleistung der UV-Strahlung im Puls ein Vielfaches der oben stehend angegebenen Leistung von beispielsweise 50 W bis 250 W beträgt. Es hat sich gezeigt, dass gepulste UV-Strahlung eine weitere Verbesserung der keimtötenden Wirkung erzielt.

[0031] Ferner kann eine zusätzliche Behandlung der zu entkeimenden Oberflächen während der UV-Bestrahlung mit Eisensalzen in einer Lösung erfolgen. Dabei hat sich gezeigt, dass Eisenionen UV-Strahlung bevorzugt absorbieren. Dadurch kann eine antibakterielle Wirkung der UV-Strahlung weiter verbessert werden. Die Eisensalzlösung kann beispielsweise durch einen Aerosol-Dosierer auf die zu entkeimenden Oberflächen aufgesprüht werden, der selbsttätig mit Inbetriebnahme der UV-Strahlungsquelle aktiviert wird.

[0032] Weitere, die Erfindung verbessernde Maßnahmen werden nachstehend gemeinsam mit der Beschreibung eines bevorzugten Ausführungsbeispieles der Erfindung anhand der Figuren näher dargestellt.

[0033] Es zeigen:

[0034] Fig. 1: eine perspektivische Ansicht eines ersten Ausführungsbeispiels eines Türdrückers, der an einem Flügelelement montiert ist, wobei im Türdrücker eine UV-Strahlungsquelle aufgenommen ist,

[0035] Fig. 2: eine perspektivische Ansicht eines zweiten Ausführungsbeispiels eines Türblattes mit einem Türdrücker und ruhend im Türblatt angeordnete UV-Strahlungsquellen in einem nicht aktivierten Zustand,

[0036] Fig. 3: eine vergrößerte Ansicht des Türdrückers sowie der UV-Strahlungsquellen im Türblatt gemäß des Ausführungsbeispiels in Fig. 2, wobei die UV-Strahlungsquellen im nicht aktivierten Zustand gezeigt sind,

[0037] Fig. 4: eine perspektivische Ansicht des Türdrückers und der UV-Strahlungsquellen im Türblatt gemäß des Ausführungsbeispiels in Fig. 2 und Fig. 3, wobei die UV-Strahlungsquellen im aktivierten Zustand dargestellt sind,

[0038] Fig. 5: eine Seitenansicht der Anordnung der UV-Strahlungsquellen relativ zum Türdrücker gemäß des Ausführungsbeispiels in Fig. 2 bis Fig. 4,

[0039] Fig. 6: eine perspektivische Ansicht der Anordnung der Lampenträger zur Aufnahme der UV-Strahlungsquellen sowie dem Türdrücker gemäß des Ausführungsbeispiels in Fig. 2 bis Fig. 5,

[0040] Fig. 7: ein drittes Ausführungsbeispiel der Anordnung von UV-Strahlungsquellen zur Bestrahlung eines Türdrückers in einem nicht aktivierten Zustand,

[0041] Fig. 8: eine Ansicht der Anordnung der UV-Strahlungsquellen gemäß des Ausführungsbeispiels in Fig. 7 in einem aktivierten Zustand,

[0042] Fig. 9: eine Detailansicht eines Lampenträgers mit einem Gehäuseteil sowie einem Deckelteil in einem geöffneten Zustand gemäß des Ausführungsbeispiels in Fig. 7 und Fig. 8,

[0043] Fig. 10: eine Detailansicht eines Deckelteils mit einer Antriebseinheit gemäß des Ausführungsbeispiels in Fig. 7, Fig. 8 und Fig. 9,

[0044] Fig. 11: die perspektivische Ansicht eines weiteren Ausführungsbeispiels der Anordnung wenigstens einer UV-Strahlungsquelle relativ zu einem Türdrücker, wobei die UV-Strahlungsquelle linear beweglich am Türblatt angeordnet ist,

[0045] Fig. 12: eine detaillierte Ansicht der beweglichen Anordnung einer UV-Strahlungsquelle am Tür-

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blatt gemäß des Ausführungsbeispiels in Fig. 11 in einer Ruheposition,

[0046] Fig. 13: die Anordnung einer UV-Strahlungsquelle an einem Türblatt in einem Bestrahlungszustand gemäß des Ausführungsbeispiels in Fig. 11 und Fig. 12,

[0047] Fig. 14: eine rückseitige perspektivische Ansicht der Anordnung der UV-Strahlungsquelle relativ zum Türdrücker gemäß des Ausführungsbeispiels in Fig. 11 bis Fig. 13,

[0048] Fig. 15: ein weiteres Ausführungsbeispiel der Anordnung einer UV-Strahlungsquelle an einem Türblatt nach Art eines Scanners,

[0049] Fig. 16: eine Seitenansicht der scannerartigen Anordnung der UV-Strahlungsquelle am Türblatt gemäß des Ausführungsbeispiels in Fig. 15 und

[0050] Fig. 17: eine perspektivische Ansicht des Türblattes sowie der scannerartigen Anordnung der UV-Strahlungsquelle mit einem Bewegungssystem gemäß des Ausführungsbeispiels in Fig. 15 und Fig. 16.

[0051] Fig. 1 zeigt eine perspektivische Ansicht eines Ausführungsbeispiels einer erfindungsgemäßen Einrichtung **1** in Gestalt einer Tür **1**. Die Tür **1** besitzt einen Beschlag **10** in Gestalt eines Türdrückers **10**, der ein manuell bedienbares Element **11** umfasst. Das manuell bedienbare Element **11** ist am Türblatt **13** der Tür **1** befestigt. Im geraden Abschnitt des Türdrückers **10**, der manuell umschlossen werden kann, befindet sich innenseitig eine UV-Strahlungsquelle **12**. Das Material des Türdrückers **10** ist aus einem für UV-Strahlung transparenten Material ausgebildet. Wird die UV-Strahlungsquelle **12** in Betrieb gesetzt, durchleuchtet diese von der Innenseite den Türdrücker **10**. Mikroorganismen, Bakterien und/oder Viren, die auf der Oberfläche des Türdrückers **10** abgelagert sind, werden dabei durch die UV-Strahlung effektiv abgetötet. Gemäß diesem Ausführungsbeispiel benötigt die UV-Strahlungsquelle **12** keine weiteren Strahlungsmittel zur Unterbringung angrenzend an oder in der Nähe des manuell bedienbaren Elementes **11**.

[0052] Fig. 2 zeigt ein weiteres Ausführungsbeispiel der Anordnung zweier UV-Strahlungsquellen **12**, die angrenzend an einen Türdrücker **10** angeordnet sind. Eine erste UV-Strahlungsquelle **12** ist oberhalb und eine zweite UV-Strahlungsquelle **12** ist unterhalb des Türdrückers **10** angeordnet. Das Türblatt **13** ist abschnittsweise gezeigt, wobei oberhalb des Türblattes **13** ein Sensor **14** angeordnet ist, der zur Detektion von Personen in der Nähe der Einrichtung **1** dient.

[0053] Die Fig. 3 zeigt das Ausführungsbeispiel der Tür **1** gemäß Fig. 2 in einer vergrößerten Ansicht. Sowohl oberhalb als auch unterhalb ist eine UV-Strahlungsquelle **12** gezeigt, die jeweils in einem Lampenträger **15** aufgenommen sind. Das manuell bedienbare Element **11** in Gestalt des Türdrückers **10** erstreckt sich aus einem Beschlagschild **18**. Dieses verläuft in vertikaler Richtung, wobei die Erstreckungsrichtung der Lampenträger **15** horizontal verläuft. Die Lampenträger **15** grenzen oberseitig und unterseitig an das Beschlagschild **18** an, und können mit diesem einteilig ausgeführt sein. Die UV-Strahlungsquellen **12** sind in einem nicht aktivierten Ruhezustand gezeigt, wobei die Lampenträger **15** durch transparente Schutzscheiben **35** abgedeckt gezeigt sind.

[0054] Fig. 4 zeigt das Ausführungsbeispiel der Tür **1** mit den UV-Strahlungsquellen **12**, die in einem Bestrahlungszustand gezeigt sind. Zur Darstellung der UV-Strahlungsmittel **16** sind die Schutzscheiben **35** gemäß Fig. 3 entfernt. Dabei ist zu erkennen, dass die UV-Strahlungsmittel **16** in jeweiligen Reflektoren **17** aufgenommen sind. Diese sind beweglich innerhalb des Lampenträgers **15** angeordnet und können derart ausgerichtet werden, dass die durch die UV-Strahlungsmittel **16** emittierte UV-Strahlung auf das manuell bedienbare Element **11** in Gestalt des Türdrückers **10** ausgerichtet werden kann.

[0055] Fig. 5 zeigt eine weitere Ansicht des Ausführungsbeispiels der ruhenden Anordnung der UV-Strahlungsquellen **12** in einer Seitenansicht. Gemäß der Darstellung ist der obere und untere Lampenträger **15** einteilig mit dem Beschlagschild **18** ausgeführt. Der Lampenträger **15** besitzt in Richtung zum manuell bedienbaren Element **11** in Gestalt des Türdrückers **10** weisende Öffnungen. Innerhalb der Lampenträger **15** sind Reflektoren **17** angeordnet, die zur Aufnahme der UV-Strahlungsmittel **16** dienen. Die Reflektoren **17** sind durch die Öffnung in den Lampenträgern **15** hindurch derart ausgerichtet, dass die von den Strahlungsmitteln **16** emittierte Strahlung auf den Türdrücker **10** gerichtet werden können.

[0056] Fig. 6 zeigt wiederholt eine perspektivische Ansicht eines Beschlags-Einbausatzes mit zwei UV-Strahlungsquellen **12** und einem Beschlagschild **18**, aus dem sich ein Türdrücker **10** heraus erstreckt. Der Einbausatz dient zum Einbau in ein Türblatt, das entsprechende Vertiefungen besitzt, in die die Lampenträger **15** eingelassen werden können.

[0057] Die Fig. 7 und Fig. 8 zeigen ein weiteres Ausführungsbeispiel der Anordnung der UV-Strahlungsquellen **12** an einem Türblatt **13**. In Fig. 7 sind die UV-Strahlungsquellen **12** in einem Ruhezustand gezeigt, wobei Fig. 8 die UV-Strahlungsquellen **12** in einem Betriebszustand zeigt, der durch die UV-Strahlengänge **36** angedeutet ist. Im Ruhezustand ist der Lampenträger **15** geschlossen, und das manuell be-

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dienbare Element **11** in Gestalt des Türdrückers **10** wird nicht bestrahlt. Gemäß Fig. 7 ist daher lediglich ein kastenförmiges Element sowohl oberhalb als auch unterhalb des Türdrückers **10** erkennbar.

[0058] In Fig. 8 sind die UV-Strahlungsquellen **12** aktiviert. Der Lampenträger **15** weist wenigstens ein Gehäuseteil **19** und einen Deckelteil **20** auf. Der Deckelteil **20** ist gelenkig am Gehäuseteil **19** angeordnet. Die Gelenkverbindungen sind rückseitig angeordnet, so dass bei einem Aufklappen der Deckelteile **20** die Innenseite der Lampenträger **15** in Richtung zum Türdrücker **10** weist. Die UV-Strahlungsmittel – hier nicht mehr gezeigt – befinden sich innerhalb des Deckelteils **20**. Werden diese eingeschaltet, so ergibt sich ein freier Strahlengang **36** in Richtung zum Türdrücker **10**, so dass dieser mit UV-Strahlung beaufschlagt wird. Ist die UV-Bestrahlung beendet, so fahren die Deckelteile **20** wieder in die Ruheposition zurück, indem diese schließend auf die Gehäuseteile **19** zurückgeschwenkt werden, wobei die UV-Strahlungsquellen **12** wieder abgeschaltet werden.

[0059] Fig. 9 zeigt eine detaillierte Ansicht des Lampenträgers **15** zur Aufnahme eines UV-Strahlungsmittels **16**. Das UV-Strahlungsmittel **16** ist in einem Reflektor **17** aufgenommen. Unterseitig ist das Gehäuseteil **19**, beispielsweise zur Montage am Türblatt **13**, dargestellt, wobei der oberseitig dargestellte Deckelteil **20** über eine Gelenkverbindung **21** mit dem Gehäuseteil **19** verbunden ist. Innerhalb des Lampenträgers **15** ist eine Antriebseinheit **22** aufgenommen, die in der folgenden Fig. 10 näher gezeigt ist.

[0060] Fig. 10 zeigt eine Detailansicht des Gehäuseteils **19**, indem eine Antriebseinheit **22** zur Bewegung des Deckelteils **20** vorgesehen ist. Die Antriebseinheit **22** besitzt einen Motor **23**, ein Getriebe **24**, einen Encoder **25**, eine Steuerung **26**, ein Zahnradsegment **27** sowie ein Zahnrad **37**. Die antreibende Verbindung zwischen dem Zahnrad **37** und dem Zahnradsegment **27** ist in Fig. 9 dargestellt. Der Motor **23** wirkt auf das Getriebe **24**, um das Zahnrad **37** anzutreiben. Endseitig am Motor **23** ist der Encoder **25** zur Detektion der Bewegungsposition des Deckelteils **20** relativ zum Gehäuseteil **19** angeordnet. Auf der hinteren Seite besitzt das Gehäuseteil **19** zwei Gelenkverbindungen **21** mit jeweils zugeordnetem Gelenkbolzen **38**, über die der Deckelteil **20** gelenkig am Gehäuseteil **19** aufgenommen wird.

[0061] Die Fig. 11 und Fig. 12 zeigen ein weiteres Ausführungsbeispiel der Anordnung des Lampenträgers **15** am Flügelelement **13**, wobei die Anordnung beweglich über eine Linearbewegungseinheit **28** zwischen der Ruheposition und der Bestrahlungsposition erfolgt. Die Anordnung des Lampenträgers **15** ist in Fig. 12 näher dargestellt. Durch die Anordnung des Lampenträgers **15** über die Linearbewegungseinheit **28** kann der Lampenträger **15** relativ zum Türdrücker **10** verfahren werden. Sowohl in Fig. 11 als auch in Fig. 12 ist der Lampenträger **15** in der Ruheposition gezeigt. Die Linearbewegungseinheit **28** besitzt einen Grundkörper **29**, der ortsfest am Flügelelement **13** angeordnet ist. Der Lampenträger **15** ist über ein Führungselement **30** am Grundkörper **29** verfahrbar, wobei der Antrieb des Grundkörpers **29** über eine elektrische Antriebseinheit verfügen kann.

[0062] Fig. 13 zeigt die Anordnung des Lampenträgers **15** über die Linearbewegungseinheit **28** mit dem Grundkörper **29** sowie dem Führungselement **30** in der Bestrahlungsposition. Der Beschlag **10** befindet sich innerhalb des Lampenträgers **15**, der über den Beschlag **10** hinweg gefahren ist. Das Führungselement **30** ist innerhalb des Grundkörpers **29** der Linearbewegungseinheit **28** geführt, wobei der Lampenträger **15** am Führungselement **30** angeordnet ist. Gemäß einem beispielhaften Abschnitt ist ein Leistungs- und/oder Signalkabel **39** gezeigt, das mit dem Lampenträger **15** verbunden ist und zur Versorgung der UV-Strahlungsquelle dient.

[0063] Fig. 14 zeigt in einer rückseitigen, perspektivischen Ansicht die Bestrahlungsposition des Lampenträgers **15**, indem dieser den Türdrücker **10** überfährt. Innerhalb des Lampenträgers **15** sind zwei UV-Strahlungsmittel **16** in jeweiligen Reflektoren **17** aufgenommen. Der Lampenträger **15** ist über das Führungselement **30** relativ zum Grundkörper **29** geführt, wobei die perspektivische Blickrichtung aus Richtung des nicht näher gezeigten Türblattes erfolgt.

[0064] Fig. 15 zeigt ein letztes Ausführungsbeispiel der Anordnung einer UV-Strahlungsquelle **12** relativ zum manuell bedienbaren Element **11**. Das manuell bedienbare Element **11** ist flächenförmig ausgeführt und stellt die Oberfläche des Türblattes **13** dar. Dieses kann gemäß dieses Ausführungsbeispiels durch die UV-Strahlungsquelle **12** abgescannt werden. Beispielsweise kann das manuell bedienbare Element **11** eine Fläche des Türblattes **13** bilden, das manuell bedient wird. Die UV-Strahlungsquelle **12** ist durch ein Bewegungssystem **32** beweglich geführt. Dieses besitzt links- und rechtsseitig Längsführungselemente **33**, die jeweils randseitig am Türblatt **13** angebracht sind. Zu den Längsführungselementen **33** erstreckt sich quer eine Bewegungseinheit **34** zur Aufnahme der UV-Strahlungsquelle **12**. Die Bewegungseinheit **34** bewegt sich in Richtung der dargestellten Bewegungsrichtung **40**. Die UV-Strahlungsquelle **12** kann sich über der gesamten Breite der Bewegungseinheit **34** erstrecken, so dass bei einer Scannerbewegung der Bewegungseinheit **34** in Bewegungsrichtung **40** die gesamte manuell bedienbare Fläche **11** mit UV-Strahlung beleuchtet wird.

[0065] Fig. 16 zeigt eine Seitenansicht der Anordnung der UV-Strahlungsquelle **12** innerhalb der Be-

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wegungseinheit **34**. Unterseitig ist das Flügelelement **13** dargestellt. Links- und rechtsseitig sind die Längsführungselemente **33** gezeigt, wobei beispielhaft ein jeweiliger Linearmotor **41** angedeutet ist, durch den die Bewegungseinheit **34** angetrieben werden kann. Das UV-Strahlungsmittel **16** ist wiederum in einem Reflektor **17** aufgenommen, der die UV-Strahlung in Richtung zum Flügelelement **13** umlenkt.

[0066] Fig. 17 zeigt wiederholt die Anordnung der UV-Strahlungsquelle **12** innerhalb der Bewegungseinheit **34**, wobei die Bewegungseinheit **34** zur besseren Ansicht ein Stück weitaus den Längsführungselementen **33** herausgefahren ist. Hierin ist erkennbar, dass das UV-Strahlungsmittel **16** eine längliche Erstreckung aufweist und in einem Reflektor **17** aufgenommen ist. Somit kann die durch das UV-Strahlungsmittel **16** emittierte Strahlung in Richtung zum Flügelelement **13** umgelenkt werden.

[0067] Die Erfindung beschränkt sich in ihrer Ausführung nicht auf das vorstehend angegebene bevorzugte Ausführungsbeispiel. Vielmehr ist eine Anzahl von Varianten denkbar, welche von der dargestellten Lösung auch bei grundsätzlich anders gearteten Ausführungen Gebrauch macht. Sämtliche aus den Ansprüchen, der Beschreibung oder den Zeichnungen hervorgehenden Merkmale und/oder Vorteile, einschließlich konstruktiven Einzelheiten, räumliche Anordnungen und Verfahrensschritte, können sowohl für sich als auch in den verschiedensten Kombinationen erfindungswesentlich sein. Insbesondere können die Merkmale der jeweiligen Ausführungsbeispiele der Anordnung der UV-Strahlungsquelle **12** beliebig miteinander kombiniert werden.

Bezugszeichenliste

1 Einrichtung/Tür
10 Beschlag/Türdrücker
11 manuell bedienbares Element
12 UV-Strahlungsquelle
13 Flügelelement/Türblatt
14 Sensor
15 Lampenträger
16 UV-Strahlungsmittel
17 Reflektor
18 Beschlagschild
19 Gehäuseteil
20 Deckelteil
21 Gelenkverbindung
22 Antriebseinheit
23 Motor
24 Getriebe
25 Encoder
26 Steuerung
27 Zahnradsegment
28 Linearbewegungseinheit
29 Grundkörper
30 Führungselement
31 Haupterstreckungsrichtung
32 Bewegungssystem
33 Längsführungselement
34 Bewegungseinheit
35 Schutzscheibe
36 UV-Strahlungsgang
37 Zahnrad
38 Gelenkbolzen
39 Kabel
40 Bewegungsrichtung
41 Linearmotor

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ZITATE ENTHALTEN IN DER BESCHREIBUNG

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Zitierte Patentliteratur

- DE 10305142 A1 [0004]

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Patentansprüche

1. Einrichtung (**1**) wie eine Tür (**1**) oder ein Fenster, aufweisend einen Beschlag (**10**) mit wenigstens einem manuell bedienbaren Element (**11**), **dadurch gekennzeichnet**, dass die Einrichtung (**1**) wenigstens eine UV-Strahlungsquelle (**12**) aufweißt, die zur bakteriziden UV-Bestrahlung des manuell bedienbaren Elementes (**11**) ausgebildet ist.

2. Einrichtung (**1**) nach Anspruch 1, dadurch gekennzeichnet, dass das manuell bedienbare Element (**11**) ein für UV-Strahlung transparentes Material aufweist und wobei die UV-Strahlungsquelle (**12**) im manuell bedienbaren Element (**11**) angeordnet ist.

3. Einrichtung (**1**) nach Anspruch 1, dadurch gekennzeichnet, dass die Einrichtung (**1**) wenigstens ein Flügelelement (**13**) wie ein Türblatt (**13**), ein Fensterblatt oder dergleichen aufweist, wobei die UV-Strahlungsquelle (**12**) am Flügelelement (**13**) angeordnet ist.

4. Einrichtung (**1**) nach Anspruch 1 oder 3, dadurch gekennzeichnet, dass das manuell bedienbare Element (**11**) als Türdrücker (**11**), als Türknauf oder als Griffelement ausgeführt ist und wobei zwei UV-Strahlungsquellen (**12**) vorgesehen sind, derart, dass eine erste UV-Strahlungsquelle (**12**) den Türdrücker (**11**) aus einer ersten Richtung und eine zweite UV-Strahlungsquelle (**12**) den Türdrücker (**11**) aus einer zweiten vorzugsweise gegenüberliegenden Richtung bestrahlt.

5. Einrichtung (**1**) nach einem der Ansprüche 1, 3 oder 4, dadurch gekennzeichnet, dass eine erste UV-Strahlungsquelle (**12**) oberhalb und eine zweite UV-Strahlungsquelle (**12**) unterhalb des Türdrückers (**11**) im und/oder am Flügelelement (**13**) ortsfest angeordnet ist.

6. Einrichtung (**1**) nach Anspruch 5, dadurch gekennzeichnet, dass die UV-Strahlungsquellen (**12**) zwei Lampenträger (**15**) zur Aufnahme jeweils wenigstens eines UV-Strahlungsmittels (**16**) aufweisen, die ortsfest im oder am Flügelelement (**13**) angeordnet oder im Flügelelement (**13**) eingelassen sind und wobei die Lampenträger (**15**) eine Öffnung aufweisen, die in Richtung zum Türdrücker (**11**) weisen, derart, dass eine direkte Bestrahlung des manuell bedienbaren Elementes (**11**) durch die Strahlungsquellen (**12**) aus zwei Richtungen ermöglicht ist.

7. Einrichtung (**1**) nach Anspruch 6, dadurch gekennzeichnet, dass ein Reflektor (**17**) vorgesehen ist, in dem das UV-Strahlungsmittel (**16**) aufgenommen ist, wobei der Reflektor (**17**) derart beweglich im Lampenträger (**15**) angeordnet ist, dass dieser zur Bestrahlung des Türdrückers (**11**) auf diesen ausrichtbar ist.

8. Einrichtung (**1**) nach Anspruch 6 oder 7, dadurch gekennzeichnet, dass der Beschlag (**10**) ein Beschlagschild (**18**) aufweist, wobei der wenigstens eine Lampenträger (**15**) mit dem Beschlagsschild (**18**) einteilig ausgeführt ist.

9. Einrichtung (**1**) nach einem der Ansprüche 1 oder 3, dadurch gekennzeichnet, dass die wenigstens eine UV-Strahlungsquelle (**12**) beweglich am Flügelelement (**13**) angeordnet ist und zwischen einer Ruheposition und einer Bestrahlungsposition bewegbar ist.

10. Einrichtung (**1**) nach Anspruch 9, dadurch gekennzeichnet, dass der Lampenträger (**15**) einen Gehäuseteil (**19**) und einen Deckelteil (**20**) aufweist, wobei der Gehäuseteil (**19**) ruhend im oder am Flügelelement (**13**) aufgenommen und der Deckelteil (**20**) beweglich am ruhenden Gehäuseteil (**19**) angeordnet ist und wobei die UV-Strahlungsquelle (**12**) im beweglichen Deckelteil (**20**) aufgenommen ist.

11. Einrichtung (**1**) nach Anspruch 10, dadurch gekennzeichnet, dass ein Lampenträger (**15**) oberhalb und ein Lampenträger (**15**) unterhalb des manuell bedienbaren Elementes (**11**) angeordnet ist, wobei die Deckelteile (**20**) zur Ausführung einer Schwenkbewegung zwischen der Ruheposition und der Bestrahlungsposition über eine Gelenkverbindung (**21**) am Gehäuseteil (**19**) angeordnet sind.

12. Einrichtung (**1**) nach Anspruch 11, dadurch gekennzeichnet, dass die Gelenkverbindung (**21**) auf der dem manuell bedienbaren Element (**11**) abgewandten Seite im Lampenträger (**15**) angeordnet ist, sodass die im beweglichen Deckelteil (**20**) aufgenommene UV-Strahlungsquelle (**12**) in der Bestrahlungsposition des Deckelteils (**20**) in Richtung zum manuell bedienbaren Element (**11**) weist.

13. Einrichtung (**1**) nach Anspruch 10 bis 12, dadurch gekennzeichnet, dass der Deckelteil (**20**) mittels einer Antriebseinheit (**22**) zwischen der Ruheposition und der Bestrahlungsposition beweglich ist, wobei die Antriebseinheit (**22**) wenigstens einen Motor (**23**), ein Getriebe (**24**), einen Encoder (**25**) und/oder eine Steuerung (**26**) aufweist.

14. Einrichtung (**1**) nach Anspruch 13, dadurch gekennzeichnet, dass im Deckelteil (**20**) ein Zahnradsegment (**27**) angeordnet und am Getriebe (**24**) ein Zahnrad (**37**) antreibend aufgenommen ist, das mit dem Zahnradsegment (**27**) in Zahneingriff gebracht ist, um die Schwenkbewegung zwischen der Ruheposition und der Bestrahlungsposition des Deckelteils (**20**) auszuführen.

15. Einrichtung (**1**) nach einem der Ansprüche 1, 2 oder 4, dadurch gekennzeichnet, dass der Lampenträger (**15**) über eine Linearbewegungseinheit (**28**)

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beweglich zwischen der Ruheposition und der Bestrahlungsposition am Flügelelement (**13**) angeordnet ist.

16. Einrichtung (**1**) nach Anspruch 15, dadurch gekennzeichnet, dass die Linearbewegungseinheit (**28**) einen Grundkörper (**29**) aufweist, der ortsfest am Flügelelement (**13**) angeordnet ist, wobei der Lampenträger (**15**) über ein Führungselement (**30**) am Grundkörper (**29**) vorzugsweise mit einem elektrischen Antrieb linearbeweglich angeordnet ist.

17. Einrichtung (**1**) nach Anspruch 15 oder 16, dadurch gekennzeichnet, dass das manuell bedienbare Element (**11**) als Türdrücker (**11**) mit einer Haupterstreckungsrichtung (**31**) ausgebildet ist, wobei die Bewegungsrichtung des Lampenträgers (**15**) durch das Führungselement (**30**) in der Haupterstreckungsrichtung (**31**) vorgegeben ist, sodass der Lampenträger (**15**) seitlich über den Türdrücker (**11**) fahrbar ist.

18. Einrichtung (**1**) nach Anspruch 15 bis 17, dadurch gekennzeichnet, dass im Lampenträger (**15**) zwei UV-Strahlungsmittel (**16**) aufgenommen sind, die jeweils in Reflektoren (**17**) gegenüberliegend angeordnet sind und zwischen die der Türdrücker (**11**) in der Bestrahlungsposition anordbar ist.

19. Einrichtung (**1**) nach Anspruch 1, dadurch gekennzeichnet, dass das manuell bedienbare Element (**11**) flächenförmig ausgebildet ist, wobei ein Bewegungssystem (**32**) vorgesehen ist, durch das die UV-Strahlungsquelle (**12**) über das flächenförmig angeordnete bedienbare Element (**11**) bewegbar ist.

20. Einrichtung (**1**) nach Anspruch 19, dadurch gekennzeichnet, dass das Bewegungssystem (**32**) seitlich am flächenförmig ausgeführten manuell bedienbaren Element (**11**) jeweils ein Längsführungselement (**33**) aufweist, an denen eine sich quer erstreckende Bewegungseinheit (**34**) zur Aufnahme der UV-Strahlungsquelle (**12**) angeordnet ist, die entlang der Längsrichtung der Längsführungselemente (**33**) nach Art eines Scanners bewegbar ist.

21. Einrichtung (**1**) nach Anspruch 19 oder 20, dadurch gekennzeichnet, dass das Bewegungssystem (**32**) einen elektrischen Antrieb aufweist, der zur Bewegung der Bewegungseinheit (**34**) entlang der Längsführungselemente (**33**) ausgebildet ist.

22. Einrichtung (**1**) nach einem der vorgenannten Ansprüche, dadurch gekennzeichnet, dass ein Sensor (**14**) wenigstens zur Detektion von Personen vorgesehen ist, wobei der Sensor (**14**) mit einer Steuerung verbunden ist, mit der die UV-Bestrahlung durch die UV-Strahlungsquelle (**12**) steuerbar ist.

23. Einrichtung (**1**) nach einem der vorgenannten Ansprüche, dadurch gekennzeichnet, dass die UV-Strahlungsquelle (**12**) elektromagnetische Strahlung mit einer Wellenlänge von 50 nm bis 400 nm, bevorzugt von 100 nm bis 300 nm und besonders bevorzugt von 100 nm bis 280 nm emittiert.

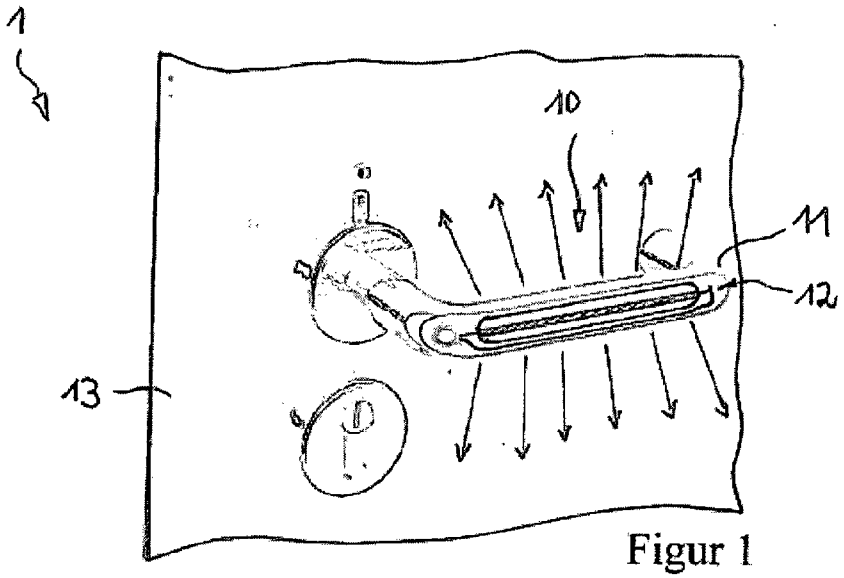
24. Einrichtung (**1**) nach einem der vorgenannten Ansprüche, dadurch gekennzeichnet, dass die UV-Strahlungsquelle (**12**) gepulste UV-Strahlung emittiert.

25. Einrichtung (**1**) nach einem der vorgenannten Ansprüche, dadurch gekennzeichnet, dass die UV-Strahlungsquelle (**12**) eine Leistung von 50 W bis 250 W, vorzugsweise von 100 W bis 150 W und besonders bevorzugt von 125 W aufweist.

Es folgen 15 Blatt Zeichnungen

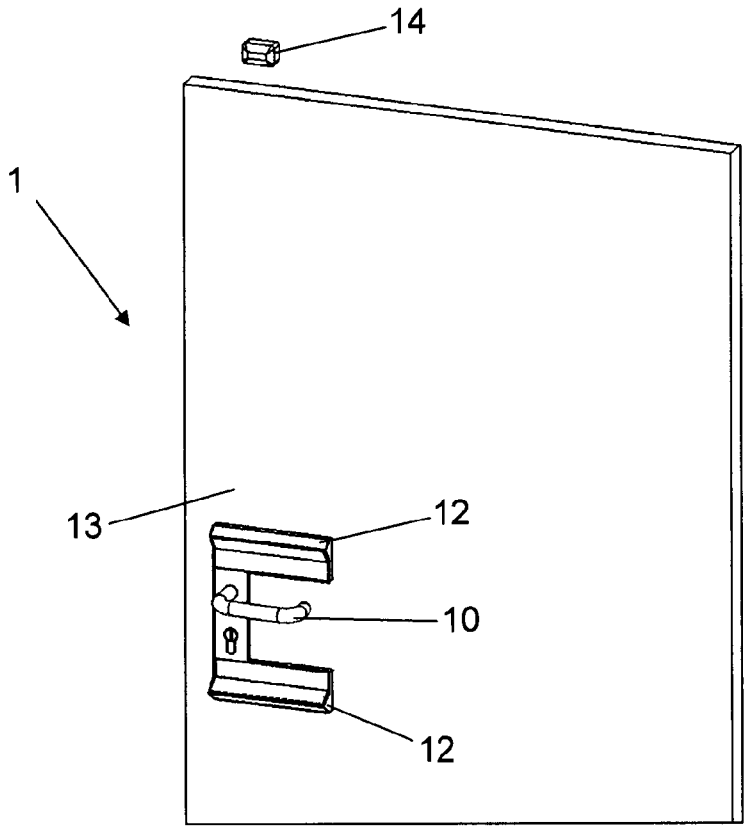
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Anhängende Zeichnungen



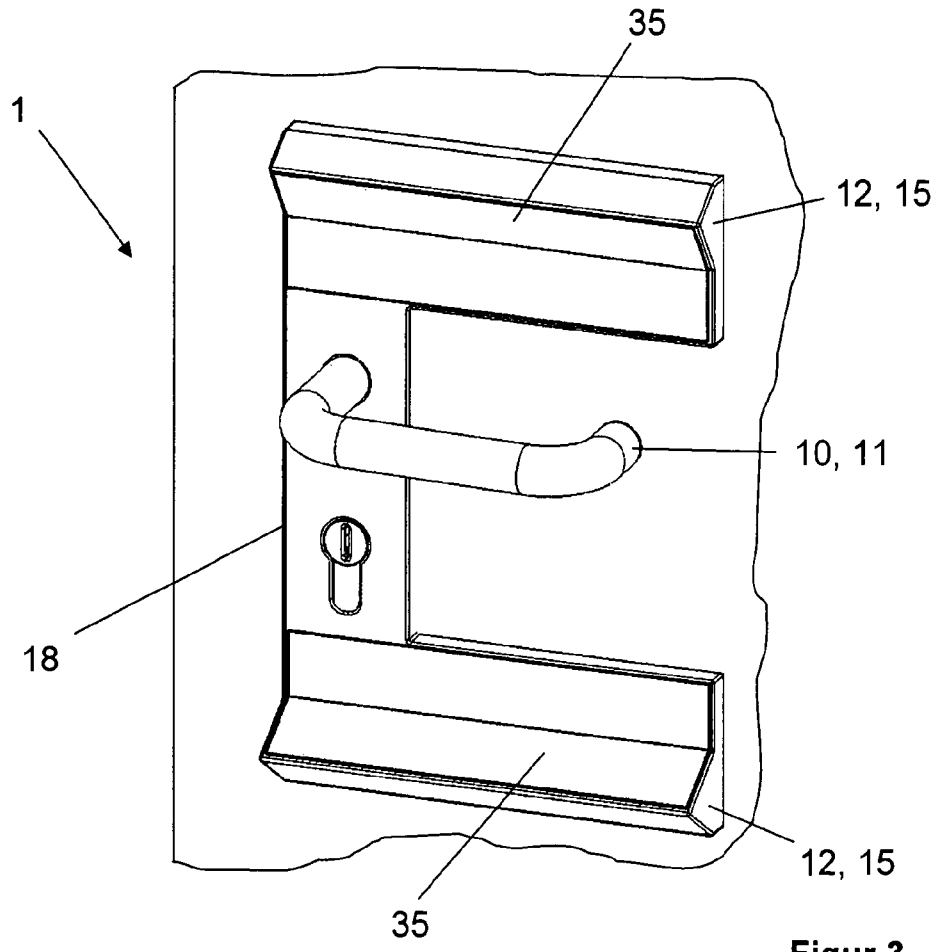
Figur 1

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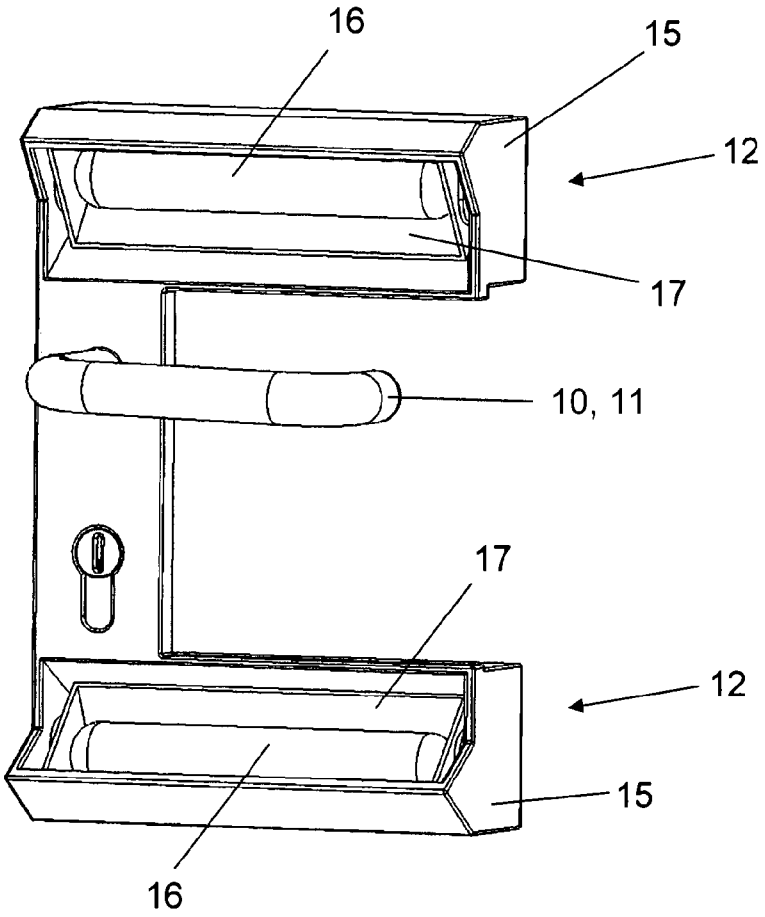
Figur 2

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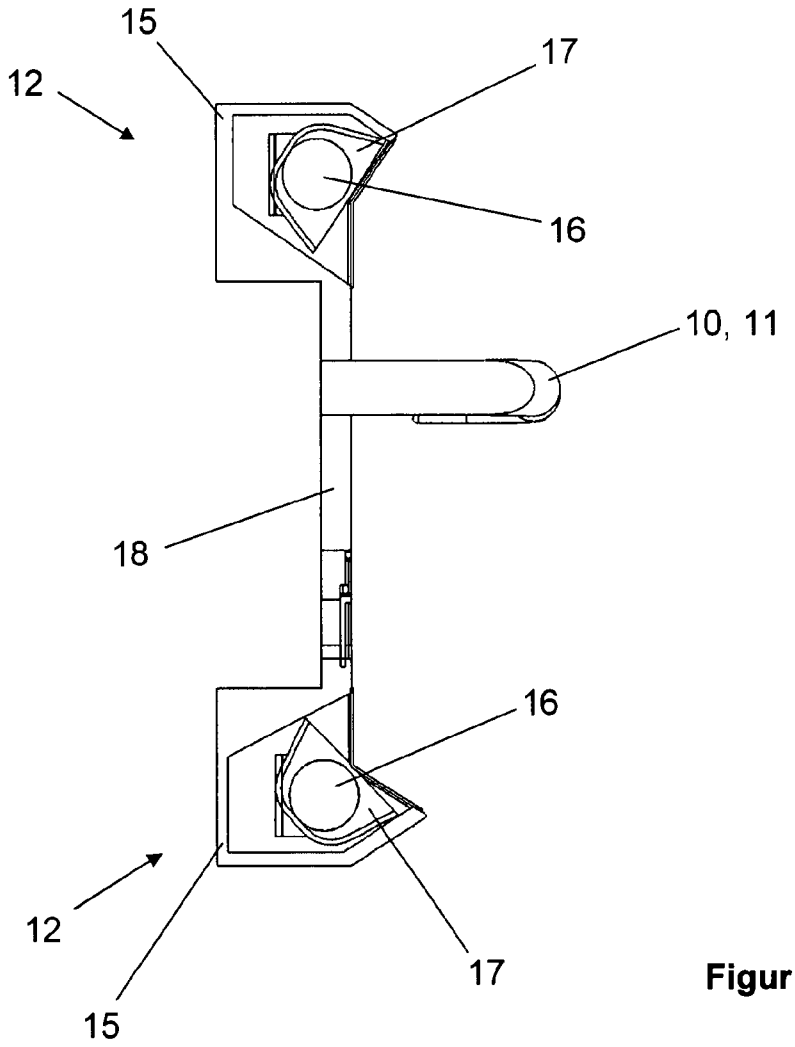
Figur 3

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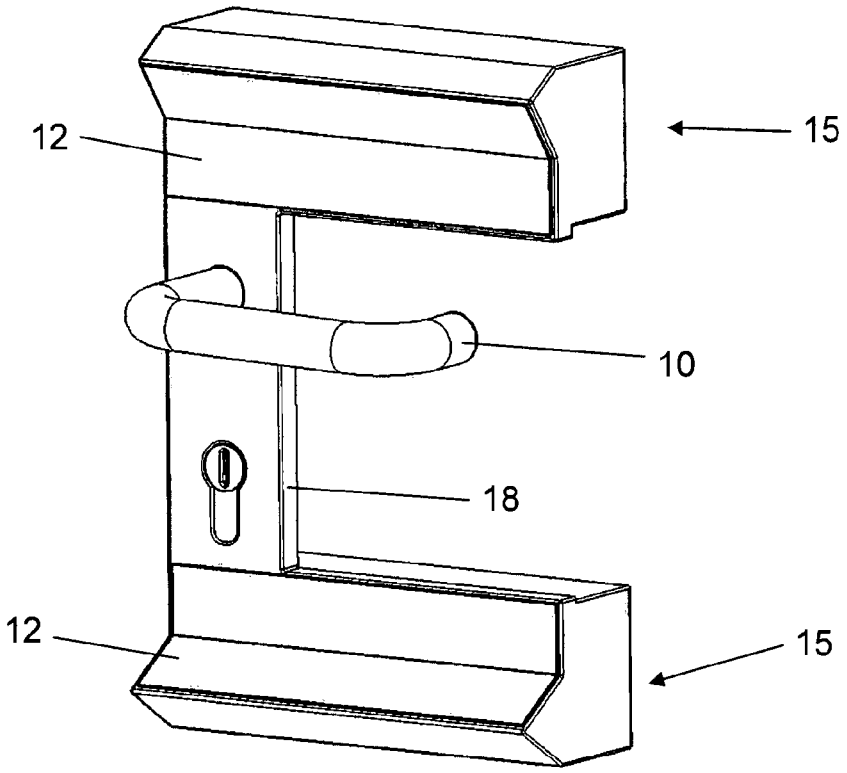
Figur 4

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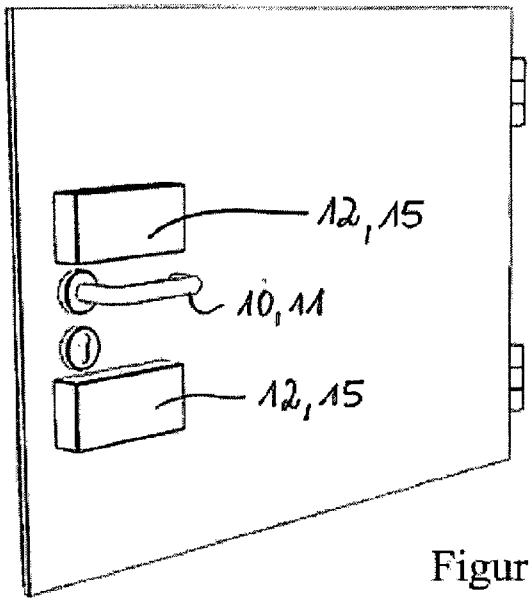
Figur 5

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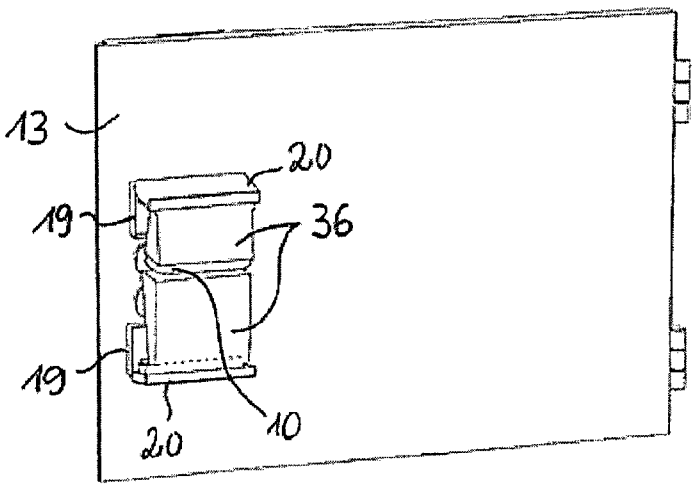


Figur 6

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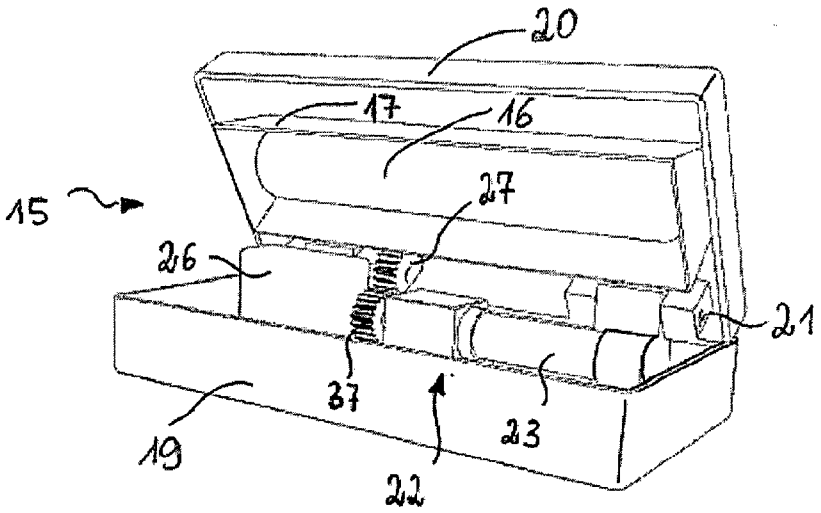


Figur 7

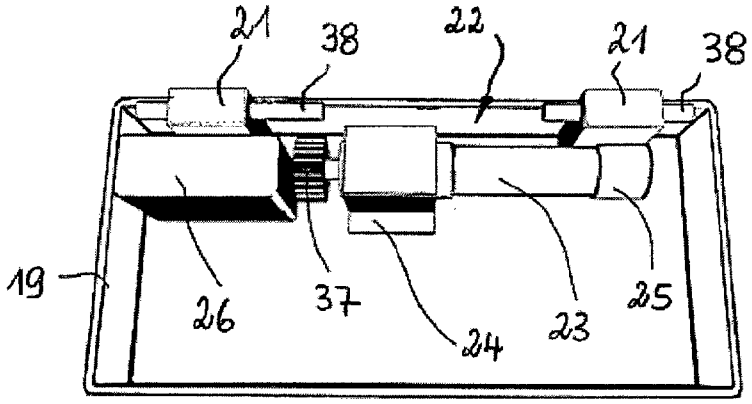


Figur 8

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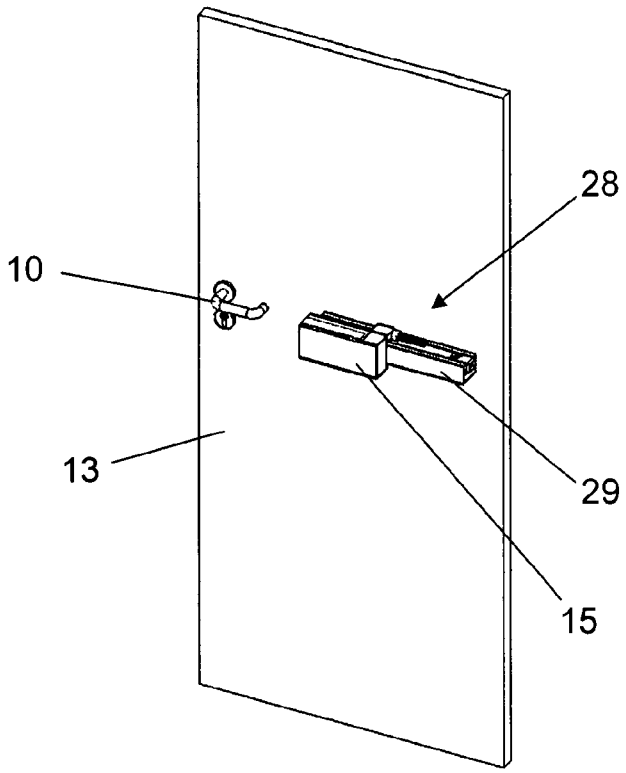


Figur 9



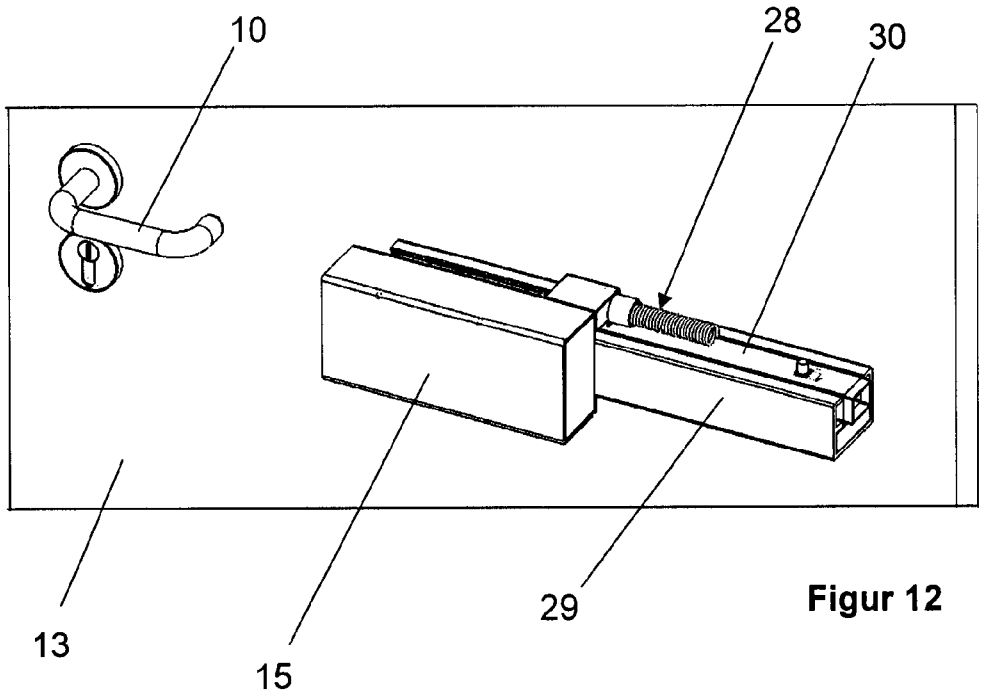
Figur 10

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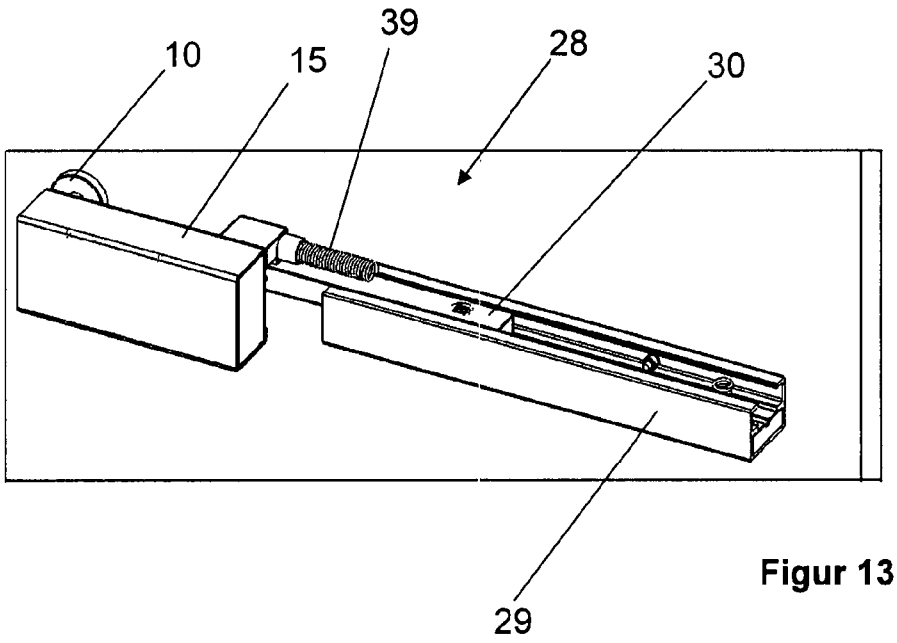
Figur 11

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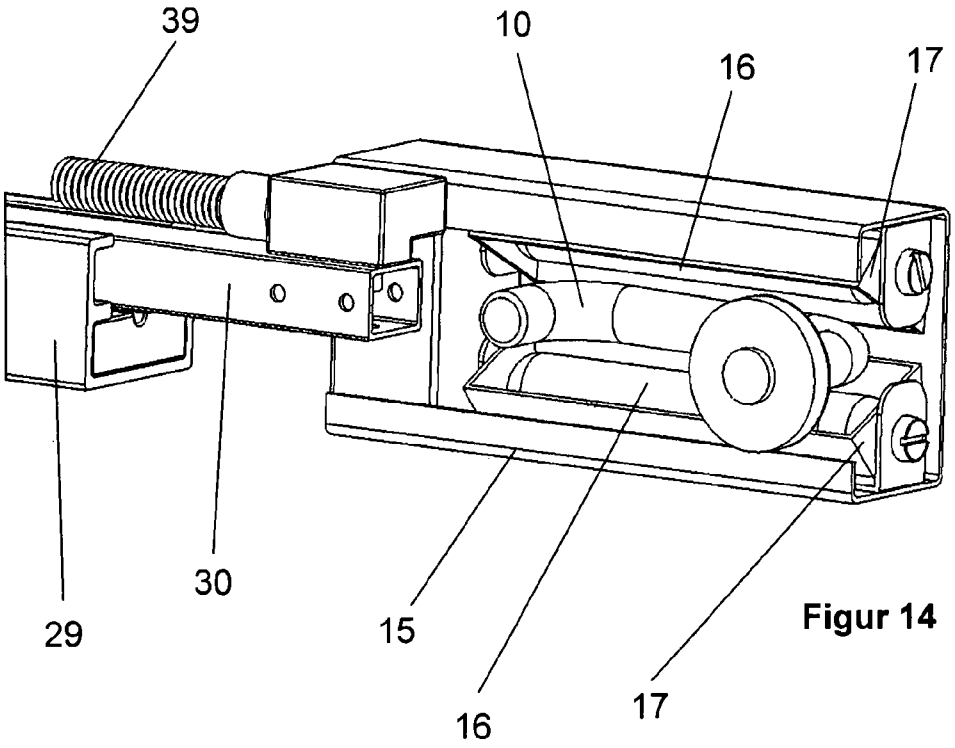
Figur 12

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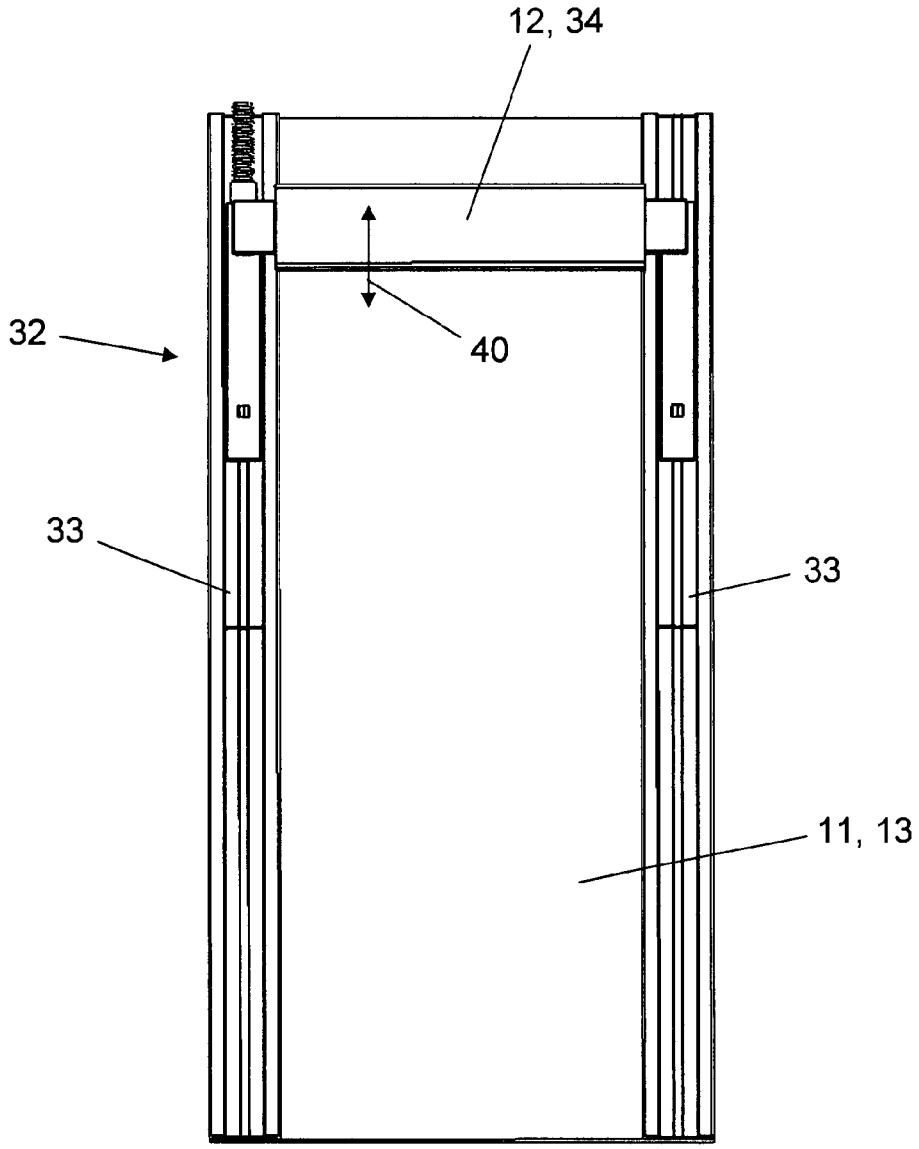
Figur 13

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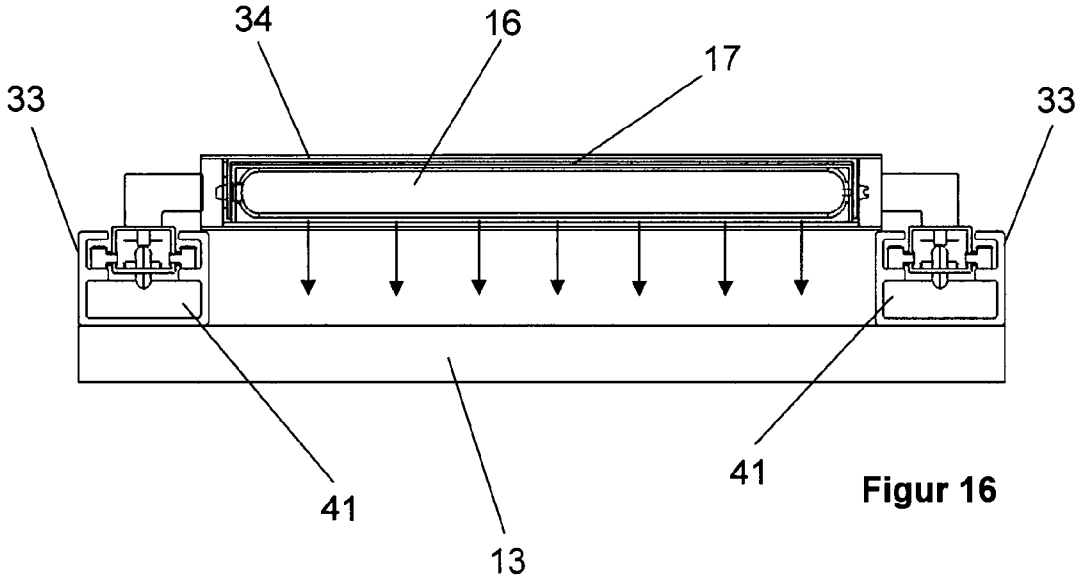
Figur 14

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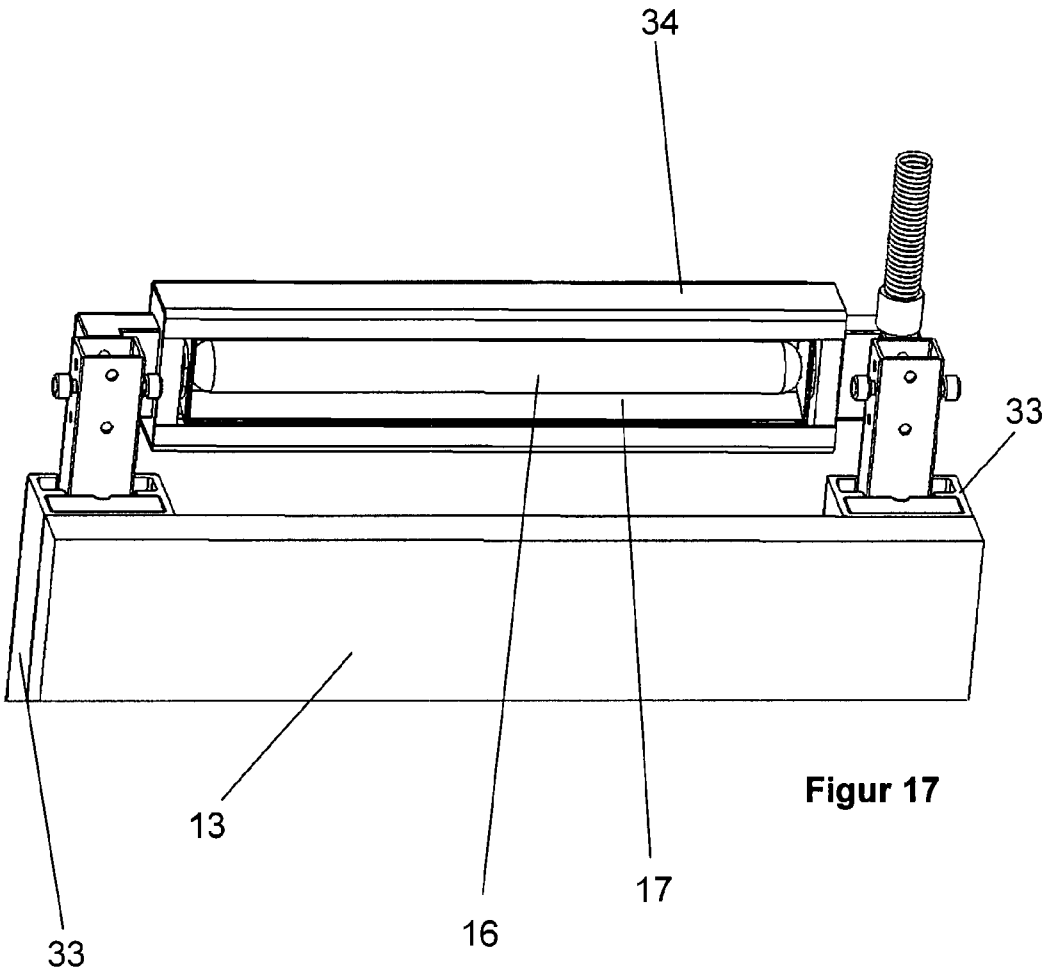
Figur 15

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Figur 16

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Figur 17

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(Not for submission under 37 CFR 1.99)

Application Number	18804396
Filing Date	2024-08-14
First Named Inventor	Dean Schumacher
Art Unit	1711
Examiner Name	Jason Y. Ko
Attorney Docket Number	AGD0100.7

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Art Unit	1711
Examiner Name	Jason Y. Ko
Attorney Docket Number	AGD0100.7

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
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Application Number	18804396
Filing Date	2024-08-14
First Named Inventor	Dean Schumacher
Art Unit	1711
Examiner Name	Jason Y. Ko
Attorney Docket Number	AGD0100.7

CERTIFICATION STATEMENT

Please see 37 CFR 1.97(e) to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

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☐ See attached certification statement.

☒ A certification statement is not submitted herewith.

FEE

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

COPIES

☐ An identification of an earlier application pursuant to 37 CFR 1.98 (d) (1) is attached.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Quincy J. Harrison/	Date (YYYY-MM-DD)	2024-11-20
Name/Print	Quincy J. Harrison	Registration Number	65,374

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APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/804,396	**11/20/2024 12:14:19 PM Z ET**	**AGD0100.7**

Title of Invention

SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	7738	FILED BY	Kateryna Ilchyshyn
PATENT CENTER #	68037993	FILING DATE	08/14/2024
CUSTOMER #	62124	FIRST NAMED INVENTOR	Dean Schumacher
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Quincy Harrison

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
IDS_AGD0100_7.pdf	4	Information Disclosure Statement (IDS) Form (SB08)	1272 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
IDS_AGD0100_7.pdf	4E315DADBBC5F56A7AD66AAB51D277F7A65AA3850C03C46C E7E9C59933E842A817D4490F26C85226478905D48E4E1D89C C5C3861372D03F34A0D59108E3522A0

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
18/804,396	08/14/2024	Dean Schumacher	AGD0100.7

CONFIRMATION NO. 7738

62124
QUINN IP Law
21500 Haggerty Road
Suite 300
Northville, MI 48167

PUBLICATION NOTICE

OC00000008150509

Date Mailed: 12/05/2024

Title:SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT

Publication No.US-2024-0399003-A1
Publication Date:12/05/2024

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APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/804,396	**12/13/2024 10:15:50 AM Z ET**	**AGD0100.7**

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PATENT CENTER #	68350892	FILING DATE	08/14/2024
CUSTOMER #	62124	FIRST NAMED INVENTOR	Dean Schumacher
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Quincy Harrison

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
Restriction_Response_AGD0100_7.pdf	2	Response to Election / Restriction Filed	73 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
Restriction_Response_AGD0100_7.pdf	18EC39115FDB0B179577AE233EFA4291A333AD7E1D86343B641F92381857A68C0EA158EEF2E8546C70D6253AA0644BA182033F1E1CDDC65F1FB6C65AD9A828A0

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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.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Dean Schumacher

First Named Inventor: Dean Schumacher | Confirmation No.: 7738

Serial No.: 18/804,396 | Examiner: Jason Y. KO

Filed: August 14, 2024 | Group Art Unit: 1711

For: SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT

Attorney Docket No.: AGD0100.7

RESPONSE TO RESTRICTION REQUIREMENT

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

This paper is intended to be fully responsive to the Restriction Requirement mailed October 17, 2024.

REMARKS

Applicant elects FIGS. 1-5 and 9 and claims 1-20, with traverse. In particular, Applicant respectfully submits that the schematics shown in FIGS. 9-12 could be applicable to the elected embodiment shown in FIGS. 1-5. As described in the Specification as-filed, "[s]ystem 42 [shown in FIG. 10] may include many of the same features and functionality as system 36 [shown in FIG. 9], but system 42 may change the state of apparatus 38 with a remote activation system 44." Specification, at [0043]. Similarly, "[s]ystem 50 [shown in FIG. 11] may include many of the same features and functionality as systems 36 and 42, but system 50 may include a timer 52 for automatically deactivating apparatus 38." Id. at [0044]. Finally, "[s]ystem 54 [shown in FIG. 12] may include many of the same features and functionality as systems 36, 42, and 50, but system 54 may include a motion sensor 56 for automatically activating and/or deactivating apparatus 38." Id. at [0045].

Accordingly, the differences between the schematic views of FIGS. 9-12 center on the inclusion or omission of three components: the remote activation system 44, the timer 52, and the motion sensor 56. Because none of these components are shown in the elected embodiment of FIGS. 1-5, it is reasonable that a person of skill in the art would understand that each of the schematic views of FIGS. 9-12 could be applicable to the elected embodiment. As such, Applicant respectfully submits that FIGS. 10-12 be included with the elected group of FIGS. 1-5 and 9.

Respectfully submitted,

By: /Quincy J. Harrison/
Quincy J. Harrison
Reg. No. 65,374

Date: 12/12/2024

QUINN IP LAW
21500 Haggerty Road, Suite 300
Northville, Michigan 48167
Phone: 248-380-9300
Fax: 248-380-8968

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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

62124 7590 01/15/2025

QUINN IP Law
21500 Haggerty Road
Suite 300
Northville, MI 48167

EXAMINER
KO, JASON Y

ART UNIT	PAPER NUMBER
1711	

DATE MAILED: 01/15/2025

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/804,396	08/14/2024	Dean Schumacher	AGD0100.7	7738

TITLE OF INVENTION: SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0.00	$0.00	$480	04/15/2025

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 DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 40% the amount of undiscounted fees, and micro entity fees are 20% the amount of undiscounted fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

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: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PTOL-85 (Rev. 11/23)

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PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via the USPTO patent electronic filing system.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (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 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. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

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

62124 7590 01/15/2025

QUINN IP Law
21500 Haggerty Road
Suite 300
Northville, MI 48167

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 transmitted to the USPTO via the USPTO patent electronic filing system or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/804,396	08/14/2024	Dean Schumacher	AGD0100.7	7738

TITLE OF INVENTION: SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0.00	$0.00	$480	04/15/2025

EXAMINER	ART UNIT	CLASS-SUBCLASS
KO, JASON Y	1711	250-492100

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/AIA/122 or PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or 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 _____
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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). 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. Fees submitted: ❑ Issue Fee ❑ Publication Fee (if required)

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

❑ Electronic Payment via the USPTO patent electronic filing system ❑ Enclosed check ❑ Non-electronic payment by credit card (Attach form PTO-2038)

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

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

❑ Applicant certifying micro entity status. See 37 CFR 1.29

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

❑ Applicant asserting small entity status. See 37 CFR 1.27

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

❑ Applicant changing to regular undiscounted fee status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

PTOL-85 Part B (11/23) Approved for use through 03/31/2026 OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/804,396	08/14/2024	Dean Schumacher	AGD0100.7	7738

62124 7590 01/15/2025

QUINN IP Law
21500 Haggerty Road
Suite 300
Northville, MI 48167

EXAMINER	
KO, JASON Y	
ART UNIT	PAPER NUMBER
1711	

DATE MAILED: 01/15/2025

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

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

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.

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OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B 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 30 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.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. The United States Patent and Trademark Office (USPTO) collects the information in this record under authority of 35 U.S.C. 2. The USPTO's system of records is used to manage all applicant and owner information including name, citizenship, residence, post office address, and other information with respect to inventors and their legal representatives pertaining to the applicant's/ owner's activities in connection with the invention for which a patent is sought or has been granted. The applicable Privacy Act System of Records Notice for the information collected in this form is COMMERCE/PAT-TM-7 Patent Application Files, available in the Federal Register at 78 FR 19243 (March 29, 2013).
https://www.govinfo.gov/content/pkg/FR-2013-03-29/pdf/2013-07341.pdf

Routine uses of the information in this record may include disclosure to:

1) law enforcement, in the event that the system of records indicates a violation or potential violation of law;
2) a federal, state, local, or international agency, in response to its request;
3) a contractor of the USPTO having need for the information in order to perform a contract;
4) the Department of Justice for determination of whether the Freedom of Information Act (FOIA) requires disclosure of the record;
5) a Member of Congress submitting a request involving an individual to whom the record pertains, when the individual has requested the Member's assistance with respect to the subject matter of the record;
6) a court, magistrate, or administrative tribunal, in the course of presenting evidence, including disclosures to opposing counsel in the course of settlement negotiations;
7) the Administrator, General Services Administration (GSA), or their designee, during an inspection of records conducted by GSA under authority of 44 U.S.C. 2904 and 2906, in accordance with the GSA regulations and any other relevant (i.e., GSA or Commerce) directive, where such disclosure shall not be used to make determinations about individuals;
8) another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c));
9) the Office of Personnel Management (OPM) for personnel research purposes; and
10) the Office of Management and Budget (OMB) for legislative coordination and clearance.

If you do not furnish the information requested on this form, the USPTO may not be able to process and/or examine your submission, which may result in termination of proceedings, abandonment of the application, and/or expiration of the patent.

Notice of Allowability	Application No. 18/804,396	Applicant(s) Schumacher, Dean	
	Examiner JASON Y KO	Art Unit 1711	AIA (FITF) Status Yes

-- 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 12/13/24.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☑ The allowed claim(s) is/are 1-20 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

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

   Certified copies:

   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.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ 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. ☑ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 11/6/24, 11/20/24.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☐ Examiner's Amendment/Comment
6. ☑ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/JASON Y KO/
Primary Examiner, Art Unit 1711

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Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Election/Restrictions

The restriction requirement has been reconsidered in view of the allowability of claims to the elected invention pursuant to MPEP § 821.04(a).

Once a restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See In re Ziegler, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

Reasons for Allowance

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

The prior art does not appear to teach or make obvious the claimed apparatuses for sanitizing an object.

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 JASON Y KO whose telephone number is (571)270-7451. The examiner can normally be reached M-F: 9:00-6:00.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at http://www.uspto.gov/interviewpractice.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-270-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: https://patentcenter.uspto.gov. Visit https://www.uspto.gov/patents/apply/patent-center for more information about Patent Center and https://www.uspto.gov/patents/docx for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JASON Y. KO
Primary Examiner
Art Unit 1711

/JASON Y KO/
Primary Examiner, Art Unit 1711

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	18/804,396	Schumacher, Dean
	Examiner	Art Unit
	JASON Y KO	1711

CPC - Searched*		
Symbol	Date	Examiner
A61L12/10	12/26/2024	JYK

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
PALM Inventor Search, PE2E Search	12/26/2024	JYK

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
A61L	12/10	12/26/2024	JYK

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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	18/804,396	Schumacher, Dean
	Examiner	**Art Unit**
	JASON Y KO	1711

CPC						
Symbol					**Type**	**Version**
A61L	/	2	/	10	F	2013-01-01
A47L	/	25	/	04	I	2013-01-01
A61L	/	2202	/	14	A	2013-01-01
B08B	/	7	/	0057	A	2013-01-01

CPC Combination Sets								
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	20	
/JASON Y KO/ Primary Examiner, Art Unit 1711	26 December 2024	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office — Part of Paper No.: 20241226

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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	18/804,396	Schumacher, Dean
	Examiner	**Art Unit**
	JASON Y KO	1711

INTERNATIONAL CLASSIFICATION					
CLAIMED					
A61L	/	12	/	10	
NON-CLAIMED					
	/		/		

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**

CROSS REFERENCES(S)						
CLASS	**SUBCLASS (ONE SUBCLASS PER BLOCK)**					

NONE (Assistant Examiner) (Date)	**Total Claims Allowed:** 20	
/JASON Y KO/ Primary Examiner, Art Unit 1711 (Primary Examiner) 26 December 2024 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

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Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	18/804,396	Schumacher, Dean
	Examiner	**Art Unit**
	JASON Y KO	1711

☑ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIMS

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original

NONE		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	20	
/JASON Y KO/ Primary Examiner, Art Unit 1711	26 December 2024	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

HYUNDAI MOTOR AMERICA
Ex. 1002
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PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	80	"4710634"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/11/30 11:18 AM
L2	103	"7175807"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/11/30 11:18 AM
L3	74	"7989779"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/11/30 11:18 AM
L4	46	"10092669"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY,	OR	ON	ON	2024/11/30 11:18 AM

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Page 225 of 701

			CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L5	2	(US-18508686-$ | US-20100051641-$).DID.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/11/30 11:18 AM
L6	5	"17496237"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/11/30 12:20 PM
L7	13	"17032187"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK,	OR	ON	ON	2024/11/30 12:22 PM

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Ex. 1002
Page 226 of 701

			TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L8	13021	a61l2/10.cpc. AND uv AND housing	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/11/30 12:23 PM
L9	3910	a61l2/10.cpc. AND uv AND housing AND germicidal	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/11/30 12:23 PM
L10	210	a61l2/10.cpc. AND uv AND housing AND germicidal AND dome	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2024/11/30 12:23 PM

PE2E SEARCH - Search History (Interference)

There are no Interference searches to show.

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Ex. 1002
Page 227 of 701

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Dean Schumacher

Inventor : Dean Schumacher Confirmation No.: 7738

Serial No.: 18/804,396 Examiner: Jason Y. Ko

Filed: August 14, 2024 Group Art Unit: 1711

For: SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT

Attorney Docket No.: AGD0100.7

STATEMENT OF RELEVANCE FOR NON-ENGLISH REFERENCES

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

In compliance with the duty of disclosure under 37 C.F.R. § 1.56 and § 1.97-1.98, the references listed and identified on the attached Forms PTO/SB/08A are being submitted herewith for consideration by the Examiner. The following information is intended to satisfy the requirement for a concise explanation of relevance under 37 CFR §1.98(a)(3) and MPEP §609:

DE102008063887 (A1): An English language Abstract of the foreign language document is provided herewith, which was obtained from Espacenet (http://worldwide.espacenet.com).

KR200410373 (Y1): An English language Abstract of the foreign language document is provided herewith, which was obtained from Espacenet (http://worldwide.espacenet.com).

KR20200016717 (A): An English language Abstract of the foreign language document is provided herewith, which was obtained from Espacenet (http://worldwide.espacenet.com).

CN202672848 (U): An English language Abstract of the foreign language document is provided herewith, which was obtained from Espacenet (http://worldwide.espacenet.com).

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /J.Y.K/

Citation of the listed references is not to be construed as an admission that any of the references are "material" as defined under 37 C.F.R. § 1.56(b). Form PTO/SB/08A is included herewith. Consideration and entry into the record of these references is respectfully requested.

Please charge any fees associated with this information disclosure statement to deposit account 07-0960.

Respectfully submitted,

By: __/Quincy J. Harrison/_____
Quincy J. Harrison
Reg. No. 65,374

Date: __11/6/2024_____

QUINN IP LAW
21500 Haggerty Road, Suite 300
Northville, Michigan 48167
Phone: 248-380-9300
Fax: 248-380-8968

/JASON Y KO/ 12/26/2024

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /J.Y.K/

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Ex. 1002
Page 229 of 701

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-22)
Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	18804396
Filing Date	2024-08-14
First Named Inventor	Dean Schumacher
Art Unit	1711
Examiner Name	Jason Y. Ko
Attorney Docket Number	AGD0100.7

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	8378323	B1	2013-02-19	Spann et al.	
	2	8203124	B2	2012-06-19	Havens et al.	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							☐

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First Named Inventor	Dean Schumacher
Art Unit	1711
Examiner Name	Jason Y. Ko
Attorney Docket Number	AGD0100.7

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
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EXAMINER SIGNATURE

Examiner Signature	/JASON Y KO/	Date Considered	12/26/2024

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	18804396
Filing Date	2024-08-14
First Named Inventor	Dean Schumacher
Art Unit	1711
Examiner Name	Jason Y. Ko
Attorney Docket Number	AGD0100.7

CERTIFICATION STATEMENT

Please see 37 CFR 1.97(e) to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☒ A certification statement is not submitted herewith.

FEE

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

COPIES

☐ An identification of an earlier application pursuant to 37 CFR 1.98 (d) (1) is attached.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Quincy J. Harrison/	Date (YYYY-MM-DD)	2024-11-20
Name/Print	Quincy J. Harrison	Registration Number	65,374

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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.**

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Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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Bibliographic Data

Application No: 18/804,396

Foreign Priority claimed: ○ Yes ◉ No

35 USC 119 (a-d) conditions met: ☐ Yes ☑ No ☐ Met After Allowance

Verified and Acknowledged: /JASON Y KO/ Examiner's Signature | Initials

Title: SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
08/14/2024	250	1711	
RULE			

APPLICANTS

INVENTORS

Dean Schumacher, Orchard Lke, MI, UNITED STATES

CONTINUING DATA

This application is a CON of 18508686 11/14/2023

18508686 is a CON of 17496237 10/07/2021 PAT 11813373

17496237 is a CON of 17032187 09/25/2020 PAT 11400174

17032187 is a CON of 15831043 12/04/2017 PAT 10792380

15831043 is a CON of 14299815 06/09/2014 PAT 9833525

14299815 is a CIP of 14252294 04/14/2014ABN

14252294 is a CON of 13070044 03/23/2011 PAT 8698100

FOREIGN APPLICATIONS

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08/27/2024

** **SMALL ENTITY** **

STATE OR COUNTRY

UNITED STATES

ADDRESS

FILING FEE RECEIVED

$2,400

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

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Approved for use through 05/31/2024. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	18804396
Filing Date	2024-08-14
First Named Inventor	Dean Schumacher
Art Unit	1711
Examiner Name	Jason Y. Ko
Attorney Docket Number	AGD0100.7

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	10092669	B2	2018-10-09	John J. Marshall	
	2	10309124	B2	2019-06-04	Darren York	
	3	10455936	B2	2019-10-29	Jacob Vincent McKnight	
	4	10994040	B2	2021-05-04	Robert M. Kennedy	
	5	4710634		1987-12-01	Richard L. Brookes	
	6	7175807	B1	2007-02-13	Kelly L. Jones	
	7	7989779	B1	2011-08-02	David A. Ray	
	8	9649398	B1	2017-05-16	Darren York	

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	First Named Inventor	Dean Schumacher
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	Examiner Name	Jason Y. Ko
	Attorney Docket Number	AGD0100.7

	9	D895764	S1	2020-09-08	Darren York	
	10	D905827	S1	2020-12-22	Darren York	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20050230638	A1	2005-10-20	Bruce Ancona	
	2	20060243762	A1	2006-11-02	Simon Sassoon	
	3	20080023497	A1	2008-01-31	Simon Sassoon	
	4	20100051641	A1	2010-03-04	Simon Sassoon	
	5	20110174992	A1	2011-07-21	Masami Sakita	
	6	20120176241	A1	2012-07-12	Scott Pasch	
	7	20120305804	A1	2012-12-06	Edward Goldman	

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	Art Unit	1711
	Examiner Name	Jason Y. Ko
	Attorney Docket Number	AGD0100.7

	8	20170246332	A1	2017-08-31	John J. Marshall		
	9	20180085481	A1	2018-03-29	Dean Schumacher		
	10	20180119447	A1	2018-05-03	Darren York		
	11	20180339075	A1	2018-11-29	Robert M. Kennedy		
	12	20190117806	A1	2019-04-25	Amos Cahan		
	13	20190388572	A1	2019-12-26	Theodore John Cole		
	14	20200217102	A1	2020-07-09	Abdul Jabbar Gargash		

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] ¡	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	102008063887	DE	A1	2010-07-01	Brieseck Bernd		☐
	2	200410373	KR	Y1	2006-03-08	Chung Junwon		☐

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	Art Unit	1711
	Examiner Name	Jason Y. Ko
	Attorney Docket Number	AGD0100.7

	3	2009056765	WO	A2	2009-05-07	Jaffres Remy		☐
	4	20200016717	KR	A	2020-02-17	Kwon Hyeon UK		☐
	5	202672848	CN	U	2013-01-16	Yao Shiru		☐

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	Extended European Search Report from European Application No. 21843406.6 dated September 23, 2024; 16 pages.	☐
	2	International Search Report and Written Opinion issued in Application No. PCT/US2021/041606 dated October 21, 2021; 10 pages.	☐
	3	Non-Final Office Action issued in Application No. 17/496,237 dated February 9, 2023; 5 pages.	☐
	4	Final Office Action issued in Application No. 15/932,221 dated March 22, 2022; 17 pages.	☐
	5	Non-Final Office Action issued in Application No. 17/032,187 dated March 2, 2022; 7 pages.	☐

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Art Unit	1711
Examiner Name	Jason Y. Ko
Attorney Docket Number	AGD0100.7

EXAMINER SIGNATURE			
Examiner Signature	/JASON Y KO/	Date Considered	12/26/2024

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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Application Number	18804396
Filing Date	2024-08-14
First Named Inventor	Dean Schumacher
Art Unit	1711
Examiner Name	Jason Y. Ko
Attorney Docket Number	AGD0100.7

CERTIFICATION STATEMENT

Please see 37 CFR 1.97(e) to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☒ A certification statement is not submitted herewith.

FEE

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

COPIES

☐ An identification of an earlier application pursuant to 37 CFR 1.98 (d) (1) is attached.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Quincy J. Harrison/	Date (YYYY-MM-DD)	2024-11-06
Name/Print	Quincy J. Harrison	Registration Number	65,374

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PC 6.1.24

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ABSTRACT KR200375295Y1

[]

The present invention relates to a mobile phone charging device having a composite function for charging and storing a mobile phone, and more specifically, to a charging device having a charging function for connecting to a standard charger as a basic function, as well as a sterilizing function using an ultraviolet lamp, a fragrance function for imparting fragrance to a mobile phone using an air freshener, and a hands-free function for enabling communication during charging.

The device according to the present invention comprises: an ultraviolet lamp installed inside a concave portion formed on the side or bottom; an ON/OFF switch for controlling the operation of the ultraviolet lamp;

A longitudinal stand including a connecting terminal and a fixing support for fixing a mobile phone in the longitudinal direction, a cover for protecting a mobile phone in a charged state from the outside; and

It comprises a charging terminal adjustment lever for adjusting the position of the above connecting terminal and the spacing between the terminals; and it is characterized in that the power for operating the UV lamp above uses a connecting terminal for charging a mobile phone.

RS232C connector, PCB, UV lamp, fixed support

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Patents KR200375295

An Apparatus Having Multiple Functions for Changing Cellular Phone

Abstract

The present invention relates to a mobile phone charging device having a complex function for charging and storage of a mobile phone, and more specifically, sterilization function using an ultraviolet lamp as well as a function for charging with a standard charger which is a basic function; Aroma function to make the phone smell using the fragrance; it relates to a charging device with a hands-free function which enables communication during charging.
The device according to the present invention is an ultraviolet lamp which is installed inside the recessed portion formed on the side or bottom; An on / off switch for controlling the operation of the ultraviolet lamp;
A length-shaped pedestal comprising a connection terminal and a fixing support for fixing the mobile phone in a longitudinal direction; A cover for protecting a mobile phone in a charged state from the outside; And
A charging terminal adjustment lever for adjusting a position of the connection terminal and a gap between the terminals; The power source for the operation of the UV lamp is characterized in that for using the connection terminal for charging the mobile phone.

Classifications

- H02J7/0042 Circuit arrangements for charging or depolarising batteries or for supplying loads from batteries characterised by the mechanical construction

View 2 more classifications

KR200375295Y1
South Korea

Download PDF Find Prior Art Similar

Other languages: Korean

Inventor: 이미경, 정승엽

Worldwide applications

2004 KR

Application KR20-2004-0033603U events

2004-11-26 Application filed by 이미경, 정승엽
2004-11-26 Priority to KR20-2004-0033603U
2005-02-07 Application granted
2005-02-07 Publication of KR200375295Y1

Info: Cited by (1), Legal events, Similar documents, Priority and Related Applications

External links: Espacenet, Global Dossier, Discuss

Claims (3)

Hide Dependent

1. In the mobile phone charging device,

   An ultraviolet lamp installed inside the recessed portion formed on the side or bottom;

   An on / off switch for controlling the operation of the ultraviolet lamp;

   A length-shaped pedestal comprising a connection terminal and a fixing support for fixing the mobile phone in a longitudinal direction;

   A cover for protecting a mobile phone in a charged state from the outside; And

   A charging terminal adjustment lever for adjusting a position of the connection terminal and a gap between the terminals;

   The power supply for the operation of the UV lamp in the cell phone charging device, characterized in that using the connection terminal for charging the mobile phone.

2. The method according to claim 1,

   Charging the mobile phone is a mobile phone charging device, characterized in that using the RS-232C cable.

3. The method according to claim 1

   Cell phone charging device including an outlet for connecting the external connection terminal of the mobile phone in the state of charge with earphones.

Description

An Apparatus Having Multiple Functions for Changing Cellular Phone

The present invention relates to a mobile phone charging device having a complex function for charging and storage of a mobile phone, and more specifically, sterilization function using an ultraviolet lamp as well as a function for charging with a standard charger which is a basic function; Aroma function to make the phone smell using the fragrance; it relates to a charging device with a hands-free function which enables communication during charging. Filling device according to the present invention for the function as described above is applied to the pedestal of the horizontal form in order to maximize the irradiation range of ultraviolet rays to achieve a sterilization function.

Unlike the past, the current mobile phone with a standard charging cable has been distributed with a mobile device and a charging charging device at the time of purchase and sold as a single product, and a cable type charger is sold separately. To charge the phone, the standard charger connects directly to the RS-232-C connector located at the bottom of the phone, or by connecting the standard charger to the charging device provided with the phone. However, the provided mobile phone charging device is insufficient to provide convenience for the user. Therefore, the multifunction charging device according to the present invention provides a mobile

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phone charging device suitable for the ideology of the well-being-oriented modern society by increasing the quality of life according to the use of the mobile phone with various functions.

Mobile phones, which are usually operated by human hands, carried in pockets or handbags or bags, and used as needed, can be contaminated with sweat and germs on the hands and unpleasant odors caused by dust or other objects in the pockets or bags. Can penetrate the phone, causing unpleasant emotions to the user.

In order to solve this problem, a proposal for a cell phone charging device capable of sterilization using ultraviolet rays is disclosed in Application No. 20-2003-0031343. The above invention is located inside the device where the germicidal ultraviolet lamp and the charging terminal of the mobile phone can be opened and closed by a transparent or translucent crystal lid, so that the mobile phone charging can simultaneously perform the charging function and the sterilization function as well as the lighting function it features a device.

The proposed mobile phone charger uses a separate power source for charging a mobile phone and an ultraviolet lamp, which requires a complicated electric circuit, and increases the manufacturing cost due to the complexity of the device. It is designed to irradiate ultraviolet rays in the unfolded state, which is not suitable for personal use. In addition, it is bulky and inconvenient to use on a desk or table, which is not easy to use at home or office, especially for personal use. In addition, unlike the past, it is possible to charge mobile phones of different manufacturing models with one charger unlike the past, in order to prevent excessive waste of mobile phone chargers nationally. Therefore, it is important to prevent the waste of national industrial resources by using standardized chargers, but the existing technology has a defect that overlooks these problems. In addition, there was also a problem of lowering the user's satisfaction by not giving practical pleasure to give a refreshing feeling after performing a function such as sterilization, and to maintain the ambient temperature above room temperature for the sterilization function of the ultraviolet lamp. By using an opening / closing lid, it was inconvenient to receive a telephone call while storing a mobile phone for charging.

Therefore, the present invention is to solve the problems of the conventional charging device as described above has the following object.

It is an object of the present invention to provide a charging device having a charging function for connecting with a standard charger, a sterilization function using an ultraviolet lamp, a fragrance function using a fragrance, and a complex function for receiving a call received in a charged state. . Filling device according to the present invention is to provide a well-being complex charging device by applying a horizontal form pedestal to expand the folder for a sufficient effect of the sterilization function and having the various functions as described above.

One embodiment of the device according to the invention to achieve the above object in the mobile phone charging device,

An ultraviolet lamp installed inside the recessed portion formed on the side or bottom;

An on / off switch for controlling the operation of the ultraviolet lamp;

A length-shaped pedestal comprising a connection terminal and a fixing support for fixing the mobile phone in a longitudinal direction;

A cover for protecting a mobile phone in a charged state from the outside; And

A charging terminal adjustment lever for adjusting a position of the connection terminal and a gap between the terminals;

The power source for the operation of the UV lamp is characterized in that for using the connection terminal for charging the mobile phone.

According to another embodiment of the present invention, the charging of the mobile phone is characterized by using an RS-232C cable.

And according to another embodiment of the present invention, it includes an outlet for connecting the external connection terminal of the mobile phone in the state of charge with earphones.

Hereinafter, the device according to the present invention will be described in detail.

Figure 1 shows a circuit associated with the ultraviolet lamp power supply according to the present invention.

2 is a perspective view of an embodiment of a charging device with a complex function according to the present invention.

Figure 3 shows a perspective view of another embodiment of a charging device having a complex function according to the present invention.

<Description of Major Codes in Drawings>

1: UV lamp, 2: PCB for UV lamp, 3: RS232C connection terminal

4: UV lamp ON / OFF switch, 5: Charging terminal control lever, 6: Charging terminal

7: fixed support, 8: cover

Hereinafter, the charging device according to the present invention will be described in detail with reference to the embodiments presented by using the accompanying drawings. The examples presented are exemplary and are not intended to limit the scope of the present invention.

1 shows a circuit of a charging device with a complex function according to the present invention.

As shown in FIG. 1, the charging device according to the present invention uses a standard charging device that receives an AC voltage from an external terminal. A standard charging device converts alternating current into direct current to charge your phone. Draw the lead wire for the UV lamp from the two terminals of the RS-232C serial cable used for charging. Since the UV lamp needs to be adjusted separately from the charging of the mobile phone, a separate switch is preferably installed. As described above, the charging device having a complex function according to the present invention is characterized by using a connection terminal of a standard charger without using a separate power source for the operation of the UV lamp. The UV lamp is preferably a UV lamp having a wavelength of 250 to 260 nm. This is because the ultraviolet rays in the wavelength band can be used at room temperature due to the high absorption of air. In addition, the ultraviolet lamps used are manufactured using quartz or special glass that can transmit ultraviolet rays, and commercially available ultraviolet lamps may be used in consideration of size and wavelength. Since the UV lamp is different from the voltage used for charging the mobile phone, it can be converted into a voltage suitable for the operation of the UV lamp by using an inverter (PCB). The inverter may be a known inverter commercially available.

Figure 2 shows a perspective view of one embodiment of a charging device with a complex function according to the present invention.

The charging device according to the present invention has a size of a mobile phone charging device generally used, and includes a horizontal lamp holder including a UV lamp device, a connection terminal and a fixed support, and a cover. The UV lamp device comprises a UV lamp 1 and an inverter 2 as described above which are installed at the bottom of the device. The device according to the present invention is made of the overall structure so that the mobile phone is charged in a horizontal form and

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the UV lamp 1 sterilizes the mobile phone by irradiating ultraviolet rays from the bottom. In general, since the light of the UV lamp 1 is emitted in all directions, it is advantageous to allow more light from the UV lamp 1 to be irradiated to the mobile phone. Therefore, a separate induction wall may be installed but the UV lamp 1 may be installed in a recess formed on the bottom surface in consideration of the problem of manufacturing cost. The lower surface of the UV lamp may be provided with a reflecting plate if necessary. The UV lamp 1 is advantageously installed in the longitudinal direction of the mobile phone, and the ON / OFF switch 4 may be installed at an appropriate position of the device in order to operate the UV lamp 1 separately from the charging device. As described above, in the device according to the present invention, the direct current power for operating the UV lamp 1 is drawn from the terminal for charging the mobile phone, but it is advantageous to install a separate operation switch to operate the UV lamp 1 as necessary. Do.

The fixing device of the device according to the present invention includes an RS232C connection terminal 3, a charging terminal control lever 5, a charging terminal 6, and a fixed support 7. The RS232C connection terminal (3) is a cable for charging a standard mobile phone and the charging terminal control lever (5) is the height of the charging terminal (6) or the spacing between the charging terminals (6), if necessary, to charge different types of mobile phones. It is a means to control the. And the fixed support 7 is a means for fixing the other end of the mobile phone in the state of charge.

The cover 8 is for protecting the mobile phone in a charged state from external dust and the like and also preventing the light from the UV lamp 1 from being emitted to the outside. The cover 8 is preferably made of a transparent material and coated with a sunscreen. The cover 8 is advantageously made to be opened and closed in a charged state and at the same time installed so that the folder of the mobile phone can be opened in the charged state. In the charging device according to the present invention is formed to enable a call in the process of charging the mobile phone. That is, it can be configured to enable communication when a call signal is received by connecting a mobile phone using a suitable earphone connection terminal. To this end, a suitable outlet is formed in the cover 8 or the cover 8 and the boundary portion adjacent to the lower part of the device so as to connect the earphone connection terminal and the like. Such a device according to the present invention enables a hands-free function.

In addition, the ON / OFF switch 4 used in the charging device according to the present invention may be in the form of a control switch that can adjust the intensity of the ultraviolet light emitted from the UV lamp (1). The control switch type may be one of a type known in the art.

Although not shown in FIG. 2, a fragrance may be installed in the device according to the present invention. The fragrance can be fixed in a suitable place inside the device in the form of a small container or installed on the cover 8. Alternatively, it may be fixed to the floor or the side or the cover 8 using a fragrance in the form of a cardboard. The installation of the fragrance may be appropriately installed using the empty space formed inside the container.

Figure 3 shows a perspective view of another embodiment of a charging device having a complex function according to the present invention.

In the charging device according to the present invention shown in FIG. 3, unlike the embodiment shown in FIG. 2, the UV lamp 1 is installed on the side of the device, and in the case of a folder-type mobile phone, the folder can be opened upward. It is charged. The UV lamp 6 is appropriately installed in the form of a recess in the inner inner wall of the device so that the ultraviolet light can be sufficiently irradiated to the mobile phone in the state of charge. The use of an external terminal of the mobile phone to enable a call in a charged state and the installation of a fragrance are similar to those in the description related to FIG. 2. In addition, the device according to the present invention as shown in 3 is that the mobile phones are all fixed in the longitudinal direction is the same as described in the embodiment related to FIG.

The charging device according to the present invention has been described in detail by using an embodiment. The embodiments presented are exemplary and various modifications and modifications can be made, and the scope of the present invention is not limited by such modifications and modifications, and the scope of the present invention is attached to the utility model registration claims attached below. Limited only by

The charging device according to the present invention has an effect of providing a user's convenience in a modern society oriented to a well-being society by having a sterilization function, a directional function, and a hands-free function in a charged state. In addition, by using the existing standard charging cable, it is possible to reduce manufacturing costs by eliminating the need for an additional power supply unit and using an additional electric device such as an AC-DC converter. .

Cited By (1)

Publication number	Priority date	Publication date	Assignee	Title
KR100842607B1	2006-10-13	2008-07-01	삼성전자주식회사	Charging cradle for head set device and speaker cover for head set device

Family To Family Citations

* Cited by examiner, † Cited by third party, ‡ Family to family citation

Similar Documents

Publication	Publication Date	Title
US20160176826A1	2016-06-23	Desk Top Item with LED Means has USB-Units or USB- Module to Charge Other Electric or Digital Data Devices
CN201768186U	2011-03-23	Automatic induction sterilizer for mobile phones
US9884844B2	2018-05-29	Switch device and power supply control system
US20200284423A1	2020-09-10	LED Desktop Items or Power Strip has Quickly Charge Detachable USB-Unit(s) with Wire
DE112014001503T5	2015-12-17	Ultraviolet disinfection housing
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ES2566013T3	2016-04-08	Electrical installation device with charging device for a mobile phone
ZA200306264B	2004-06-30	Box with hinged lid.

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US6490351B1	2002-12-03	Telephone handset sterilizer method and apparatus
CN102157068B	2012-10-17	Intelligent illumination lamp
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US20060254636A1	2006-11-16	Sunshade with socket device
US20060227538A1	2006-10-12	Illuminated purse
US20020027777A1	2002-03-07	Headlight
KR101692213B1	2017-01-06	Sound output type solar light
AU2003281601A1	2003-06-30	Container with hinged lid
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CN105351866B	2018-07-17	A kind of manufacturing method of the LED sterilization desk lamps with fleshlight
TW200642411A	2006-12-01	Mobile communications apparatus having solar cell
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KR20180135840A	2018-12-21	Puff sanitizer of cosmetics kit using UV LED
CN106168353A	2016-11-30	Intelligent desk lamp
KR20060012144A	2006-02-07	Cellular phone charger with ultraviolet sterilizer

Priority And Related Applications

Priority Applications (1)

Application	Priority date	Filing date	Title
KR20-2004-0033603U	2004-11-26	2004-11-26	An Apparatus Having Multiple Functions for Changing Cellular Phone

Applications Claiming Priority (1)

Application	Filing date	Title
KR20-2004-0033603U	2004-11-26	An Apparatus Having Multiple Functions for Changing Cellular Phone

Legal Events

Date	Code	Title	Description
2005-01-28	REGI	Registration of establishment	
2008-01-28	FPAY	Annual fee payment	Payment date: 20080129 Year of fee payment: 4
2009-01-29	LAPS	Lapse due to unpaid annual fee	

Concepts

machine-extracted

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Name	Image	Sections	Count	Query match
cellular		title,description	2	0.000
sterilising		abstract,description	10	0.000
fragrance		abstract,description	9	0.000
communication		abstract,description	3	0.000
smell		abstract,description	2	0.000

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(19)대한민국특허청(KR)
(12) 등록실용신안공보(Y1)

(51) 。 Int. Cl.[7]
H02J 7/00
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(74) 대리인 김홍균

기초적요건 심사관 : 이창용

(54)복합 기능을 가진 휴대폰 충전 장치

요약

본 고안은 휴대폰의 충전 및 보관을 위한 복합 기능을 가진 휴대폰 충전 장치와 관련되고, 보다 상세하게는 기본 기능인 표준 충전기와 연결하는 충전을 위한 기능뿐만 아니라 자외선 램프를 이용하는 살균기능; 방향제를 이용하여 휴대폰에 향이 스미도록 하는 방향 기능; 충전 중에 통신이 가능하도록 하는 hands-free 기능을 구비한 충전 장치와 관련된다.

본 고안에 따른 장치는 측면 또는 바닥에 오목하게 형성된 부분의 내부에 설치되는 자외선 램프; 상기 자외선 램프의 작동을 조절하기 위한 ON/OFF 스위치;

휴대폰을 길이 방향으로 고정시키기 위한 연결 단자 및 고정 지지대를 포함하는 길이 형태의 받침대; 충전 상태의 휴대폰을 외부로부터 보호하기 위한 덮개; 및

상기 연결 단자의 위치 및 단자 간의 간격을 조절하기 위한 충전 단자 조절 레버를 포함하고; 상기에서 UV 램프의 작동을 위한 전원은 휴대폰 충전을 위한 연결 단자를 이용하는 것을 특징으로 한다.

대표도

도 2

색인어

RS232C 연결단자, PCB, 자외선 램프, 고정 지지대

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명세서

도면의 간단한 설명

도 1은 본 고안에 따른 자외선 램프 전원 공급과 관련된 회로를 도시한 것이다.

도 2는 본 고안에 따른 복합 기능을 가진 충전 장치의 실시 예에 대한 사시도를 도시한 것이다.

도 3은 본 고안에 따른 복합 기능을 가진 충전 장치의 다른 실시 예에 대한 사시도를 도시한 것이다.

<도면의 주요 부호의 설명>

1: 자외선 램프, 2: 자외선 램프용 PCB, 3: RS232C 연결 단자

4: 자외선 램프 ON/OFF 스위치, 5: 충전단자 조절 레버, 6: 충전 단자

7: 고정 지지대, 8: 덮개

고안의 상세한 설명

고안의 목적

고안이 속하는 기술 및 그 분야의 종래기술

본 고안은 휴대폰의 충전 및 보관을 위한 복합 기능을 가진 휴대폰 충전 장치와 관련되고, 보다 상세하게는 기본 기능인 표준 충전기와 연결하는 충전을 위한 기능뿐만 아니라 자외선 램프를 이용하는 살균기능; 방향제를 이용하여 휴대폰에 향이 스미도록 하는 방향 기능; 충전 중에 통신이 가능하도록 하는 hands-free 기능을 구비한 충전 장치와 관련된다. 상기와 같은 기능을 위하여 본 고안에 따른 충전 장치는 자외선의 조사 범위를 최대화하여 살균 기능을 충분히 이루어지도록 하기 위하여 가로로 된 형태의 받침대를 적용한다.

과거와 달리 표준형 충전케이블이 보급된 현재의 휴대폰은 구매 시에 휴대폰 기기와 충전용 충전 장치가 함께 포장되어 단일 상품으로 판매되고, 케이블형 충전기는 별도로 판매되고 있는 실정이다. 휴대폰 충전을 위해 표준 충전기를 휴대폰의 하부에 위치한 RS-232-C 커넥터에 직접 연결하거나 휴대폰과 함께 제공되는 충전 장치에 표준 충전기를 상호 연결하여 충전을 하고 있다. 그러나 제공되는 상기 휴대폰 충전 장치는 사용자 입장의 편의를 제공하기에는 부족하다. 그러므로 본 고안에 따른 복합 기능을 가진 충전 장치는 다양한 기능을 구비하여 휴대폰 사용에 따른 삶의 질을 높여 Well-Being 지향의 현대 사회의 이념에 적합한 휴대폰 충전 장치를 제공한다.

일반적으로 사람의 손으로 주로 조작하고 호주머니 또는 핸드백이나 가방을 이 용하여 소지하고 필요 시 사용되는 휴대폰은 손에 묻어 있는 땀과 세균에 오염될 수 있고 호주머니나 가방 내부의 먼지나 다른 물건으로 인해 불쾌한 냄새가 휴대폰에 스며들 수 있어 사용자에게 불쾌한 감정을 유발할 수 있다.

이와 같은 문제점을 해결하기 위하여 자외선을 이용하여 살균이 가능한 휴대폰 충전장치에 대한 제안이 출원번호 20-2003-0031349에 개시되어 있다. 상기 고안은 살균 자외선 램프와 휴대폰의 충전 단자가 투명 또는 반투명의 크리스털 뚜껑에 의해 개폐될 수 있는 장치 내부에 위치되어, 휴대폰의 충전 기능 및 살균 기능은 물론이고 조명 기능을 동시에 수행할 수 있는 휴대폰 충전 장치를 특징으로 한다.

상기에서 제안된 휴대폰 충전기는 휴대폰 충전과 자외선 램프를 위하여 별도의 전원을 사용하도록 되어 있어 복잡한 전기회로를 필요로 하고, 장치가 복잡하여 제조 비용이 증가한다는 문제점을 가질 뿐만 아니라, 폴더 형태의 휴대폰을 펼친 상태에서 자외선을 조사하도록 되어 있어 개인용으로 사용하기에는 부적절하다는 문제점을 가지고 있다. 이에 더하여 부피가 커져 책상이나 탁자 위에 올려 놓고 사용하기가 불편하여 특히 개인용으로 가정이나 사무실에서 사용하는 것이 불편하다는 결함이 있었다. 또한, 휴대폰 충전기의 과도한 낭비를 국가적으로 방지하기 위하여 충전기 규격의 표준화를 통해 과거와는 달리 하나의 충전기로 서로 다른 제조모델의 휴대폰들을 충전하는 것이 가능해 졌다. 따라서 표준화된 충전기를 그대로 이용하여 국가적 산업 자원 낭비를 방지하는 것도 중요한 사안이나 기존의 기술은 이러한 문제점을 간과하는 결함을 갖고 있었다. 추가로 살균과 같은 기능을 수행한 이후의 상쾌한 느낌을 줄 수 있도

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록 실질적인 쾌감을 주지 못하여 이용자의 만족도 를 저하시키는 문제점을 또한 갖고 있었으며, 자외선 램프의 살균 기능을 위해 주변온도를 상온이상으로 유지하기 위한 개폐용 뚜껑을 사용함으로써 충전 등을 위한 휴대폰의 보관 중에 오는 전화를 받는 것이 불편한 결함을 갖고 있었다.

그러므로 본 고안은 위와 같은 종래의 충전 장치의 문제점을 해결하기 위한 것으로서 아래와 같은 목적을 가진다.

고안이 이루고자 하는 기술적 과제

본 고안의 목적은 표준 충전기와 연결하는 충전을 위한 충전 기능, 자외선 램프를 이용한 살균기능, 방향제를 이용한 방향 기능 및 충전 상태에서 수신되는 전화를 받을 수 있는 복합 기능을 구비한 충전 장치를 제공하는 것이다. 본 고안에 따른 충전 장치는 살균기능의 충분한 효과를 위해 폴더를 펼칠 수 있는 가로 형태 받침대를 적용하고 위와 같은 다양한 기능을 구비하여 Well-Being 형태의 복합 충전 장치를 제공할 수 있도록 한다.

위와 같은 목적을 이루기 위하여 고안에 따른 장치의 하나의 실시 예는 휴대폰 충전 장치에 있어서,

측면 또는 바닥에 오목하게 형성된 부분의 내부에 설치되는 자외선 램프;

상기 자외선 램프의 작동을 조절하기 위한 ON/OFF 스위치;

휴대폰을 길이 방향으로 고정시키기 위한 연결 단자 및 고정 지지대를 포함하는 길이 형태의 받침대;

충전 상태의 휴대폰을 외부로부터 보호하기 위한 덮개; 및

상기 연결 단자의 위치 및 단자 간의 간격을 조절하기 위한 충전 단자 조절 레버를 포함하고;

상기에서 UV 램프의 작동을 위한 전원은 휴대폰 충전을 위한 연결 단자를 이용하는 것을 특징으로 한다.

본 고안의 다른 실시 예에 따르면 상기 휴대폰의 충전은 RS-232C 케이블을 이용하는 것을 특징으로 한다.

그리고 본 고안의 또 다른 실시 예에 따르면, 상기 충전 상태에 있는 휴대폰의 외부 연결 단자를 이어폰 등으로 연결하기 위한 출구를 포함한다.

아래에서 본 고안에 따른 장치를 상세하게 설명한다.

고안의 구성 및 작용

아래에서 본 고안에 따른 충전 장치를 첨부된 도면을 이용하여 제시된 실시 예로서 상세하게 설명한다. 제시된 실시 예는 예시적인 것이며 본 고안의 범위를 제한하기 위한 것은 아니다.

도 1은 본 고안에 따른 복합 기능을 가진 충전 장치의 회로를 도시한 것이다.

도 1에 도시된 것처럼 본 고안에 따른 충전 장치는 외부 단자로부터 교류 전압의 공급을 받는 표준 충전 장치를 이용한다. 표준 충전 장치는 교류를 직류로 변환하여 휴대폰을 충전시킨다. 충전을 위하여 사용되는 RS-232C 직렬 케이블의 2개의 단자로부터 UV 램프를 위한 연결 선을 인출시킨다. 상기 UV 램프는 휴대폰의 충전과는 별도로 연결 상태가 조정될 필요가 있으므로 별도의 스위치가 설치되는 것이 바람직하다. 위와 같이 본 고안에 따른 복합 기능을 가진 충전 장치는 UV 램프의 작동을 위한 별도의 전원을 사용하지 않고 표준 충전기의 연결 단자를 이용하는 것을 특징으로 한다. 상기 UV 램프는 250 내지 260 nm 파장을 가지는 UV 램프가 적절하다. 상기 파장대의 자외선은 공기의 흡수도가 높아 상온에서도 사용가능하기 때문이다. 또한 사용되는 자외선 램프는 자외선을 투과시킬 수 있는 석영 또는 특수 유리를 사용하여 제작되며, 크기 및 파장을 고려하여 상업적으로 이용 가능한 자외선 램프가 사용될 수 있다. 상기 UV 램프는 휴대폰의 충전을 위하여 사용되는 전압과 다르므로 인버터(PCB)를 이용하여 UV 램프의 작동에 적합한 전압으로 변환될 수 있다. 상기 인버터는 상업적으로 이용 가능한 공지의 인버터가 될 수 있다.

도 2는 본 고안에 따른 복합 기능을 가진 충전 장치의 하나의 실시 예에 대한 사시도를 도시한 것이다.

본 고안에 따른 충전 장치는 일반적으로 사용되는 휴대폰 충전 장치의 크기를 가지며, UV 램프 장치, 연결 단자 및 고정 지지대를 포함하는 가로 형태의 받침대, 그리고 덮개를 포함한다. 상기 UV 램프 장치는 장치의 아래쪽 바닥에 설

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치되는 위에서 설명한 것과 같은 UV 램프(1) 및 인버터(2)를 포함한다. 본 고안에 따른 장치는 휴대폰이 가로 형태로 충전되도록 전체적인 구조가 만들어지며 UV 램프(1)는 아래쪽으로부터 자외선을 조사하여 휴대폰을 살균한다. 일반적으로 UV 램프(1)의 빛은 모든 방향으로 방출되므로 UV 램프(1)의 빛이 휴대폰으로 보다 많이 조 사되도록 하는 것이 유리하다. 그러므로 별도의 유도 벽이 설치될 수도 있지만 제조 비용의 문제를 고려할 때 UV 램프(1)가 바닥 면에 형성된 오목한 부분 내에 설치될 수도 있다. UV 램프의 아래쪽 면은 필요에 따라 반사 판이 설치될 수도 있다. UV 램프(1)는 휴대폰의 길이 방향으로 설치되는 것이 유리하고, UV 램프(1)를 충전 장치와 별도로 작동시키기 위하여 장치의 적당한 위치에 ON/OFF 스위치(4)가 설치될 수 있다. 이미 설명한 것처럼 본 고안에 따른 장치에서는 UV 램프(1)를 작동시키기 위한 직류 전원은 휴대폰을 충전시키기 위한 단자로부터 인출되지만 별도의 작동 스위치를 설치하여 UV 램프(1)를 필요에 따라 작동시키는 것이 유리하다.

본 고안에 따른 장치의 고정 장치는 RS232C 연결단자(3), 충전 단자 조절 레버(5), 충전 단자(6) 및 고정 지지대(7)를 포함한다. RS232C 연결 단자(3)는 표준 휴대폰 충전을 위한 케이블이며 충전 단자 조질 레버(5)는 서로 다른 형태의 휴대폰을 충전시키기 위하여 충전 단자(6)의 높이 또는 필요한 경우에는 충전 단자(6) 사이의 간격을 조절하기 위한 수단이 된다. 그리고 고정 지지대(7)는 충전 상태에 있는 휴대폰의 다른 한 쪽 끝을 고정시키기 위한 수단이 된다.

덮개(8)는 충전 상태에 있는 휴대폰을 외부 먼지 등으로부터 보호하고 아울러 UV 램프(1)로부터의 빛이 외부로 방출되지 않도록 하기 위한 것이다. 덮개(8)는 투명한 재질로 만들어지고 자외선 차단제에 의하여 코팅이 되는 것이 바람직하다. 상기 덮개(8)는 충전 상태에서 개폐가 가능한 상태로 만들어지며 동시에 충전 상태에서 휴대폰의 폴더가 열릴 수 있도록 설치되는 것이 유리하다. 본 고안에 따른 충전 장치에서는 휴대폰이 충전되는 과정에서는 통화가 가능하도록 형성된다. 즉 적당한 이어폰 연결 단자를 이용하여 휴대폰을 연결하여 통화 신호가 수신되는 경우 통신이 가능하도록 형성될 수 있다. 이를 위하여 덮개(8) 또는 덮개(8)와 장치의 아래쪽 부분과 인접하는 경계 부분에 적당한 인출구가 형성되어 이어폰 연결 단자 등을 연결할 수 있도록 한다. 이와 같은 본 고안에 따른 장치는 hands-free 기능이 가능하도록 한다.

또한 본 고안에 따른 충전 장치에서 사용되는 ON/OFF 스위치(4)는 UV램프(1)에서 방출되는 자외선의 세기를 조절할 수 있는 조질스위치 형태가 될 수 있다. 상기 조질 스위치 형태는 이 분야에서 공지된 형태의 것이 사용될 수 있다.

도 2에는 도시되지 않았지만 본 고안에 따른 장치에는 방향제가 설치될 수 있다. 상기 방향제는 작은 용기 형태로서 장치의 내부 적당한 곳에 고정되거나 또는 덮개(8)에 설치될 수 있다. 또는 판지 형태의 방향제를 사용하여 바닥 또는 측면이나 덮개(8)에 고정될 수도 있다. 상기 방향제의 설치는 용기 내부의 형성되는 빈 공간을 이용하여 적당하게 설치될 수 있다.

도 3은 본 고안에 따른 복합 기능을 가진 충전 장치의 또 다른 실시 예에 대한 사시도를 도시한 것이다.

도 3에 도시된 본 고안에 따른 충전 장치는 도 2에 도시되 실시 형태와는 달리 UV 램프(1)가 장치의 측면에 설치되며 또한 폴더 형태의 휴대폰의 경우 폴더가 위쪽으로 열릴 수 있는 상태로 충전이 된다는 점이다. UV 램프(6)는 적절하게 장치의 내부 안쪽 벽면에 오목하게 들어간 형태로 설치되어 자외선이 충전 상태에 있는 휴대 폰에 충분히 조사될 수 있도록 한다. 휴대폰의 외부 단자를 이용하여 충전 상태에서 통화가 가능하도록 하는 것과 방향제의 설치는 도 2와 관련된 설명에서와 유사하다. 또한 3에 도시된 것처럼 본 고안에 따른 장치는 휴대폰이 모두 길이 방향으로 고정된다는 점은 도 2와 관련된 실시 예에서 설명한 것과 같다.

위에서 본 고안에 따른 충전 장치를 실시 예를 이용하여 상세하게 설명하였다. 제시된 실시 예는 예시적인 것으로서 이에 대한 다양한 변형 및 수정 고안이 만들어질 수 있으며, 이러한 변형 및 수정 고안에 의하여 본 고안의 범위는 제한되지 않으며, 본 고안의 범위는 아래에서 첨부된 실용신안등록청구범위에 의해서만 제한된다.

고안의 효과

본 고안에 따른 충전 장치는 충전 상태에서 살균 기능, 방향 기능 및 hands-free 기능을 가지도록 함으로서 welling-being 사회를 지향하는 현대사회에서 사용자의 편의를 제공하도록 하는 효과를 가진다. 뿐만 아니라 기존의 표준형 충전 케이블을 이용하므로 부가적인 전원부를 장착할 필요 없이 단일회로를 이용하여 교류-직류 변환장치와 같은 추가적인 전기 장치를 필요로 하지 않게 되어 제조상의 비용절감을 할 수 있는 이점을 갖는다.

(57) 청구의 범위

청구항 1.
휴대폰 충전 장치에 있어서,

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측면 또는 바닥에 오목하게 형성된 부분의 내부에 설치되는 자외선 램프;

상기 자외선 램프의 작동을 조절하기 위한 ON/OFF 스위치;

휴대폰을 길이 방향으로 고정시키기 위한 연결 단자 및 고정 지지대를 포함하는 길이 형태의 받침대;

충전 상태의 휴대폰을 외부로부터 보호하기 위한 덮개; 및

상기 연결 단자의 위치 및 단자 간의 간격을 조절하기 위한 충전 단자 조절 레버를 포함하고;

상기에서 UV 램프의 작동을 위한 전원은 휴대폰 충전을 위한 연결 단자를 이용하는 것을 특징으로 하는 휴대폰 충전 장치.

청구항 2.
청구항 1에 있어서,

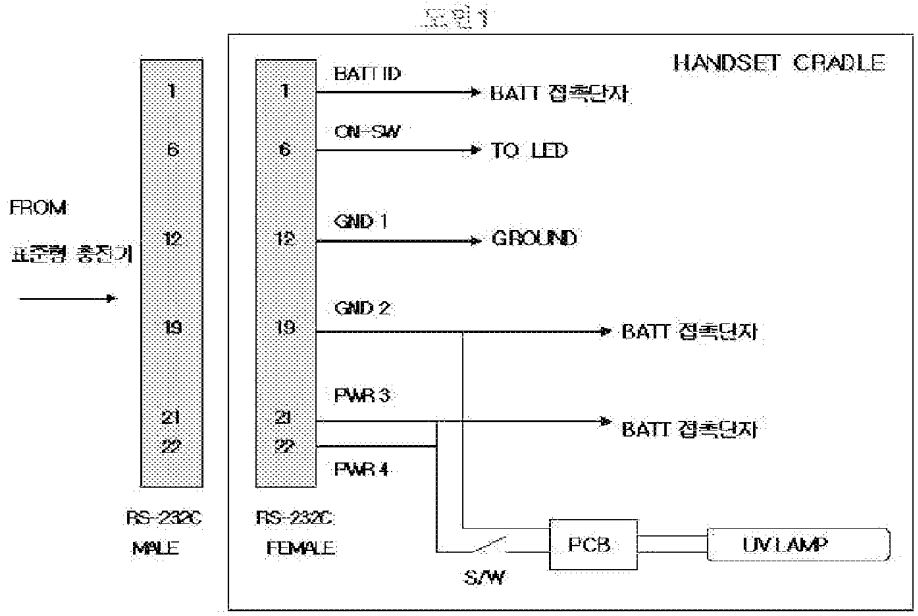
상기 휴대폰의 충전은 RS-232C 케이블을 이용하는 것을 특징으로 하는 휴대폰 충전 장치.

청구항 3.
청구항 1에 있어서

상기 충전 상태에 있는 휴대폰의 외부 연결 단자를 이어폰 등으로 연결하기 위한 출구를 포함하는 휴대폰 충전 장치.

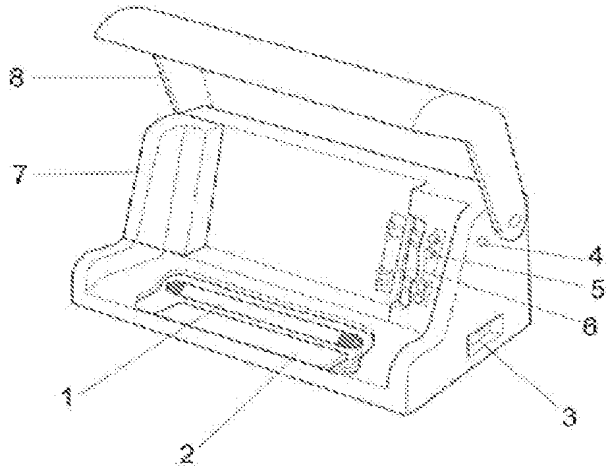
도면

도면1

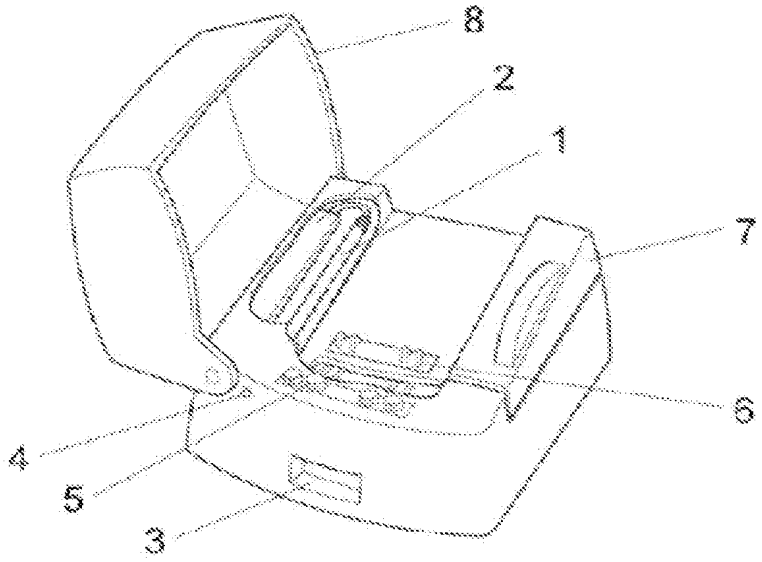


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도면2



도면3



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Espacenet

CN2236317Y Disinfector for probe for medical ultrasonic diagnosis

Applicants: HU SHUNYOU [CN]

Inventors: SHUNYOU HU [CN]

Classifications:
IPC ***A61L2/10;*** (IPC1-7): A61L2/10;

Priorities: CN95242301U 1995-10-27

Application: CN95242301U·1995-10-27

Publication: CN2236317Y·1996-10-02

Published as: CN2236317Y

Disinfector for probe for medical ultrasonic diagnosis

Abstract

The utility model relates to a B-ultrasonic probe disinfector used for disinfecting for B-ultrasonic probe, which comprises a casing, a top cover, a front panel, a closed disinfecting chamber, an ultraviolet light source and a regulated power supply. The automatic control device of the utility model comprises an infrared detector, a disinfecting time counting displaying device, a time presetting displaying device, a comprehensive determiner, a disinfecting power supply control switch, etc. The utility model which can be used for diagnoses when doctors use a B-ultrasonic instrument has the advantages of reliable operation, convenient input, intuitive display, etc., the disinfecting time can be preset and presets automatically, and the disinfecting time can be controlled automatically.

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[19]中华人民共和国专利局

[11] 授权公告号 CN 2236317Y

[12] 实用新型专利说明书

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A61L 2/10

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[21]申请号 95242301.4

[74]专利代理机构 绵阳市专利事务所

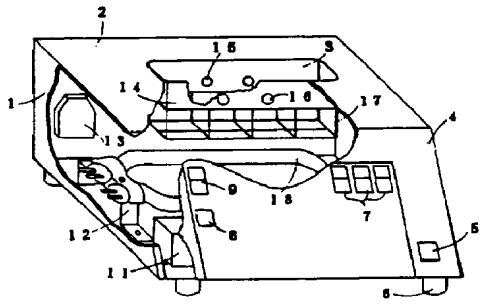
代理人 高 春

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[54]实用新型名称 B超探头消毒器

[57]摘要

一种用于对 B 超探头进行消毒的 B 超探头消毒器，它包括机壳、上盖板、前面板、封闭式消毒仓、紫外线光源和稳压电源，该消毒器由红外检测、消毒时间计数与显示、时间预置与显示、综合判断器和消毒电源控制开关等构成自动控制装置，具有工作可靠，可预置和自动预置消毒时间，可自动对消毒时间进行控制，输入方便和显示直观等优点，可供医生使用 B 超仪进行诊断时使用。



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权　利　要　求　书

1、一种B超探头消毒器，包括具有电源开关（K_1）的机壳，具有消毒窗口的上盖板、前面板；机壳内有紫外线光源，上端开口且与上盖板上的消毒窗口对应的封闭式消毒仓，变压器，稳压电源和自动控制装置；封闭式消毒仓中上部周边有遮光板，中下部为透光栅栏；自动控制装置包括具有过零检测可控硅触发的光电合器驱动双向触发可控硅的驱动电源，其特征是所述的B超探头消毒器中的自动控制装置还包括：

一个红外检测器，它包括具有振荡源和至少一对红外发射管的红外发射器，由至少一对红外接收管和检测信号判断器组成的红外接收器；红外发射管和红外接收管分别位于设置在所述封闭式消毒仓内两侧仓壁上的安装孔中；

一个消毒时间计时与显示器，它包括一个控制端与检测信号判断器输出相连的秒信号发生器，计数输入端与秒信号发生器输出相连的秒分计数器，以及输入分别与秒分计数器的秒、10秒和分的输出相连而输出分别与设置在所述前面板上以显示消毒时间的数码管分别相连的译码／驱动器；

一个时间预置与显示器，它包括分钟预置器，设置于前面板以显示预置时间的数码管，连于分钟预置器与数码管之间的译码／驱动器，以及设置于前面板且与所述分钟预置器计数输入端相连的加置数开关K_2；

一个综合判断器，它的输入分别与所述秒分计数器的分位输出和分钟预置器输出相连；

一个消毒电源控制开关，它由双稳态触发器、非门F_8和电容C_{15}构成，双稳态触发器的Q端与驱动电源控制端相连，$\bar{Q}$端与所述秒分计

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数器清零端相连，CP端与所述综合判断器输出相连，R端与所述检测信号判断器输出端相连，电容C_{15}跨接于非门F_8输出与双稳态触发器的S端，非门F_8输入与双稳态触发器R端相连。

2、按权利要求1所述的B超探头消毒器，其特征是所述的分钟预置器由可预置数的BCD计数器和单稳电路构成，BCD计数器的置数控制端可根据需要与电源的高或低端相连，其置数端与单稳电路输出相连，计数输入端与电源低端之间连所述加置数开关K_2。

3、按权利要求1所述的B超探头消毒器，其特征是所述的红外检测器中，检测信号判断器是两输入端与非门F_0，在与非门F_0的两个输入与所述一对红外接收管的两个输出之间，分别依次连有结构相同的放大器，T型滤波器和整形器。

4、按权利要求1、2所述的B超探头消毒器，其特征是所述的综合判断器包括四个开关组和一个四输入端与门F_{00}，每个开关组包括两只输出相连且分别作为控制开关和补偿开关的双向模似开关，在四个开关组中，各个补偿开关的输入与高电位之间分别连有一只电阻，各个补偿开关的控制端分别与所述BCD计数器的$\bar{Q}_1 \sim \bar{Q}_4$端依次相连；各个控制开关的输入分别与所述秒分计数器中分位的$Q_1 \sim Q_4$端依次相连，各个控制开关的控制端分别与所述BCD计数器的$Q_1 \sim Q_4$依次相连；四个开关组的输出分别与四输入端与门F_{00}的输入相连，F_{00}的输出为综合判断器的输出。

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说　　明　　书

B 超探头消毒器

本实用新型涉及紫外线消毒器，尤其是一种适用于对医用B超探头进行消毒的B超探头消毒器。

为了减少使用B超进行诊断时对所造成的交叉感染，出现了许多对B超探头进行消毒的消毒器。紫外线光源消毒器（专利申请号为：95241554.2）是其中的一种。这种消毒器由机壳、支撑架、紫外线光源和自动控制装置构成，具有安全、消毒时间可以进行选择等优点。但不足的是：(1)该消毒器用于判断探头是否置入消毒器的检测机构是机械开关，由于机械开关的一致性较差，易发生检测失误和机器误动作等弊病。(2)该消毒器采用发光二极管对消毒时间进行显示，使人感到不直观，尤其是它采用三位琴键开关用二进制组合输入消毒时间，更使一般人感到不方便。

本实用新型之目的，是针对上述技术的不足，提供一种对探头是否置入消毒器检测判断准确，可以　　预置消毒时间，可以用十进制显示消毒时间，使用方便的全自动式的B超探头消毒器。

本实用新型目的可以这样实现：一种B超探头消毒器，包括具有电源开关（K_1）的机壳，具有消毒窗口的上盖板、前面板；机壳内有紫外线光源，上端开口且与上盖板的消毒窗口对应的封闭式消毒仓，变压器，稳压电源和自动控制装置；封闭式消毒仓中上部周边有遮光板，中下部为透光栅栏，自动控制装置包括具有过零检测可控硅触发的光电耦合驱动触发双向可控硅以向所述紫外线光源提供电源的驱动

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电源，其特征是所述的B超探头消毒器的自动控制装置还包括：

一个红外检测器，它用于判断B超探头是否置入消毒器的消毒窗，它包括具有振荡源和至少一对红外发射管的红外发射器，由至少一对红外接收管和检测信号判断器构成的红外接收器；红外发射管和红外接收管分别位于设置在所述封闭式消毒仓内两侧仓壁上的安装孔中；

一个消毒时间计时与显示器，用于对探头的消毒时间进行计时，它包括一个控制端与所述检测信号判断器输出相连的秒信号发生器，计数端与秒信号输出相连的秒分计数器，以及其输入分别与秒分计数器的秒、10秒和分输出相连而输出分别与设置在前面板以显示消毒时间的数码管相连的译码／驱动器；

一个时间预置与显示器，用于预先设定B超探头的消毒时间，它包括分钟预置器，设置于前面板以显示预置时间的数码管，连于分钟预置器与数码管之间的译码／驱动器，以及设置于前面板且与所述分钟预置器的计数输入端相连通的加置开关K2；

一个综合判断器，用于将所述分钟预置器中的时间和所述秒分计数器中分位所计的时间进行比较，以判断对B超探头的消毒时间是否达到预先设定的消毒时间，它的输入分别与所述秒分计数器中的分位输出和分钟预置器的输出相连；

一个消毒电源控制开关，用于对为紫外线光源提供电源的驱动电源进行控制，它由双稳态触发器，非门F8和电容C_{15}构成，双稳态触发器的Q与所述驱动电源控制端相连，$\bar{Q}$端与所述秒分计数器清零端相连，CP端与所述综合判断器输出相连，R端与所述检测信号判断器输出相连，电容C_{15}跨接于非门8输出与双稳态触发器的S

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端，非门8输入与双稳态触发器R端相连。

所述方案中：分钟预置器可以由可置数的BCD计数器和单稳电路构成，BCD计数器的置数控制端可根据需要与电源的高电位或低电位分别相连，其置数端与单稳电路输出相连，这种方式可保证在电源接通后，由单稳电路将BCD计数器自动置成事先设定的时间。BCD计数器的计数输入端与电源低电位之间连所述的加置数开关K_2，当自动置入的时间不能满足需要时，可用K_2逐次将BCD计数器中的时间加至需要值。

所述方案中：红外检测器的检测信号判断器可以选择两输入端与非门F_0；为了保证一对红外接收管分别取出的信号较为良好，在一对红外接收管和与非门F_0两输入之间，还可以分别设置结构相同且依次相连的放大器，T型滤波器和整形器。

所述方案中：综合判断器可以包括四个开关组和一个四输入端与门F_{00}，每个开关组包括两只输出相连且分别作为补偿开关和控制开关的双向模似开关，在四个开关组中，各个补偿开关的输入与电源之间分别连有一只电阻，各个补偿开头的控制端分别按序与所述BCD计数器的$\bar{Q}_1 \sim \bar{Q}_4$依次相连，各个控制开关的输入分别按序与所述秒分计数器中，分位的$Q_1 \sim Q_4$依次相连，各个控制开关的控制端分别按序与所述BCD计数器的$Q_1 \sim Q_2$依次相连，四个开关组的输出和与门（F_{00}）输入分别相连，与门（F_{00}）输出作为综合判断器的输出。

和现有的B超探头消毒器相比，本实用新型的优点是不言而喻的，

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首先，它采用了红外检测装置对B超探头是否置入消毒器进行检测，这种方法不仅可靠，而且可使消毒器的结构简化，二是设置了时间预置与显示装置。当医生打开消毒器时，消毒器可以自动设置一个预置时间，这种设计不仅可以自动达到对B超探头进行消毒灭菌，而且为医生提供了写出诊断报告的时间。对于需要对超过自动预置时间的病毒进行消毒时，只需用加置开关K_2 对预置时间进行点动加数即可，极为简单方便。三是设置了消毒时间计时与显示装置、综合判断器和消毒电源控制开关，不仅可以准确对消毒时间进行计时，而且可以自动控制紫外线光源的工作时间。四是显示装置均采用十进制数码显示、十进制输入，极为直观、方便。

综上所述，本实用新型完全克服了现有技术的缺点，达到了本实用新型之目的。

本实用新型有如下附图，附图记载了本实用新型一个具体实例。

图1为本实用新型结构示意图。

图2为图1中自动控制装置的电路结构图。

图3为图2中作为四个开关组的两个四双向模似开关（CD4066）的内部电路图。

实例说明如下（参见图1－图3）：

1为壳体，它包括具有电源开关K_1 的前面板4，具有消毒窗口3的上盖板2和底脚6。7为前面板4上用于对消毒时间进行计时显示的数码管，共3只，分别显示秒、10秒和分。9为前面板上显示预置消毒时间的数码管。8为加置数开关K_2，它选用点动开关。11为稳压电源。12为支撑紫外线电源（本例中为紫外线灯管）的

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支撑组件。13为电源插座。本例中的消毒仓由遮光板14和透光栅栏17构成，位于壳体1内的紫外线光源18上方，其上端开口且与上盖板2上的消毒窗口3对应。16和15为位于遮光板14两侧且相互对应的用于装置红外发射管和红外接收管的安装孔。

21为红外发射器，它包括位于所述安装孔16中的红外发射管V_{D1}－V_{D2}，电阻R_1－R_4，电容C_1－C_2，振荡器组件I_{C1}（本例中采用NE555）。22为红外接收器，它包括分别位于安装孔15中的红外接收管V_{T1}－V_{T2}，作为检测信号判断器的与非门F_0，以及两组分别由电阻R_{13}－R_{21}，电容C_5－C_6，放大组体A_3－A_4组成且顺序相连的放大器，T型滤波器和整形器。本例中由红外发射器、红外接收器和与非门F_0构成红外检测装置。

23为消毒时间计时与显示装置，包括：由I_{C4}（用CD4060）、电阻R_{21}－R_{22}，电容C，构成的标准秒信号发生器；由I_{C8}和I_{C5}（均采用CD4518双BCD加法计数器），电阻R_{23}－R_{24}，电阻R_{35}－R_{36}，与非门F_1－F_3和与门H_1－H_2构成的标准秒分计数器；分别由组件IC_6及电阻R25－R_{27}，组件I_{C9}和电阻R_{38}－R_{41}，以及组件I_{C11}和电阻R_{49}－R_{51}（I_{C6}、I_{C7}和I_{C11}均为型号为CD4511D的BCD－7段锁存／译码／驱动器）构成的三组标准译码／驱动器，分别包括电阻R_{28}－R_{34}，电阻R_{42}－R_{48}和电阻R_{52}－

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R_{58} 的三只数据管（I_{C7}、I_{C10}、I_{C12}）。本装置中秒分计数器还具有由电阻R_{85}和电容C_{14}构成的开机清零器。

24为时间预置与显示器，其中单稳电路由组件I_{C15a}（本例中采用CD4013中单稳）和电阻$R_{66}-R_{67}$，电容$C_{10}-C_{11}$按公知电路搭成；分钟预置器由可置数的BCD计数器I_{C17}（本例中采用CD40192），电阻$R_{68}-R_{70}$、电容$C_{12}-C_{13}$和开关K_2构成，I_{C17}的置数控制端分别通过与高电位或低电位的搭接而呈预置3分钟状态，电阻R_{69}和电容C_{13}构成开机清“0”器，电阻R_{68}和电容构成加置数开关K_2的防颤电路；译码／驱动器由组件I_{C18}（CD4511）和电阻$R_{71}-R_{73}$构成，I_{C19}为数码管9，$R_{74}-R_{80}$为电阻。

25为综合判断器，它由两个组件$I_{C21}-I_{C22}$（四双向模似开关CD4066，参见图3）中的8个开关构成的四个开关组，电阻$R_{81}-R_{84}$，四输入端与门F_{00}，四个非门F_4-F_6构成。其中非门F_4-F_6用于获得I_{C17}的$\bar{Q}_1 \sim \bar{Q}_4$信号。

26为消毒电源控制开关，本例中由组件I_{C15b}（本例中是CD4013的双D触发器）、电阻R_{59}、电容C_8和非门F_8构成，C_8和R_{59}构成开机清0器。

27为公知的具有过零检测可控硅触发的光电耦合驱动触发双向可控硅的驱动电源。

28为稳压电源，D为紫外线光源18，K_1为电源开关5。

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实例的工作过程：合上K_1，秒分计数器中I_{C5}、I_{C8}，消毒电源开关控制器26中I_{C15b}清零，分钟预置器中I_{C17}先清零，然后在单稳触发器I_{C15a}作用下呈“3”分钟状态，前面板上的数码管9自动显示预置消毒时间为3分钟，显示清毒时间的数码管6均显示0；与此同时，红外发射器21中I_{C1}起振，由红外发射管V_{D1}－V_{D2}发出的信号被红外接收器22中红外接收管V_{T1}－V_{T2}分别接收，经放大滤波整形后送至与非F_0，F_0输出高电平，使消毒时间计时与显示装置23中I_{C4}控制端为高电平，秒信号发生器不工作，此时消毒器呈准备工作状态。当B超探头由消毒窗口3插入封闭式消毒仓时，由于红外发射管V_{D1}－V_{D2}发出的信号被阻断，与非门F_0输出低电平，该低电平的前沿通过非门8反相，经过电容C_{15}使消毒电源开关控制器26中I_{C15}置1，驱动电源27工作并点燃紫外线光源18，与此同时，与非门F_0输出的低电平启动秒信号发生器组件I_{C4}，输出秒脉冲使秒计数器计数……。当秒分计数器累加的分位数与时间预置器中I_{C17}中预置的分组数相同时，综合判断器25中F_{00}输出一正脉冲使消毒电源开关控制器26中I_{C15b}换转。I_{C15b}的Q端电位变低关断驱动电源27，其$\overline{Q}$端输出高电位而使秒分计数器中I_{C5}和I_{C5}清零……。

若需改变预置的消毒时间，可在消毒器自动预置消毒时间后按动开关K_2，每按一次，预置消毒时间增加一分。本例可在3－9分钟内选择。

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说　明　书　附　图

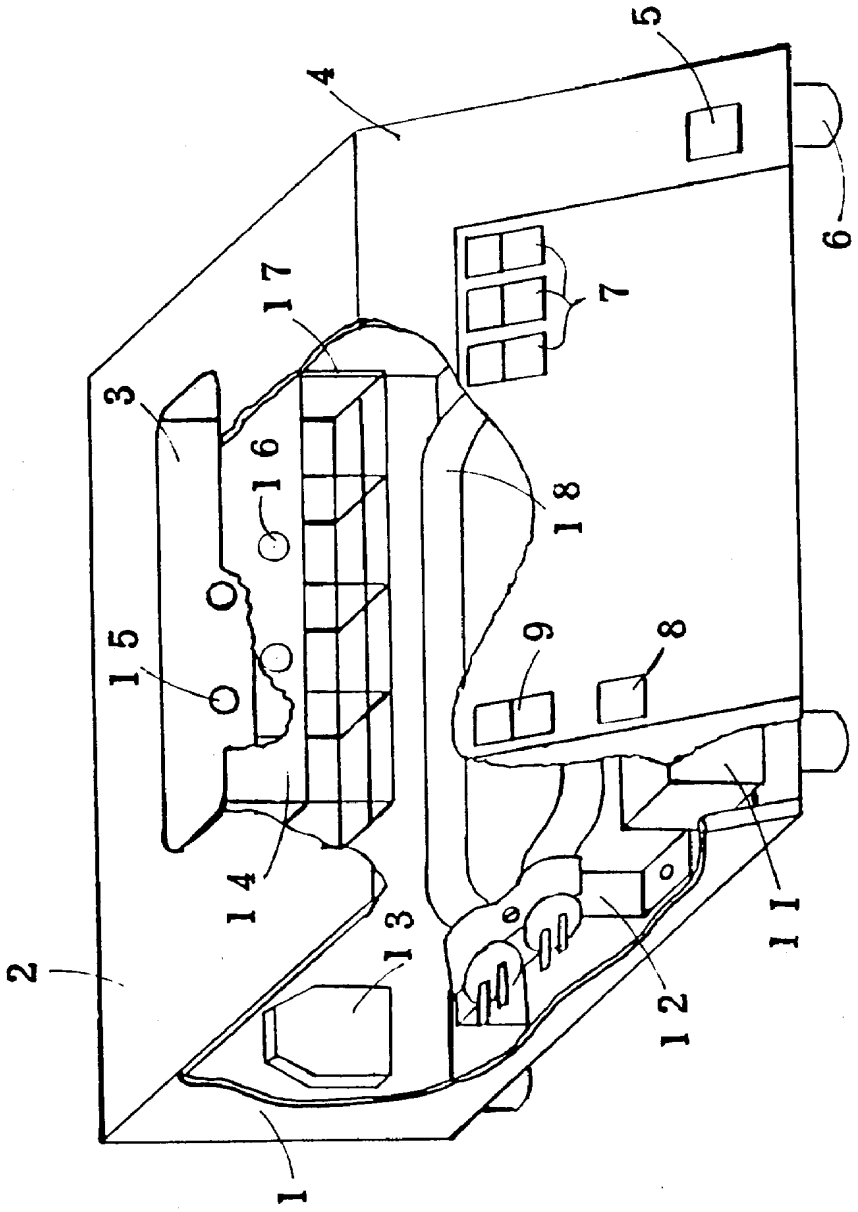
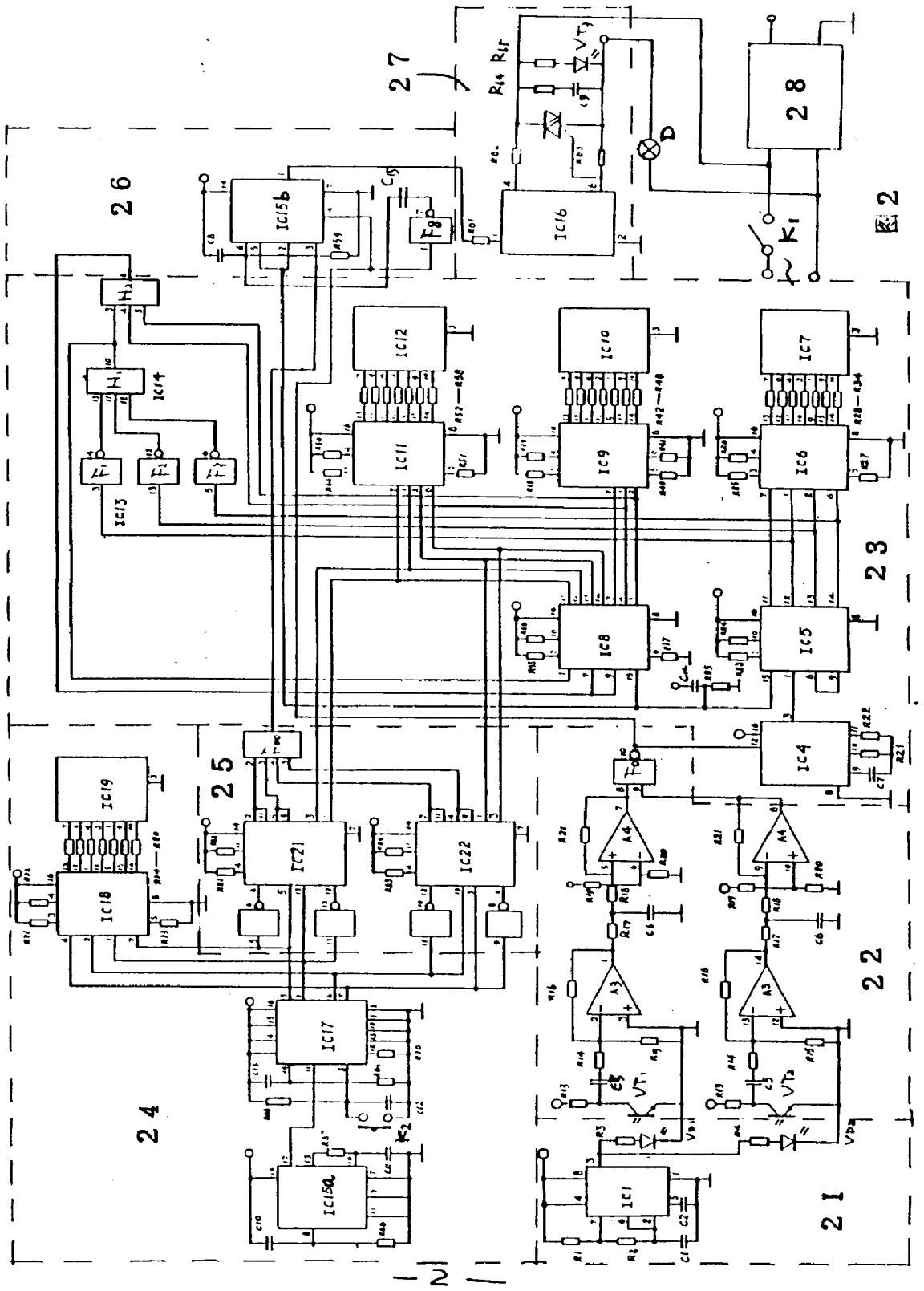


图1

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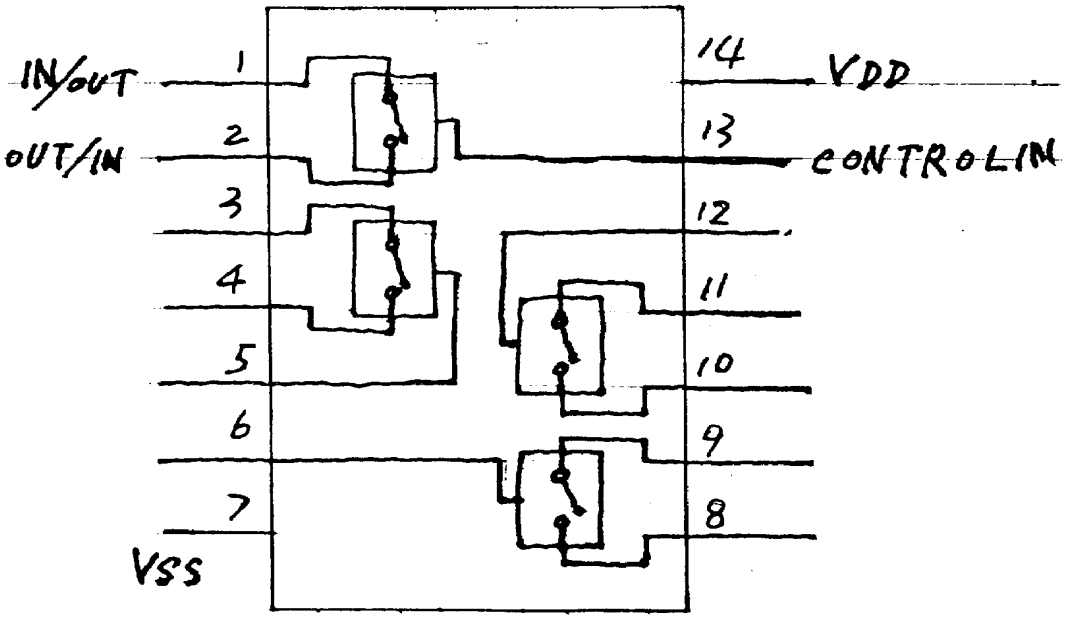


图 3

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Espacenet

WO2004080494A1 OPTICAL STERILIZING METHOD AND DEVICE USING FLASH PULSES

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OPTICAL STERILIZING METHOD AND DEVICE USING FLASH PULSES

Abstract

A device using flash pulses, which is small-sized, produces no heat radiation, and is energy-saving. An optical sterilizing device using flash pulses adapted to irradiate a sterilization subject with flash pulses to sterilize the sterilization subject, wherein the device comprises a blue color light emitting diode array (3) opposed to a sterilization subject with a predetermined distance therebetween, and a driving circuit (5) for driving this blue color light emitting diode array (3) by pulse signals spaced at predetermined intervals. This blue color light emitting diode array (3) irradiates the sterilization subject (S) with near ultraviolet rays to effect sterilization.

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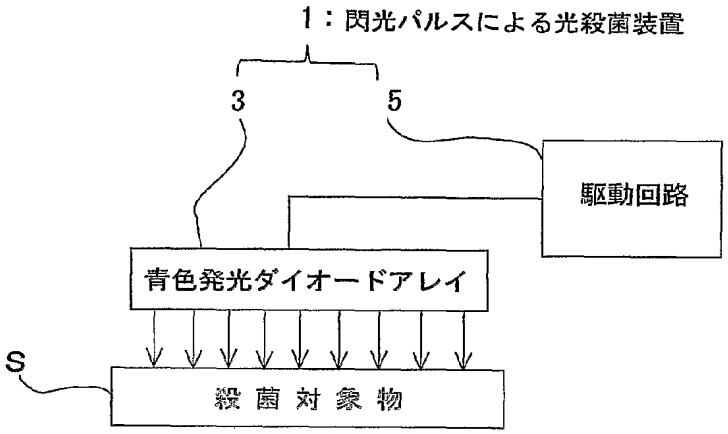
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[続葉有]

(54) Title: OPTICAL STERILIZING METHOD AND DEVICE USING FLASH PULSES

(54) 発明の名称: 閃光パルスによる光殺菌方法及びその装置



1...OPTICAL STERILIZING DEVICE USING FLASH PULSES
3...BLUE COLOR LIGHT EMITTING DIODE ARRAY
5...DRIVING CIRCUIT
S...STERILIZATION SUBJECT

(57) Abstract: A device using flash pulses, which is small-sized, produces no heat radiation, and is energy-saving. An optical sterilizing device using flash pulses adapted to irradiate a sterilization subject with flash pulses to sterilize the sterilization subject, wherein the device comprises a blue color light emitting diode array (3) opposed to a sterilization subject with a predetermined distance therebetween, and a driving circuit (5) for driving this blue color light emitting diode array (3) by pulse signals spaced at predetermined intervals. This blue color light emitting diode array (3) irradiates the sterilization subject (S) with near ultraviolet rays to effect sterilization.

(57) 要約: 本発明は、小型化が可能で、熱の放射がなく、省エネルギーの閃光パルスによる装置を提供することを目的とする。本発明に係る閃光パルスによる光殺菌装置は、閃光パルスを殺菌対象物に照射して殺菌対象物を殺菌する閃光パルスによる光殺菌装置において、殺菌対象物に所定の距離を話して対峙させた青色発光ダイオードアレイ３と、この青色発光ダイオードアレイ３を所定間隔のパルス信号で駆動する駆動回路５とを備えたものである。この青色発光ダイオードアレイ３から近紫外線を殺菌対象物Ｓに照射して殺菌を行う。

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明　細　書

閃光パルスによる光殺菌方法及びその装置

技術分野

本発明は、閃光パルスを殺菌対象物に照射して殺菌対象物を殺菌する閃光パルスによる光殺菌方法及びその装置に関するものである。

背景技術

現在、微生物による食中毒の多発等を受け、ＨＡＣＣＰ（Hazard Analysys Control Point evaluation）の導入が世界的に普及してきており、主流である加熱殺菌や薬剤使用殺菌に代わって、非加熱・非接触で殺菌可能な技術への要求が高まっている。

図１０は、上述した非加熱・非接触で殺菌可能な従来の閃光パルスによる光殺菌装置を示すブロック図である。

この図１０において、従来の閃光パルスによる光殺菌装置１０１は、閃光パルス殺菌対象物に照射できるストロボ装置１０３と、前記ストロボ装置１０３と距離Ｄだけ離して配置され殺菌対象物Ｓを前記ストロボ装置１０３の下の殺菌場所に搬送し殺菌が完了した殺菌対象物Ｓを別な場所に搬送する搬送手段１０５とから構成されている（例えば、特許文献１参照）。

ここで、前記ストロボ装置１０３は、ストロボライト１３１と、これを駆動する駆動回路１３３とから構成れさている。前記ストロボライト１３１は、反射傘１３１ａの中央部に、例えばキセノンランプ等の放電管１３

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１ｂが設けられ、その反射傘１３１ａの前にガラス板１３１ｃが設けられている。前記駆動回路１３３は、放電管１３１ｂを直接駆動する充放電回路１３３ａと、前記充放電回路１３３ａに電力を供給する電源回路１３３ｂと、閃光回数・照射時間・発光タイミング等を制御する制御回路１３３ｃとから構成されている。

前記搬送手段１０５は、制御回路１３３ｃからのタイミング信号に基づき、駆動装置１５１によって駆動され、殺菌対象物Ｓをストロボライト１３１の直下に連続して搬送する装置である。

このような閃光パルスによる光殺菌装置１０１による閃光パルスによる光殺菌方法によれば、閃光時間が１／５００［秒］～１／１７０００［秒］の範囲で、放電管１３１ｂから発光させる光の波長を２５０［ｎｍ］～１１００［ｎｍ］の範囲に保って、閃光パルスを殺菌対象物Ｓに照射することにより、殺菌対象物Ｓを非加熱・非接触で殺菌している。これにより、殺菌対象物の菌は、パルス光を光を吸収して温度が上昇し死滅し、殺菌対象物は熱容量が大きいため、吸収された熱が放散されて殺菌対象物の組成変形がないという利点がある。

【特許文献１】　特開２０００－１０７２６２号公報

しかしながら、上記従来の閃光パルスによる光殺菌装置及びによれば、装置が大型化し、かつ、熱の放射も大きく、しかも、エネルギー消費が大きいという不都合があった。

発明の開示

本発明は、上述した欠点を解消し、小型化が可能で、熱の放射がなく、

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かつ、省エネルギーの閃光パルスによる光殺菌方法及びその装置を提供することを目的とする。

上記目的を達成するために、請求項１記載の発明に係る閃光パルスによる光殺菌方法は、閃光パルスを殺菌対象物に照射して殺菌対象物を殺菌する閃光パルスによる光殺菌方法において、所定の条件のパルス信号で青色発光ダイオードアレイを駆動し、青色発光ダイオードアレイから閃光パルスを発生させて殺菌対象物に照射して殺菌することを特徴とするものである。

上記目的を達成するため、請求項２記載の発明に係る閃光パルスによる光殺菌装置は、閃光パルスを殺菌対象物に照射して殺菌対象物を殺菌する閃光パルスによる光殺菌装置において、殺菌対象物に所定の距離を離して対峙させた青色発光ダイオードアレイと、前記青色発光ダイオードアレイを所定間隔のパルス信号で駆動する駆動回路とを備えたことを特徴とするものである。

図面の簡単な説明

第１図は、本発明の実施の形態及び実施例に係る閃光パルスによる光殺菌方法を実現する装置を示す図である。

第２図は、本発明の実施の形態及び実施例に係る閃光パルスによる光殺菌方法を実現する装置に使用される青色発光ダイオードアレイの構成例を示す側面図である。

第３図は、本発明の実施の形態及び実施例に係る閃光パルスによる光殺菌方法を実現する装置に使用される青色発光ダイオードアレイの構成例

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を示す平面図である。

第４図は、本発明の実施の形態及び実施例に係る閃光パルスによる光殺菌方法を実現する装置に使用される青色発光ダイオードアレイの回路構成を示す回路図である。

第５図は、本発明の実施の形態及び実施例に係る閃光パルスによる光殺菌装置による光殺菌方法の有効性を検証するために、他の光源と同様に行った試験装置の一例を示す図である。

第６図は、光強度測定器で測定した他の光源（「ＧＬ－６」）のスペクトルを示す特性図である。

第７図は、光強度測定器で測定した他の光源（「ＯＣ９０Ａ」及び「ＭＳ９０Ａ」）のスペクトルを示す特性図である。

第８図は、光強度測定器で測定した他の光源（「白色ＬＥＤ」）のスペクトルを示す特性図である。

第９図は、光強度測定器で測定した本発明に係る閃光パルスによる光殺菌装置の光源（「青色ＬＥＤ」）のスペクトルを示す特性図である。

第１０図は、非加熱・非接触で殺菌可能な従来の閃光パルスによる光殺菌装置を示すブロック図である。

発明を実施するための最良の形態

以下、本発明の実施の形態及び実施例について図面を参照して説明する。

図１は、本発明の実施の形態及び実施例に係る閃光パルスによる光殺菌方法を実現する装置を示す図である。

この図１において、閃光パルスによる光殺菌装置１は、閃光パルスを殺

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菌対象物に照射して殺菌対象物を殺菌する閃光パルスによる光殺菌装置であって、殺菌対象物Ｓに所定の距離を離して対峙させた青色発光ダイオードアレイ３と、前記青色発光ダイオードアレイ３を所定間隔のパルス信号で駆動する駆動回路５とを備えたものである。

図２は、本発明の実施の形態及び実施例に係る閃光パルスによる光殺菌方法を実現する装置に使用される青色発光ダイオードアレイの構成例を示す側面図である。図３は、本発明の実施の形態及び実施例に係る閃光パルスによる光殺菌方法を実現する装置に使用される青色発光ダイオードアレイの構成例を示す平面図である。図４は、本発明の実施の形態及び実施例に係る閃光パルスによる光殺菌方法を実現する装置に使用される青色発光ダイオードアレイの回路構成を示す回路図である。

本発明の実施の形態に係る閃光パルスによる光殺菌装置１で用いる青色発光ダイオードアレイ３は、図２及び図３に示すように、例えば３７個の青色発光ダイオード３ａ，…を六角形状に基板３ｂの上に配置固定したものであって、図４に示すように各ダイオード３ａ，…のアノード同士とカソード同士をそれぞれ並列に接続してなるものである。これら各ダイオード３ａ，…アノードと、カソードに前記駆動回路５から駆動パルスを供給するようになっている。この駆動パルスは、例えばパルス幅が１０[ｍＳ]、デューティー比が１／１０、電圧が４．５[[Ｖ]、パルス順電流が青色発光ダイオード１個当たり１００[ｍＡ]のものを採用している。

このような閃光パルスによる光殺菌装置１によって実現される閃光パルスによる光殺菌方法では、前記駆動回路５から所定の条件のパルス信号を青色発光ダイオードアレイ３の青色発光ダイオード３ａ，…のアノードと

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カソードに供給して青色発光ダイオードアレイ３を駆動し、青色発光ダイオードアレイ３から閃光パルスを発生させて殺菌対象物Ｓに照射することにより殺菌している。

（検証）

このような閃光パルスによる光殺菌装置１による殺菌方法が有効か否かを確認するため、被検細菌を選択し、かつ、閃光パルスを発生できる光源を幾つか選択して、殺菌状態を確認した。

＜選択した被検細菌について＞

選択した被検細菌としては、Bacillus subtilis(ＩＡＭ　１０６９　冷凍芽胞菌　５．６×１０$^{-7}$［個／ml］を用いた。この菌は、グラム陽性桿に属し胞子を形成する芽胞形成菌であり、枯草菌や納豆菌と分類学上で近縁種である。また、炭疽菌も枯草菌の一種であるが、ここで用いた菌は人体に無害である。

この菌の最大の特徴は、細胞分裂で細胞自体が増殖し、過酷な環境下でも一般に菌自体より強い胞子を形成し、その環境に耐えられることである。芽胞が固い殻で覆われているため、熱や薬品等の外的因子に対する抵抗力が高く、１００［℃］、５［分］間の熱湯中でも死滅しないと報告されている。

一般的に安全性の高い菌でもあるので、加熱殺菌の指標菌として広く利用されている。Bacillus 属のように、あらゆるストレスに強い芽胞菌が殺菌可能であれば、将来的な応用を考えた場合、その他の菌（大腸菌等）の処理も充分に可能である。

＜選択した光源について＞

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本発明が有効であることを検証するために、他の光源による殺菌状態とを比較する。以下、本発明において、比較のために選択した光源について以下に説明する。

（１）他の光源の一つとして、National 製、殺菌灯「ＧＬ－６型」（以下、「ＧＬ－６」という）を採用した。

（２）他の光源の一つとして、東西電気産業株式会社製、ゼノンフラッシャランプ「ＯＣ９０Ａ型」、発光間隔が１／１．３［秒］（以下、「ＯＣ９０Ａ」という）と、ゼノンフラッシャランプ「ＭＳ９０Ａ型」、発光間隔が１／７［秒］（以下、「ＭＳ９０Ａ」という）を採用した。

（３）他の光源の一つとして、日亜化学製、白色発光ダイオード（白色ＬＥＤ）、「ＮＳＰＷ５００ＢＳ」（以下、「白色ＬＥＤ」という）、消費電力９［Ｗ］を採用した。

なお、本発明に係る閃光パルスによる光殺菌装置で用いる光源には、三洋電機製、「ＬＰ－０３Ｂ３６Ａ－８１」の青色発光ダイオード（以下、「青色ＬＥＤ」という）を採用した。

＜光殺菌の原理＞

殺菌の原理は殺菌方法により様々であるが、本発明では光を用いて殺菌を行っている。

光殺菌では主に紫外線（２００［ｎｍ］～４００［ｎｍ］）が用いられ、中でも殺菌力相対値が高い波長は、２５０［ｎｍ］～２６０［ｎｍ］付近である。吸収された紫外線は、生命維持と遺伝情報の伝達に必要なＤＮＡ（菌体ゲノム）を破壊し、チミンタイマーを誘起して２つの隣り合ったチミン分子が共有結合させて、再生を妨害し、細菌等の活動を停止させ死滅

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させる。

３５０［ｎｍ］以上の可視領域波長の光による殺菌のメカニズムは、菌体をとりまく分子、例えば酸素、光増感分子の関与する間接効果が考えられる。また、光合成菌やクロレラは別として、多くの微生物にとっては光は不必要ばかりか、むしろ有害である。

閃光パルス殺菌のメカニズムとして、次の二つのことが考えられる。

前述した紫外線殺菌のメカニズムと同様の効果が考えられ、閃光パルスが発する瞬間的な光により、菌の細胞膜等の紫外線吸収がある物質が存在する場合でも、奥深くまで光が到達することにより殺菌効果が得られると考えられる。

一方、可視光や赤外線を照射することにより、殺菌対象物の表面で吸収された光が熱に変換され、温度上昇が起こり、殺菌効果が生じている。非常に短時間の照射であるため、瞬間的で、かつ、殺菌対象物の極表面のみで急激な温度上昇が発生している。前述の紫外線によるＤＮＡ損傷と、可視・赤外線による急激な温度上昇が同時に発生する効果により、高い殺菌効果が得られると考えられる。

＜特性試験概要＞

次に、本発明の有効性を確認するため、次のような特性試験を行った。細菌を用いる上で、菌を肉眼で確認することが不可能なため、また、細菌の大きさが１［μｍ］～１００［μｍ］と小さく、通常の光学顕微鏡でも確認が難しく、生死の判別ができないため、特殊な方法により計測を行った。

微生物の増殖過程を測定するには、様々な方法がある。

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まず、総菌計数法は、細菌や酵母などの菌数を顕微鏡下で直接数える方法で、Petroff-Hauser の菌計数盤や Thoma の血球計数器を用いる。

次に、分光学的方法では、比濁計や比色計を用いた吸光法がある。光電比色計を用いて菌体を含む培地の光吸度を測定する方法や、培地中の微生物濃度を測定するレーザー法がある。このレーザー法は、半導体レーザーにより７８０［ｎｍ］の光を、菌体を含有する懸濁液に照射したとき、減衰する光を受光部で受け、電圧に変換して吸光度として表したものである。光吸度とは、入射光、透過光の強さ及び散乱光の計数によって決定するようにしたものである。

さらに、生菌計数法は、菌液を適当に希釈してコロニーを発生させ、生きている菌だけを測定する方法である。

本発明の有効性を検証するために、本発明では、生菌計数法を基にコロニーカウント法を採用して計測することにした。

＜コロニーカウント法＞

コロニーとは細菌の集落のことで、一つのコロニーに約１億匹の菌が存在する。一つの細菌が分裂を繰り返し、一つのコロニーを作成することから、コロニーを形成させることにより、菌の発生の有無、及びその数の測定が可能である。

次に、コロニーカウント法について具体的に説明をする。

シャーレに栄研化学株式会社製の普通寒天培地（菌の発育を促すため栄養入りの寒天）を用いて寒天平板培地を作成して、寒天培地が固まるまでシャーレに蓋を閉めて、２０～３０［分］放置する。このとき、菌を培養するには、適度な栄養と温度が必要である。本来、培地精製は、培地調整

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薬を水に溶かし、ＰＨを調整後、粉末寒天を６５［％］添加して加圧殺菌する過程を踏む必要があるが、今回、使用した普通寒天培地は滅菌済みかつＰＨ調整済みなのものである。

寒天培地が固まった後に、電気恒温槽内で蓋を僅かにずらして、無菌的に１５～２０［分］間水滴を乾かす。

さらに、形成したコロニーが重複しないように、白金線で希釈した殺菌対象物（試料寒天平板）上に塗布する。また、白金線を使う前後は必ず、白金線を火炎滅菌しておく。このとき、菌体のついた白金線の先端は、まず温度の低い内炎に入れ、次に高温の外炎で焼く。なぜなら、いきなり外炎にいれると、周囲に菌体が飛び散る恐れがあるからである。

このように、コロニーが発生した少なくとも４つの殺菌対象物（試料寒天平板）に対して、本発明の実施の形態に係る閃光パルスによる光殺菌装置装置１による閃光パルスによる光殺菌方法と、上述した他の３つの光源による閃光パルスを含む光殺菌方法とによって、それぞれを光殺菌をする。

上述した本発明の実施の形態に係る閃光パルスによる光殺菌装置装置１による閃光パルスによる光殺菌方法によって殺菌した殺菌対象物（試料寒天平板）と、上述した他の３つの光源による閃光パルスを含む光殺菌方法とによって殺菌した３つの殺菌対象物（試料寒天平板）を３７［℃］で２４時間の間、電気恒温槽で培養する。このときに、頻繁に扉を開閉すると温度が変化してしまうので、注意する必要がある。

２４時間後に電気恒温槽から取り出した各殺菌対象物（試料寒天平板）のコロニーの数を計数する。このとき、計数する各殺菌対象物（試料寒天平板）は、１シャーレ当たりのコロニー数が３０～３００［個］程度の場

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合が最も信頼度が高く望ましい。

＜殺菌効果の定義＞

殺菌効率を泥状的に調べるため、次のように定義する。光を照射しなかったときに発生した菌の個数をＡ、ｔ時間光を照射した後に残っていた菌の個数をｒとしたときの殺菌効率をＰとすると、

Ｐ＝｛(Ａ－ｒ）／Ａ｝×１００　　…（１）

と定義する。

ただし、一回のデータではコロニー同士が重なり合ってしまったり、空気中の雑菌が混入してしまったり、菌の発育の違いによる誤差がでてくるため、Ａ、ｒは数回の実行してデータの平均値を用いた。

＜試験装置＞

以上の試験を行うため、次のような装置を用いた。

（１）波長分布測定を行うため、光スペクトルナアライザを用いた。

（２）ＣＷ光の光強度測定を行うため、光パワーメータを用いた。

（３）パルス光の光強度を測定するため、光強度測定器を用いた。

図５は、本発明の実施の形態及び実施例に係る閃光パルスによる光殺菌装置による光殺菌方法の有効性を検証するために、他の光源と同様に行った試験装置の一例を示す図である。

この図３において、符号１１は光源であり、この光源１１は、本発明の実施の形態及び実施例に係る閃光パルスによる光殺菌装置による光源、または、他の３つの光源のことを差す。

また、上述した図５において、符号Ｓは殺菌対象物（試料寒天平板）である。

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さらに、上述した図５において、符号１３は光強度測定器であり、光強度測定器１３は、光を電気に変換するフォトダイオード（ＰＤ）１３ａと、このＰＤ１３ａからの電気信号のうち最大値を保持するピークホールド回路１３ｂと、前記ピークホールド回路１３ｂを制御する制御部１３ｃとからなる。

各光源（他の４つの光源（「ＧＬ－６」、「ＯＣ９０Ａ」、「ＭＳ９０Ａ」、「白色ＬＥＤ」と、本発明に係る閃光パルスによる光殺菌方法に用いる「青色ＬＥＤ」）１１の光強度は、当然光源１１から遠くなるにしたがって弱くなってゆくので、光強度による殺菌効率の測定を行うためには、距離に対する光強度の測定をおこない、それらの値を把握する必要がある。そのため、光パワーメータ及び光強度測定器１３を用いて測定を行った。

図６は、光強度測定器で測定した他の光源（「ＧＬ－６」）のスペクトルを示す特性図であって、横軸に波長［ｎｍ］を、縦軸に強度［ｄＢｍ］を、それぞれとったものである。

図７は、光強度測定器で測定した他の光源（「ＯＣ９０Ａ」及び「ＭＳ９０Ａ」）のスペクトルを示す特性図であって、横軸に波長［ｎｍ］を、縦軸に強度［ｄＢｍ］を、それぞれとったものである。

図８は、光強度測定器で測定した他の光源（「白色ＬＥＤ」）のスペクトルを示す特性図であって、横軸に波長［ｎｍ］を、縦軸に強度［ｄＢｍ］を、それぞれとったものである。

図９は、光強度測定器で測定した本発明に係る閃光パルスによる光殺菌装置の光源（「青色ＬＥＤ」）のスペクトルを示す特性図であって、横軸に波長［ｎｍ］を、縦軸に強度［ｄＢｍ］を、それぞれとったものである。

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こられの特性図の結果を表１に示す。

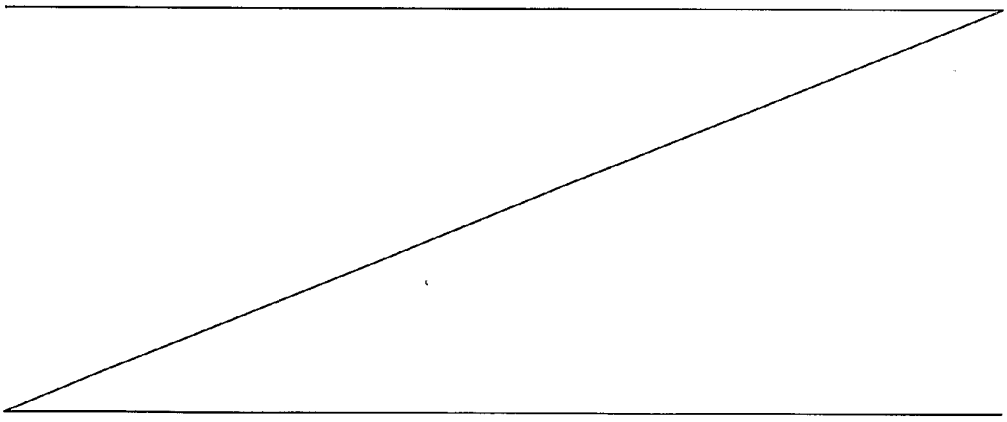
表１

各光源のスペクトラム

	波長範囲	ピーク波長
GL-6	330nm ～ 700nm	435nm
OC90A&MS90A	320nm ～ 1150nm	845nm
白色 LED	330nm ～ 800nm	468nm
青色 LED	419nm ～ 519nm	466nm

この表１からわかるように、「ＧＬ－６」は波長が３３０［ｎｍ］～７００［ｎｍ］でピーク波長は４３５［ｎｍ］であった。また、「ＯＣ９０Ａ」及び「ＭＳ９０Ａ」は波長が３２０［ｎｍ］～１１５０［ｎｍ］でピーク波長は８４５［ｎｍ］であった。「白色ＬＥＤ」は波長が３３０［ｎｍ］～８００［ｎｍ］でピーク波長は４６８［ｎｍ］であった。

本発明の実施の形態に係る閃光パルスによる光殺菌装置１で用いる「青色ＬＥＤ」は波長が４１９［ｎｍ］～５１９［ｎｍ］でピーク波長は４６６［ｎｍ］であった。



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表２

各光源の距離／光強度特性

（光強度の単位はＷ／ｍ^2）

	Gl-6	OC90A&MS90A	白色 LED	青色 LED
1cm	7.47	2.10*10^-4	243.19	48.50
2cm	5.77	1.97*10^-4	208.81	45.30
3cm	3.71	1.88*10^-4	179.53	42.90
4cm	3.03	1.81*10^-4	129.87	40.70
5cm	2.18	1.78*10^-4	120.93	39.50
10cm	0.80	1.71*10^-4	35.65	20.50
15cm	0.58	1.68*10^-4	14.00	11.60
20cm	0.31	1.63*10^-4	12.73	7.30

次に、光源１１と殺菌対象物（試料寒天平板）Ｓとの距離を変化させて測定を行った。表２は、各他の３つの光源（「ＧＬ－６」、「ＯＣ９０Ａ」及び「ＭＳ９０Ａ」、「白色ＬＥＤ」）と、本発明の実施の形態に係る閃光パルスによる光殺菌装置で用いる光源(「青色ＬＥＤ」)における光源の距離と、光強度との関係を示すものである。

この表２に示すように、「ＧＬ－６」は、１［ｃｍ］で７．４７［ｗ／ｍ^2］、２［ｃｍ］で５．７７［ｗ／ｍ^2］、…、２０［ｃｍ］で０．３１［ｗ／ｍ^2］の特性であった。

この表２に示すように、「ＯＣ９０Ａ」及び「ＭＳ９０Ａ」は、１［ｃｍ］で２．１０×１０$^{-4}$［ｗ／ｍ^2］、２［ｃｍ］で１．１９×１０$^{-4}$［ｗ／ｍ^2］、…、２０［ｃｍ］で１．６３×１０$^{-4}$［ｗ／ｍ^2］であった。

この表２に示すように、「白色ＬＥＤ」は、１［ｃｍ］で２４３．１９［ｗ／ｍ^2］、２［ｃｍ］で２０８．８１［ｗ／ｍ^2］、…、２０［ｃｍ］で１２．７３［ｗ／ｍ^2］であった。

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この表２に示すように、本発明に係る閃光パルスによる光殺菌装置で用いる光源の「青色ＬＥＤ」は、１［ｃｍ］で４８．５０［ｗ／ｍ²］、２［ｃｍ］で４５．３０［ｗ／ｍ²］、…、２０［ｃｍ］で７．３０［ｗ／ｍ²］であった。

本発明の実施の形態に係る閃光パルスによる光殺菌装置で用いる光源（「青色ＬＥＤ」）と、その他の光源（「ＧＬ－６」、「ＯＣ９０Ａ」及び「ＭＳ９０Ａ」、「白色ＬＥＤ」）の特徴を表３に示す。

表３

各光源の特徴

Light source	GL-6 sterilization lamp	OC90A & MS90A Xe flash lamp
Wavelength (Peak)	435nm	845nm
Characteristic	from near UV to visible	from near UV to near IR
Light intensity (5cm)	2.18 W/m^2	1.78*10^-4 W/m^2
(GL-6 = 1)	1	8.2*10^-5

Light source	White LED	Blue LED
Wavelength (Peak)	468nm	466nm
Characteristic	from near UV to visible	almost near UV
Light intensity (5cm)	120.93 W/m^2	39.50 W/m^2
(GL-6 = 1)	55	18

表３において、他の光源である「ＧＬ－６」はピーク波長（Wavelength(Peak)）が４３５［ｎｍ］で、近紫外線から可視光までの波長を有し、光強度が５［ｃｍ］離れて２．１８［ｗ／ｍ²］であるという特性を有する。

表３において、他の光源である「ＯＣ９０Ａ」及び「ＭＳ９０Ａ」はピーク波長（Wavelength(Peak)）が８４５［ｎｍ］で、近紫外線から近赤外

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線までの波長を有し、光強度が５［ｃｍ］離れて８．２×１０$^{-4}$［ｗ／ｍ^2］であるという特性を有する。

表３において、他の光源である「白色ＬＥＤ」はピーク波長（Wavelength(Peak)）が４６８［ｎｍ］で、近紫外線から可視光までの波長を有し、光強度が５［ｃｍ］離れて１２０．９３［ｗ／ｍ^2］であるという特性を有する。

表３において、本発明に係る閃光パルスによる光殺菌装置で使用する光源の「青色ＬＥＤ」はピーク波長（Wavelength(Peak)）が４６６［ｎｍ］で、近紫外線の波長を有し、光強度が５［ｃｍ］離れて３９．５０［ｗ／ｍ^2］であるという特性を有する。

各光源１１と殺菌対象物（試料寒天平板）Ｓとの距離を１［ｃｍ］，３［ｃｍ］，５［ｃｍ］と変えて、光強度に対する各光照射時間の殺菌効率の測定と、この結果を比較するために光源１１からの距離に対する光強度の測定を行った。

照射距離／照射時間における殺菌効率の結果について、光源（「ＧＬ－６」）１１については表４に、光源（「ＯＣ９０Ａ」）１１については表５に、光源（「ＭＳ９０Ａ」）１１については表６に、光源（「白色ＬＥＤ」）１１については表７に、本発明に係る閃光パルスによる光殺菌装置で用いた光源（「青色ＬＥＤ」）１１については表８に、それぞれ示している。

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表４

ＧＬ－６殺菌灯における殺菌効率

	1cm	3cm	5cm
1時間	20.7%	12.0%	12.0%
2時間	36.7%	25.0%	20.0%
3時間	37.5%	36.0%	18.7%

表５

ＯＣ９０Ａ型フラッシュランプ（１／１．３ｓ）による殺菌効率

	1cm	3cm	5cm
1時間	18.00%	4.00%	4.50%
2時間	24.00%	8.00%	8.00%
3時間	27.83%	12.00%	8.00%

表６

ＭＳ９０Ａ型フラッシュランプ（１／７ｓ）による殺菌効率

	1cm	3cm	5cm
1時間	5.33%	4.00%	2.67%
2時間	6.00%	4.00%	4.00%
3時間	8.00%	6.00%	4.00%

表７

白色ＬＥＤによる殺菌効率

	1cm	3cm	5cm
1時間	4.00%	4.00%	2.67%
2時間	8.00%	6.00%	4.00%
3時間	10.00%	6.00%	4.50%

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表８

青色ＬＥＤによる殺菌効率

	1cm
1時間	29.10%
2時間	40.00%
3時間	33.30%

本発明の実施の形態に係る閃光パルスによる光殺菌装置による光殺菌方法に関しては、表８に示すように、空気中の雑菌が混入したり、菌がうまく発育しなかったりと問題が生じたため、他の光源の結果と比較してデータが少なくなっている。

また、試験結果により、本発明の実施の形態に係る閃光パルスによる光殺菌方法で用いた光源（「青色ＬＥＤ」）も、他の光源（「ＧＬ－６」、「ＯＣ９０Ａ」及び「ＭＳ９０Ａ」、「白色ＬＥＤ」）とも、殺菌効率は認められるが、殺菌対象物（試料寒天平板）Ｓの菌の根絶までには至らなかった。

まず、表４～表８に示す結果について考察すると、全ての結果において、殺菌効果及び菌の発育の抑制は認められたが、菌の根絶までには至らなかった。

また、表４、表５、表６よりフラッシュランプ（「ＯＣ９０Ａ」及び「ＭＳ９０Ａ」）と殺菌灯（「ＧＬ－６」）の動条件を比較してみると、フラッシュランプ（「ＯＣ９０Ａ」及び「ＭＳ９０Ａ」）のほうが殺菌効率が低いことがわかる。この結果より、波長が短くパワーが強いほど、より高効率がえられる傾向を確認できた。

また、結果だけみると、フラッシュランプ（「ＯＣ９０Ａ」及び「ＭＳ９０Ａ」）は、殺菌灯（「ＧＬ－６」）よりも殺菌効率が低いため、あまり実用

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に向いていないと考えられるが、波長・光強度ともに、他の光源の中で最弱であるにも関わらず、菌の発育を抑える効果が認められたことから、閃光パルス殺菌の有効性と発展の可能性が確認できる。また、フラッシュランプ（「ＯＣ９０Ａ」及び「ＭＳ９０Ａ」）よりも強いパルス光源を用いれば、菌の滅菌を可能だと考えられる。

表４、表７及び表８の結果については、本発明の実施の形態に係る閃光パルスによる光殺菌装置で用いる光源（「青色ＬＥＤ」）及び他の光源のうちの一つの光源（「白色ＬＥＤ」）は、他の光源のうちの一つの光源である殺菌灯（「ＧＬ－６」）よりは殺菌効率が低いという結果となった。

しかしながら、本発明の実施の形態に係る閃光パルスによる光殺菌装置で用いる光源（「青色ＬＥＤ」）では、データが少ないが、殺菌灯（「ＧＬ－６」）とほぼ同様の殺菌効率を得ることができた。

この結果は、光源（「白色ＬＥＤ」）と、本発明の実施の形態に係る閃光パルスによる光殺菌装置で用いた光源（「青色ＬＥＤ」）とともに近紫外域に波長をある程度有しているが、本発明の実施の形態に係る閃光パルスによる光殺菌装置で用いた光源（「青色ＬＥＤ」）のほうがより多くの近紫外域に波長を有しているため、殺菌効率が高くなったと思われる。

また、光殺菌において、光強度も重要な要素であるが、その光源のスペクトルに紫外域（近紫外域）の波長をより多く含んでいるほうが、より高い殺菌効果がえられる傾向があると考えられる。

上述したことから、閃光パルスと、青色ＬＥＤとを組み合わせた本発明の実施の形態に係る閃光パルスによる光殺菌装置によれば、通常の殺菌灯よりも、高効率、低消費電力、低コストで小型化できるという利点がある

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ほか、人体に影響のない殺菌装置を得ることができる。

本発明の実施の形態に係る閃光パルスによる光殺菌装置では、閃光パルスによる光殺菌装置１を青色発光ダイオードアレイ３と駆動回路５とから構成し、単に青色発光ダイオードアレイ３から殺菌対象物Ｓにパルス光を照射するという方法であったが、これに限定されることなく、次のような構成であってもよい。

まず、第１の変形例は、青色発光ダイオードアレイ３の大型化し、これからの光をレンズや鏡を利用して効率的に殺菌対象物Ｓに導くようにしてもよい。

第２の変形例としては、青色発光ダイオードアレイ３の大型化し、これからの光を光ファイバーを用いて光ファイバーの先端から殺菌対象物Ｓにパルス光を照射するようにしてもよい。

第３の変形例としては、青色発光ダイオードアレイ３で殺菌対象物Ｓを囲み殺菌するようにしてもよい。

また、本発明の実施の形態に係る閃光パルスによる光殺菌装置１は、レストランや老人ケアセンターの紙製使い捨ておしぼりや、水の殺菌や、スーパー等のカウンターディスプレイの生もの・新鮮物の殺菌に応用できる。

また、本発明の実施の形態に係る閃光パルスによる光殺菌装置は、病院内感染などへの消毒液などで濡らす必要のない消毒に応用できる。

さらに、本発明の実施の形態に係る閃光パルスによる光殺菌装置は、洗濯機内の洗濯かごや、食器洗浄器の内部や、洗浄水、掃除機内の殺菌に応用できる。

また、本発明の実施の形態に係る閃光パルスによる光殺菌装置は、冷蔵

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庫内部や、製氷機の貯水タンクにおける水、フィルタの殺菌に応用できる。

加えて、本発明の実施の形態に係る閃光パルスによる光殺菌装置は、エアコンのフィルターの殺菌に応用できる。

さらに、本発明の実施の形態に係る閃光パルスによる光殺菌装置に光ファイバーを併用して、手の届かないような狭部いや隙間の殺菌に応用できる。

また、本発明の実施の形態に係る閃光パルスによる光殺菌装置は、浴槽などの殺菌に応用できるほか、小型化が可能なので、家庭用の小型な殺菌装置や、携帯用殺菌装置に応用できる。

産業上の利用可能性

以上説明したように本発明の閃光パルスによる光殺菌方法及びその装置によれば、所定のパルス信号で青色発光ダイオードアレイを駆動し、青色発光ダイオードアレイから閃光パルスを発生させて殺菌対象物に照射して殺菌することができるので、高効率、低消費電力、低コストで小型化できるという利点があるほか、熱放射がなく、かつ、人体に影響のない殺菌ができるという利点がある。

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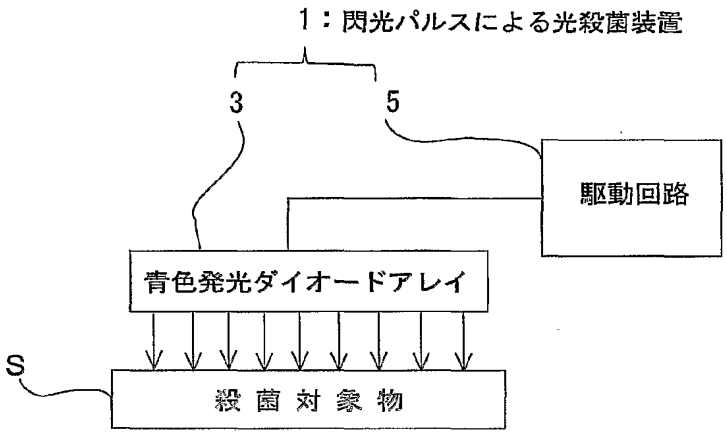
請 求 の 範 囲

1．閃光パルスを殺菌対象物に照射して殺菌対象物を殺菌する閃光パルスによる光殺菌方法において、所定のパルス信号で青色発光ダイオードアレイを駆動し、青色発光ダイオードアレイから閃光パルスを発生させて殺菌対象物に照射して殺菌することを特徴とする閃光パルスによる光殺菌方法。

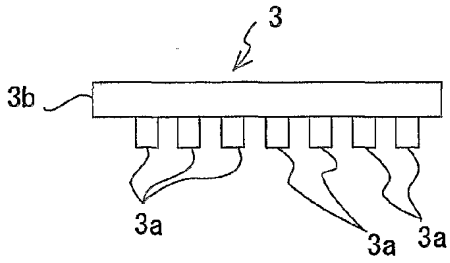
2．閃光パルスを殺菌対象物に照射して殺菌対象物を殺菌する閃光パルスによる光殺菌装置において、殺菌対象物に所定の距離を離して対峙させた青色発光ダイオードアレイと、前記青色発光ダイオードアレイを所定間隔のパルス信号で駆動する駆動回路とを備えたことを特徴とする閃光パルスによる光殺菌装置。

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第１図

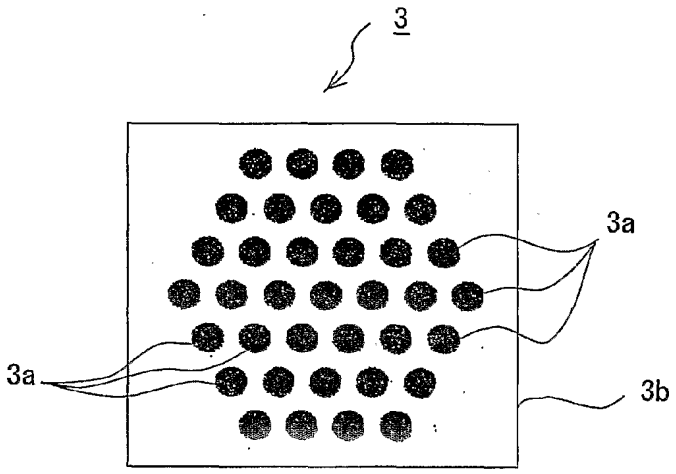


第２図

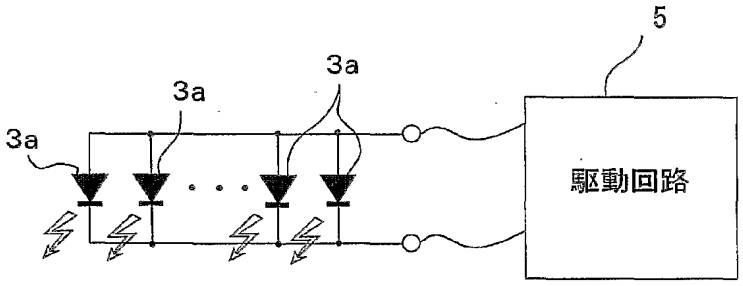


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第３図

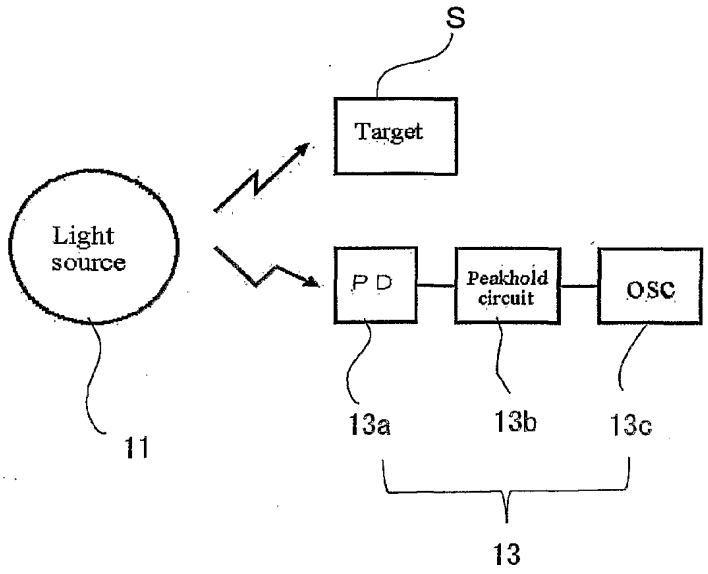


第４図



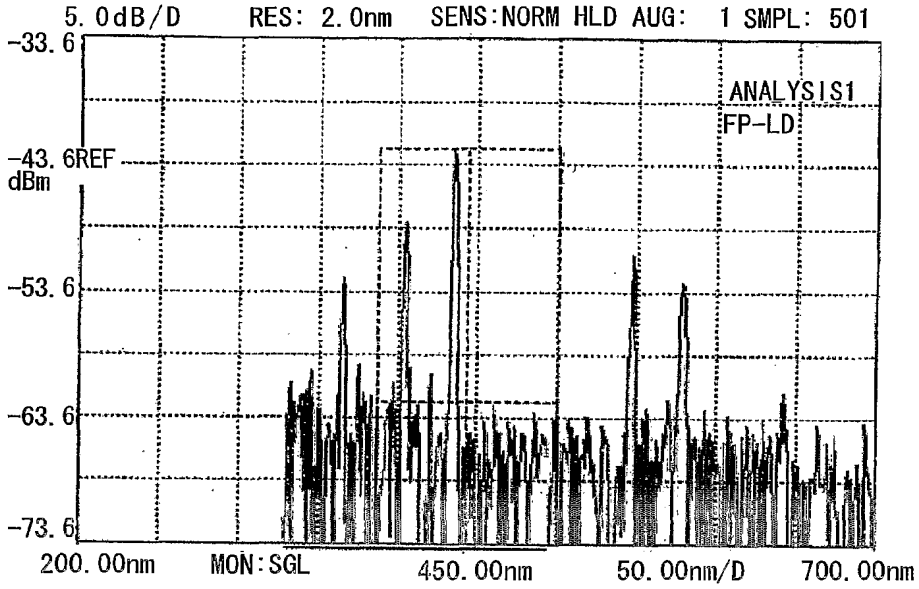
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第５図

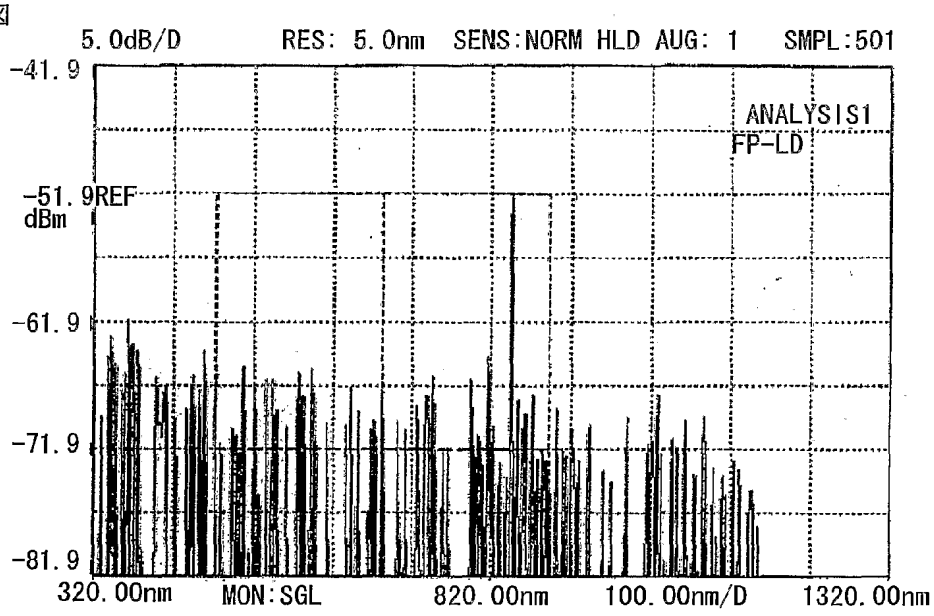


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第６図



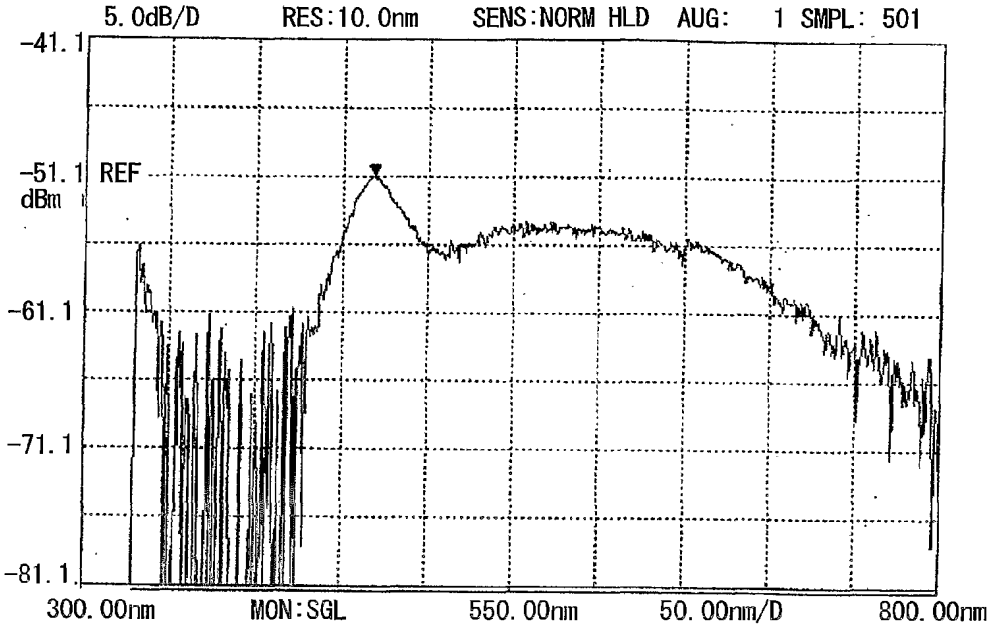
第７図



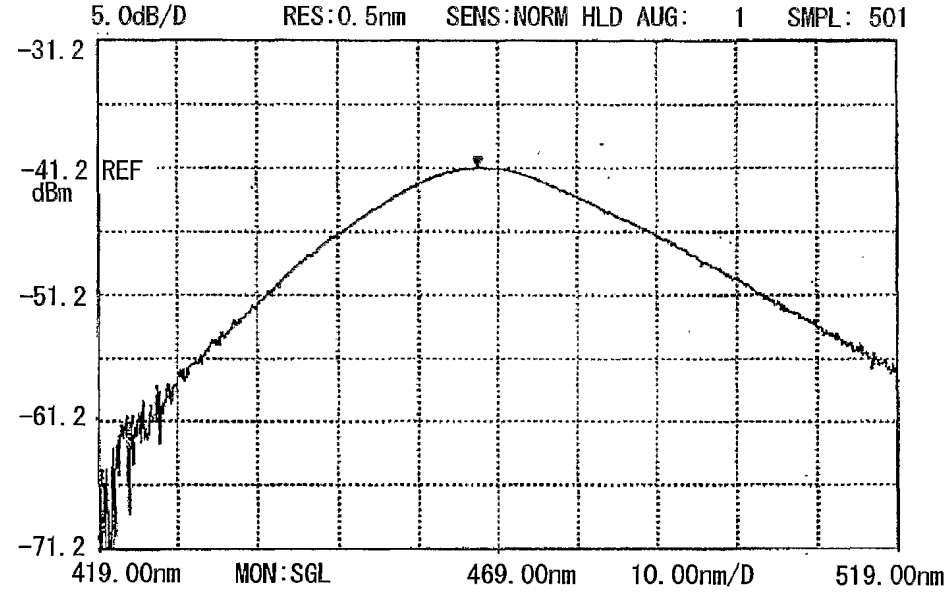
PS_000990

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第８図

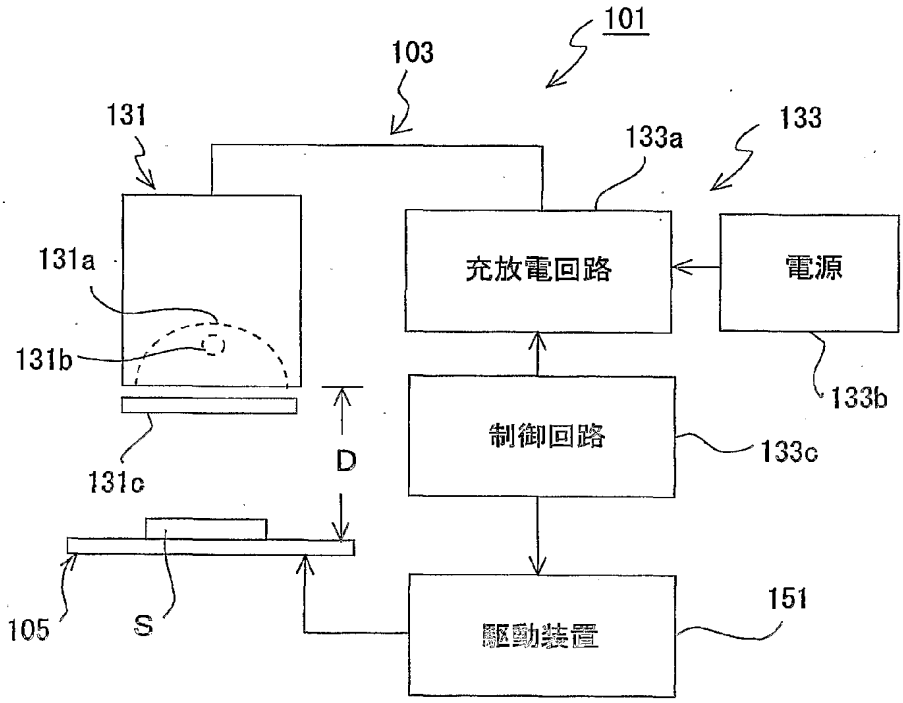


第９図



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第１０図



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INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2004/003283

A. CLASSIFICATION OF SUBJECT MATTER
Int.Cl[7] A61L2/08

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)
Int.Cl[7] A61L2/08, A61L2/10

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1926-1996 Toroku Jitsuyo Shinan Koho 1994-2004
Kokai Jitsuyo Shinan Koho 1971-2004 Jitsuyo Shinan Toroku Koho 1996-2004

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 2000-107262 A (Kometto Kabushiki Kaisha), 18 April, 2000 (18.04.00), Claims; Par. Nos. [0007], [0010] (Family: none)	1,2
Y	US 5364645 A (The Regents of the University of California), 15 November, 1994 (15.11.94), Claims (Family: none)	1,2
Y	JP 10-277367 A (Sanyo Electric Co., Ltd.), 20 October, 1998 (20.10.98), Column 1, line 33 to column 2, line 4; column 6, line 27 to column 8, line 16 (Family: none)	1,2

☒ Further documents are listed in the continuation of Box C. ☐ See patent family 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 application or patent 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
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
19 May, 2004 (19.05.04)	01 June, 2004 (01.06.04)
Name and mailing address of the ISA/ Japanese Patent Office	Authorized officer
Facsimile No.	Telephone No.

Form PCT/ISA/210 (second sheet) (January 2004)

PS_000993

INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2004/003283

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 11-155932 A (Sanyo Electric Co., Ltd.), 15 June, 1999 (15.06.99), Par. Nos. [0004], [0009] (Family: none)	1,2
Y	Kensho OKAMOTO, "LED no Shin Oyo Kokido LED o Mochiita Shokubutsu Saibai", Shinseiji Otan Chiryo oyobi Aokabi Boshi", OPTRONICS, No.191, 1997, pages 153 to 162	1,2

Form PCT/ISA/210 (continuation of second sheet) (January 2004)

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国際調査報告	国際出願番号　ＰＣＴ／ＪＰ２００４／００３２８３

A.　発明の属する分野の分類（国際特許分類（ＩＰＣ））

Int. Cl[7]　Ａ６１Ｌ２／０８

B.　調査を行った分野

調査を行った最小限資料（国際特許分類（ＩＰＣ））

Int. Cl[7]　Ａ６１Ｌ２／０８、Ａ６１Ｌ２／１０

最小限資料以外の資料で調査を行った分野に含まれるもの

日本国実用新案公報	１９２６－１９９６
日本国公開実用新案公報	１９７１－２００４
日本国登録実用新案公報	１９９４－２００４
日本国実用新案登録公報	１９９６－２００４

国際調査で使用した電子データベース（データベースの名称、調査に使用した用語）

ＪＯＩＳ（ＪＩＣＳＴ）

C.　関連すると認められる文献

引用文献のカテゴリー＊	引用文献名　及び一部の箇所が関連するときは、その関連する箇所の表示	関連する請求の範囲の番号
Ｙ	ＪＰ ２０００－１０７２６２ Ａ（コメット株式会社） ２０００．０４．１８，特許請求の範囲，【０００７】，【００１０】（ファミリーなし）	１，２
Ｙ	ＵＳ ５３６４６４５ Ａ（Ｔｈｅ Regents of the University of California） １９９４．１１．１５，クレーム（ファミリーなし）	１，２

☒ Ｃ欄の続きにも文献が列挙されている。　☐ パテントファミリーに関する別紙を参照。

＊　引用文献のカテゴリー
「Ａ」特に関連のある文献ではなく、一般的技術水準を示すもの
「Ｅ」国際出願日前の出願または特許であるが、国際出願日以後に公表されたもの
「Ｌ」優先権主張に疑義を提起する文献又は他の文献の発行日若しくは他の特別な理由を確立するために引用する文献（理由を付す）
「Ｏ」口頭による開示、使用、展示等に言及する文献
「Ｐ」国際出願日前で、かつ優先権の主張の基礎となる出願の日の後に公表された文献
「Ｔ」国際出願日又は優先日後に公表された文献であって出願と矛盾するものではなく、発明の原理又は理論の理解のために引用するもの
「Ｘ」特に関連のある文献であって、当該文献のみで発明の新規性又は進歩性がないと考えられるもの
「Ｙ」特に関連のある文献であって、当該文献と他の１以上の文献との、当業者にとって自明である組合せによって進歩性がないと考えられるもの
「＆」同一パテントファミリー文献

国際調査を完了した日	国際調査報告の発送日
１９．０５．２００４	01. 6. 2004

国際調査機関の名称及びあて先	特許庁審査官（権限のある職員）	
日本国特許庁（ＩＳＡ／ＪＰ） 郵便番号１００－８９１５ 東京都千代田区霞が関三丁目４番３号	小久保　勝伊	４Ｄ　９８３１
	電話番号　０３－３５８１－１１０１　内線　３４２１	

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Ｃ（続き）．　関連すると認められる文献

引用文献のカテゴリー＊	引用文献名　及び一部の箇所が関連するときは、その関連する箇所の表示	関連する請求の範囲の番号
Ｙ	ＪＰ １０－２７７３６７ Ａ（三洋電機株式会社） １９９８．１０．２０，第１欄第３３行～第２欄第４行、第６欄第２７～第８欄第１６行（ファミリーなし）	１，２
Ｙ	ＪＰ １１－１５５９３２ Ａ（三洋電機株式会社） １９９９．０６．１５，【０００４】，【０００９】（ファミリーなし）	１，２
Ｙ	岡本研正，ＬＥＤの新応用　高輝度ＬＥＤを用いた植物栽培，新生児黄疸治療および青カビ防止，ＯＰＴＲＯＮＩＣＳ，Ｎｏ．１９１，１９９７，第１５３～１６２頁	１，２

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Notice

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ABSTRACT KR20035721 6Y1

[]

The present invention operates the first and second ultraviolet lamps and the heating heater by manipulating the control member formed on the outside of the case, so that selective sterilization and drying are possible depending on the degree of bacterial contamination on the body of the mobile phone when charging the battery of the mobile phone, and at the same time, the front and back of the mobile phone are evenly sterilized, so that it is hygienic, and a mobile phone charger with a built-in sterilization function that can sterilize accessories such as watches, necklaces, and rings is provided by forming a support plate with a guide hole through the upper end of the fixed plate.

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Patents KR200357216

contain for charging disinfect divice

Abstract

The present invention operates the first and second ultraviolet lamps and the heating heater by operating the control member formed on the outside of the case, so that when the cell phone battery is charged, the sterilization and drying are selectively performed according to the degree of contamination of the bacteria on the body of the cell phone. At the same time, it sterilizes the front and back of the mobile phone evenly, providing hygienic and mobile phone charger with sterilization function to sterilize accessories such as watches, necklaces and rings by forming a support plate through which guide hole is penetrated at the upper end of the fixed plate. Is in.

Classifications

- A61L2/10 Ultra-violet radiation

View 1 more classifications

KR200357216Y1
South Korea

Download PDF Find Prior Art Similar

Other languages: Korean

Inventor: 이호원

Worldwide applications

2004 KR

Application KR20-2004-0011560U events

2004-04-26 Application filed by 이호원

2004-04-26 Priority to KR20-2004-0011560U

2004-07-27 Application granted

2004-07-27 Publication of KR200357216Y1

Info: Cited by (1), Legal events, Similar documents, Priority and Related Applications

External links: Espacenet, Global Dossier, Discuss

Claims (2)

Hide Dependent

1. The body 11 is provided with a seating space 13 is formed to seat the mobile phone (P), the lower end of the seating portion 13 is provided with a charging terminal 12 for charging the battery, the body 11 in the mobile phone charger is provided with a power supply unit 14 at the rear of the,

   The body 110 is provided with a receiving space 111 is formed to accommodate the mobile phone (P), a cover 120 for rotating and opening around the hinge 121 is provided on one side of the body 110, The body 110 is inclined at a predetermined angle, and the fixing plate 130 is provided with a through hole 131 penetrated in the front, extends to the upper end of the fixing plate 130, the guide hole 151 is penetrated A case 100 having a support plate 150 and a protruding rib 140 separating the support plate 150 and the fixing plate 130 so as to seat the accessory on one side of the support plate 150;

   A first ultraviolet lamp 210 for sterilizing the front surface of the mobile phone (P) is provided at one end of the fixing plate 130, and a second for sterilizing and drying the rear surface of the mobile phone (P) behind the case (100). A support piece 220 is provided to support the ultraviolet lamp 230 and the heating heater 240, and controls

   the first and second ultraviolet lamps 210 and 230 and the heating heater 240 on the front of the case 100. Cell phone charger with a sterilization function, characterized in that the sterilization unit 200 is provided with a control member 250.

   2. The method of claim 1, wherein the support plate 150,

      Ultraviolet light emitted from the second ultraviolet lamp 230 is delivered to the upper through the guide hole 151 to sterilize accessories such as watches, necklaces, rings, etc., the built-in cell phone charger with a sterilization function.

Description

Mobile phone charger with built-in sterilizer (contain for charging disinfect divice)

The present invention relates to a mobile phone charger, and a mobile phone charger with a sterilization device for sterilizing and drying the bacteria on the outside of the mobile phone while charging the mobile phone battery.

In general, mobile phones have been increasing exponentially due to the development of wireless information and communication technology. As such, with the expansion rate, various additional services such as multimedia service and short message are provided. It is a necessity.

In addition, a separate device for charging the battery of such a mobile phone is required, and when the user purchases, a mobile phone charger and a mobile phone are provided in one set to purchase at the same time.

The mobile phone is largely divided into a body, a transmitter, and a receiver. In particular, the transmitter is easily polluted by the saliva of the caller emitted when the caller speaks or exhales, and maintains a constant temperature by heat generated by the phone itself. As a result, the transmission part is wet and warm, and the condition is good for germs to propagate.

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In general, mobile phones are stored in various places such as bags, pockets, and the inside of a vehicle at the convenience of users, rather than being stored in a case, so they are easily contacted with germs living in each storage area, and are always exposed to air. Not only is it easy to introduce suspended bacteria, but odor is generated accordingly.

In addition, even if a person's mobile phone is often a number of people are talking on the phone, the virus owned by one person can be transmitted to an unspecified number of people through the mobile phone.

The mobile phone charger 10 that charges the battery of the mobile phone is formed with a body 11 having a seating portion 13 formed thereon to charge the battery of the mobile phone P, and a lower end of the seating portion 13. The charging terminal 12 is applied to the charge of the battery is formed, the power supply 14 for supplying power to the rear of the body 11 is formed.

However, the above-mentioned conventional mobile phone charger only functions to charge the discharged battery when charging a contaminated mobile phone, but does not have a sterilizing function to sterilize contaminated bacteria or diseased pathogens on the outside of the mobile phone. There is a risk of bacterial infection through, there was a problem with carrying an unsanitary cell phone formed by moisture emitted from the mobile phone.

The present invention has been made in view of the above-mentioned conventional defects, and its object is to operate the first and second ultraviolet lamps and the heating heater by operating the control member formed on the outside of the case. It is possible to selectively sterilize and dry according to the degree of contamination of germs on the body of the body, and to sanitize the front and back of the mobile phone evenly, and it is hygienic. The present invention provides a cell phone charger with a sterilization function capable of sterilizing accessories.

The present invention for achieving the above object is provided with a body having a seating space is formed to seat the mobile phone, a charging terminal for charging the battery at the lower end of the seating, the mobile phone is provided with a power supply in the rear of the body in the charger,

The body is provided with a receiving space is formed to accommodate the mobile phone, a cover for rotating the opening and closing around the hinge on one side of the body is provided, inclined at an angle to the inside of the body, the fixing plate through the through hole in the front A case having a support plate extending from an upper end of the fixing plate and having a guide hole penetrated therein, and a protrusion rib separating the support plate and the fixing plate to seat an accessory on one side of the support plate;

A first ultraviolet lamp for sterilizing the front of the mobile phone is provided at one end of the fixing plate. the support piece is provided from the rear of the case to the front, and the second ultraviolet lamp for sterilizing and drying the rear of the mobile phone on the upper end of the support piece; The heating heater is provided, characterized in that the sterilization unit is provided with a control member for controlling the first and second ultraviolet lamps and the heating heater on the front of the case.

1 is a perspective view of a conventional mobile phone charger

2 is a perspective view of the present invention

3 is a cross-sectional view of the present invention

Figure 4 as showing the state of use of the present invention

a is the cover of the case is open,

b is a state in which the mobile phone is placed inside the case to sterilize,

c is a state in which the mobile phone and accessories are sterilized at the same time inside the case.

<Explanation of symbols for the main parts of the drawings>

100: case 110: body

120: cover 130: fixed plate

140: protruding rib 150: support plate

200: sterilization unit 210: the first ultraviolet lamp

220: support piece 230: second ultraviolet lamp

240: heating heater 250: control material

Hereinafter, an embodiment of the present invention will be described in detail with reference to the accompanying drawings. 2 is a perspective view of the present invention, Figure 3 is a cross-sectional view of the present invention.

The present invention, the body 11 is provided with a seating space 13 is formed to seat the mobile phone (P), the lower end of the seating portion 13 is provided with a charging terminal 12 for charging the battery, in the mobile phone charger provided with a power supply unit 14 in the rear of the body 11, the body 110 is provided with a receiving space 111 is formed to accommodate the mobile phone (P), one side of the body 110 The cover 120 is rotated about the hinge 121 to open and close, and the cover 120 is inclined at a predetermined angle inside the body 110, and a fixing plate 130 through which the through hole 131 is penetrated is provided on the front surface. The support plate 150 extends at an upper end of the fixing plate 130 and includes a support plate 150 through which the guide hole 151 penetrates, and supports the accessory plate 150 and the fixing plate 130 on one side of the support plate 150. Is provided with a case 100 is protruding rib 140 protruding upward, one end of the fixing plate 130 The first ultraviolet lamp 210 for sterilizing the front surface of the mobile phone (P) is provided, the support piece 220 is provided from the rear of the case 100 to the front, the mobile phone on the top of the support piece 220 A second ultraviolet lamp 230 and a heating heater 240 are provided to sterilize and dry the rear surface of the P, and the first and second ultraviolet lamps 210 and 230 and the heating heater are disposed on the front of the case 100. Sterilization unit 200 is provided with a control member 250 for controlling the 240.

The support plate 150,

Ultraviolet rays emitted from the second ultraviolet lamp 230 may be transferred upward through the guide hole 151 to sterilize accessories such as watches, necklaces, and rings.

The following describes an embodiment in which the present invention configured as described above is used.

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First, as shown in FIG. 4B, the cover 120 of the case 100 is rotated upwards around the hinge 121 and then lifted up, and then the fixed plate 130 inclined to contaminated or damp mobile phone P is formed.), The mobile phone (P) is pushed from the top to the bottom and connected to the charging terminal 12 formed on one side to be properly grounded.

In addition, after connecting the mobile phone to the charging terminal 12, by rotating the cover 120 that was opened to the top to the lower case so that the ultraviolet rays emitted from the first and second ultraviolet lamps 210, 230 do not leak to the outside. In close contact with (100).

As described above, the mobile phone P is mounted and the cover 120 is closed to insert the power supply 14 formed at the rear of the case 100 to apply power. When the power is applied, the battery of the mobile phone P is charged from the time when the power is applied.

In addition, when sterilizing the mobile phone (P) in the case 100 and at the same time, sterilization, by operating the control member 250 formed on the outside of the case 100 according to the contamination of the mobile phone (P) first, 2 UV lamps 210, 230 can be adjusted, if the pollution of the user's mobile phone (P) is minimal, only the first ultraviolet lamp 210 is to operate, if the pollution degree of the mobile phone (P) is determined to be serious By operating the first and second ultraviolet lamps 210 and 230 at the same time to sterilize the front and rear of the mobile phone (P) at the same time to remove the bacteria on the outside of the mobile phone (P).

On the other hand, when the moisture generated by the heat generated from the user's mobile phone (P) to operate the heat generating heater 240 by operating the control member 250, after removing the moisture of the mobile phone (P) where the moisture is generated will be.

The control member 250 may be sterilized and dried by a user arbitrarily operating by determining the degree of contamination of the mobile phone (P).

In addition, as shown in Figure 4c, in addition to the mobile phone accessories, such as necklaces, rings, watches that are mainly used by women can be put on the support plate 150 to sterilize, in this case, sterilizing accessories simultaneously with the mobile phone (P) You may.

If the cell phone P is not charged, the user places an accessory that the user wants to disinfect and sterilize on the upper surface of the support plate 150 through which the guide hole 151 is operated. The sterilization and drying may be performed by operating the 230 and the heating heater 240, and may be sterilized and dried by simultaneously operating the first and second ultraviolet lamps 210 and 230 and the heating heater 240 as necessary. It is.

As described above, the present invention operates the first and second ultraviolet lamps and the heating heater by operating the control member formed on the outside of the case, and thus selectively depending on the degree of contamination of the bacteria on the body of the mobile phone when charging the mobile phone battery. It is possible to sterilize and dry and at the same time sterilizes the front and rear of the mobile phone evenly and hygienic, the support plate is formed through the guide hole in the upper end of the fixed plate has the advantage that can sterilize accessories such as watches, necklaces, rings.

Cited By (1)

Publication number	Priority date	Publication date	Assignee	Title
WO2006022466A1 *	2004-08-23	2006-03-02	Hyo-Jeong Baek	Sterilizing and charging apparatus for mobile communication terminals
Family To Family Citations				

* Cited by examiner, † Cited by third party, ‡ Family to family citation

Similar Documents

Publication	Publication Date	Title
US6758337B2	2004-06-22	Portable toothbrush case with UV lamp
CA2060378C	2001-02-13	Oral hygiene device
US5640783A	1997-06-24	Hearing aid drying appliance
US6483331B1	2002-10-01	Computer input device sterilization method and apparatus
DE60112969T2	2006-04-27	Uv pasteurizer
US7886578B1	2011-02-15	Ultraviolet water and object surface disinfection apparatus
EP1081199B1	2009-07-01	Use of a writing implement sterilization apparatus
US6096364A	2000-08-01	Toothbrush sterilization cabinet
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CN201758186U	2011-03-23	Automatic induction sterilizer for mobile phones
US8481970B2	2013-07-09	Sanitizer for portable electronic devices
WO2011059461A1	2011-05-19	Hearing aid dryer
ES2218681T3	2004-11-16	Apparatus for conditioning a humidity sensitive article.
US8771606B2	2014-07-08	Kitchen waste bin
JP4329841B2	2009-09-09	Hair dryer
US4981651A	1991-01-01	Apparatus for sterilizing shoes

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TW200624346A	2006-07-16	Container for dispensation of tissue
DE69933834D1	2006-09-28	Device for cleaning and disinfecting / sterilizing an endoscope
US20060120915A1	2006-06-08	Sterilization apparatus, and method for sterilizing surfaces
HK1044553A1	2002-10-25	Surface-treatment of silicone medical devices comprising an intermediate carbon coating and graft polymerization.
DE601240401D1	2006-12-07	Room cover, trunk and drive device
KR20130011874A	2013-01-30	An auto cleaner for smart-phone
US20060165571A1	2006-07-27	Nipple overcap having sterilizer
EP1469877A4	2008-08-20	B-cell lymphoma specific antigen for use in diagnosis and treatment of b-cell malignancies
PL367266A1	2004-07-26	Methods and agents for cleaning and disinfecting fragile medical appliances

Priority And Related Applications

Priority Applications (1)

Application	Priority date	Filing date	Title
KR20-2004-0011560U	2004-04-26	2004-04-26	contain for charging disinfect divice

Applications Claiming Priority (1)

Application	Filing date	Title
KR20-2004-0011560U	2004-04-26	contain for charging disinfect divice

Legal Events

Date	Code	Title	Description
2004-07-14	REGI	Registration of establishment	
2004-07-26	T201	Request for technology evaluation of utility model	
2005-11-02	T701	Written decision to grant on technology evaluation	
2005-11-15	G701	Publication of correction	
2005-12-22	FPAY	Annual fee payment	Payment date: 20051223 Year of fee payment: 3
2007-07-15	LAPS	Lapse due to unpaid annual fee	

Concepts

machine-extracted

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Name	Image	Sections	Count	Query match
sterilising		claims,abstract,description	22	0.000
heat treatment		claims,abstract,description	12	0.000
drying		claims,abstract,description	8	0.000
Bacteria		abstract,description	6	0.000

Show all concepts from the description section

Data provided by IFI CLAIMS Patent Services

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(19)대한민국특허청(KR)
(12) 등록실용신안공보(Y1)

(51) 。Int. Cl.[7]
H02J 7/00

(45) 공고일자 2004년07월27일
(11) 등록번호 20-0357216
(24) 등록일자 2004년07월14일

(21) 출원번호 20-2004-0011560
(22) 출원일자 2004년04월26일

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(54)살균장치가 내장된 휴대폰 충전기

요약

본 고안은, 케이스의 외부에 형성된 제어부재를 조작하여 제1,2 자외선램프와 발열히터를 작동하므로, 휴대폰 배터리를 충전시 휴대폰의 본체에 묻어 있는 세균의 오염 정도에 따라 선택적으로 살균 및 건조가 가능함과 동시에 휴대폰의 전, 후면을 골고루 살균시키므로 위생적이고, 고정판의 상측 단부에 안내공이 관통된 지지판이 형성되어 시계, 목걸이, 반지 등의 악세서리를 살균할 수 있는 살균기능이 내장된 휴대폰 충전기를 제공함에 있다.

대표도

도 3

명세서

도면의 간단한 설명

도 1은 종래 휴대폰 충전기의 사시도

도 2는 본 고안의 사시도

도 3은 본 고안의 단면도

도 4는 본 고안의 사용상태도를 나타낸 것으로

a는 케이스의 커버가 개방된 상태이고,

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b는 케이스 내부에 휴대폰이 안착되어 살균하는 상태이며,

c는 케이스 내부에 휴대폰과 악세서리가 동시에 살균하는 상태도이다.

<도면의 주요 부분에 대한 부호의 설명>

100: 케이스 110: 몸체

120: 커버 130: 고정판

140: 돌출리브 150: 지지판

200: 살균부 210: 제1 자외선램프

220: 지지편 230: 제2 자외선램프

240: 발열히터 250: 제어부재

고안의 상세한 설명

고안의 목적

고안이 속하는 기술 및 그 분야의 종래기술

본 고안은 휴대폰 충전기에 관한 것으로, 휴대폰 배터리를 충전함과 동시에 휴대폰의 외부에 묻어 있는 세균을 살균 및 건조시키는 살균장치가 내장된 휴대폰 충전기에 관한 것이다.

일반적으로 휴대폰은, 무선정보통신 기술의 발달로 인해 그 보급률이 기하급수적으로 증가하고 있는 추세이며, 이와 같은 보급률과 더불어 멀티미디어 서비스, 단문메세지와 같은 다양한 부가서비스가 제공됨으로서, 정보화 시대에 살아가는 현대인의 필수품이라 할 수 있다.

또한, 이러한 휴대폰의 밧데리를 충전하기 위한 별도의 장치가 필요하며, 사용자가 구입시에 휴대폰 충전기와 휴대폰이 한 셋트로 구비되어 동시에 구입을 하게 된다.

상기 휴대폰은 크게 몸체와 송신부, 수신부로 나뉘게 되는데 특히, 송신부는 그 특성상 통화자가 말을 하거나 숨을 내쉴 때에 발산되는 통화자의 타액에 의해 오염이 쉽게 되고, 휴대폰 자체에서 발생하는 열에 의해 일정온도를 유지하게 되므로, 송신부는 습하고 온난하여 세균이 번식하기 좋은 조건의 상태가 된다.

보편적으로 휴대폰은, 케이스에 보관하기 보다는 사용자의 편의에 의해 가방, 주머니, 차량의 내부 등과 같이 다양한 장소에 보관되므로 각 보관장소에 서식 하는 세균들과 접촉되기 쉽고, 항상 공기에 노출되어 있어 공기중에 부유하고 있는 세균의 유입이 용이하게 될 뿐 아니라 이에 따른 악취가 발생한다.

또한, 개인의 휴대폰이라 할지라도 여러명이 돌려가며 통화를 하는 경우가 종종 발생하기 때문에 어느 한사람이 보유하고 있는 바이러스가 휴대폰을 통해 불특정 다수의 사람에게 전염 될 수 있다.

상기 휴대폰의 베터리를 충전하는 휴대폰 충전기(10))는, 휴대폰(P)의 배터리를 충전시키도록 안착시키는 안착부(13)가 형성된 몸체(11)가 형성되고, 상기 안착부(13)의 하단부에 배터리의 충전을 인가하는 충전단자(12)가 형성되며, 상기 몸체(11)의 후방에 전원을 공급하는 전원공급부(14)가 형성된다.

그런데 상기와 같은 종래의 휴대폰 충전기는 오염된 휴대폰을 충전시 방전된 밧데리를 충전시키는 기능만 할 뿐 휴대폰의 외부에 오염된 세균이나 질환성 병원균 등을 살균하는 살균기능이 없기 때문에 사용자의 코나 호흡기를 통해 세균이 감염될 위험이 있으며, 휴대폰에서 발산되는 열에 의해 습기가 형성된 비위생적인 휴대폰을 가지고 다니는 문제점이 있었다.

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고안이 이루고자 하는 기술적 과제

이에 본 고안은 상술한 바와 같은 종래의 제반 결함을 감안하여 이루어진 것으로 그 목적은, 케이스의 외부에 형성된 제어부재를 조작하여 제1,2 자외선램프와 발열히터를 작동하므로, 휴대폰 배터리를 충전시 휴대폰의 본체에 묻어 있는 세균의 오염 정도에 따라 선택적으로 살균 및 건조가 가능함과 동시에 휴대폰의 전, 후 면을 골고루 살균시키므로 위생적이고, 고정판의 상측 단부에 안내공이 관통된 지지판이 형성되어 시계, 목걸이, 반지 등의 악세서리를 살균할 수 있는 살균기능이 내장된 휴대폰 충전기를 제공함에 있다.

이러한 목적을 달성하기 위한 본 고안은, 휴대폰을 안착시키도록 안착공간이 형성된 몰체가 구비되고, 상기 안착부의 하단부에 배터리를 충전하는 충전단자가 구비되며, 상기 몸체의 후방에 전원공급부가 구비되는 휴대폰 충전기에 있어서,

상기 휴대폰을 수용하도록 수용공간이 형성된 몰체가 구비되고, 상기 몸체의 일측에 힌지를 중심으로 회전하여 개폐시키는 커버가 구비되며, 상기 몸체의 내부에 일정각도 경사지며, 전면에 관통공이 관통된 고정판이 구비되고, 상기 고정판의 상단부에 연장되며, 안내공이 관통된 지지판이 구비되고, 상기 지지판의 일측에 악세서리를 안착시키도록 지지판과 고정판을 분리하는 돌출리브가 상향으로 돌출되는 케이스와;

상기 고정판의 일측 단부에 휴대폰의 전면을 살균시키는 제1 자외선램프가 구비되며, 상기 케이스의 후방에서 전방으로 지지편이 구비되고, 상기 지지편의 상단에 휴대폰의 후면을 살균 및 건조시키는 제2 자외선 램프와 발열히터가 구비되며, 상기 케이스 전면에 제1,2 자외선램프와 발열히터를 제어하는 제어부재가 구비되는 살균부가 구성되는 것을 특징으로 하는 것이다.

고안의 구성 및 작용

이하 첨부된 도면에 의거하여 본 고안의 일실시예를 상세히 설명한다. 도 2는 본 고안의 사시도이고, 도 3은 본 고안의 단면도이다.

본 고안은, 휴대폰(P)을 안착시키도록 안착공간(13)이 형성된 몸체(11)가 구비되고, 상기 안착부(13)의 하단부에 배터리를 충전하는 충전단자(12)가 구비되며, 상기 몸체(11)의 후방에 전원공급부(14)가 구비되는 휴대폰 충전기에 있어서, 상기 휴대폰(P)을 수용하도록 수용공간(111)이 형성된 몸체(110)가 구비되고, 상기 몸체(110)의 일측에 힌지(121)를 중심으로 회전하여 개폐시키는 커버(120)가 구비되며, 상기 몸체(110)의 내부에 일정각도 경사지며, 전면에 관통공(131)이 관통된 고정판(130)이 구비되고, 상기 고정판(130)의 상단부에 연장되며, 안내공(151)이 관통된 지지판(150)이 구비되고, 상기 지지판(150)의 일측에 악세서리를 안착시키도록 지지판(150)과 고정판(130)을 분리하는 돌출리브(140)가 상향으로 돌출되는 케이스(100)가 구비되며, 상기 고정판(130)의 일측 단부에 휴대폰(P)의 전면을 살균시키는 제1 자외선램프(210)가 구비되고, 상기 케이스(100)의 후방에서 전방으로 지지편(220)이 구비되며, 상기 지지편(220)의 상단에 휴대폰(P)의 후면을 살균 및 건조시키는 제2 자외선 램프(230)와 발열히터(240)가 구비되고, 상기 케이스(100) 전면에 제1,2 자외선램프(210)(230)와 발열히터(240)를 제어하는 제어부재(250)가 구비되는 살균부(200)가 구성된다.

상기 지지판(150)은,

상기 제2 자외선램프(230)에서 발산되는 자외선이 안내공(151)을 통해 상부 로 전달되어 시계, 목걸이, 반지 등의 악세서리를 살균할 수 있다.

다음은 상기와 같이 구성된 본 고안이 사용되는 실시예를 설명하면 다음과 같다.

먼저, 도 4b에 도시된 바와 같이, 케이스(100)의 커버(120)를 힌지(121)를 중심으로 상부로 회전하여 들어올린 후, 오염되거나 습기가 찬 휴대폰(P)을 경사지게 형성된 고정판(130)에 올려놓고, 상기 휴대폰(P)을 상부에서 하부로 밀어넣어 일측에 형성된 충전단자(12)에 올바르게 접지되도록 접속한다.

또한, 충전단자(12)에 휴대폰을 접속한 후, 상부로 개방했던 커버(120)를 하부로 회전하여 제1,2 자외선램프(210)(230)에서 발산되는 자외선이 외부로 유출되지 않도록 케이스(100)에 밀착시킨다.

상기와 같이 휴대폰(P)을 장착하고 커버(120)를 닫은 상태에서 케이스(100)의 후방에 형성되어 있는 전원공급부(14)를 꽂아 전원을 인가시킨다. 전원을 인가시키게 되면 인가시킨 시점부터 휴대폰(P)의 배터리가 충전이 되는 것이다.

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또한, 케이스(100) 내부에 있는 휴대폰(P)을 충전과 동시에 살균을 할 경우, 휴대폰(P)의 오염 여부에 따라 케이스(100)의 외부에 형성된 제어부재(250)를 조작하여 제1,2 자외선램프(210)(230)를 조절할 수 있는데, 만약 사용자 휴대폰(P)의 오염이 미미할 경우에는 제1 자외선램프(210)만 작동하면 되고, 휴대폰(P)의 오염정도가 심각하다고 판단되면 제1,2자외선램프(210)(230)를 동시에 작동하여 휴대폰(P)의 전, 후면을 동시에 살균하여 휴대폰(P)의 외부에 묻어 있는 세균을 원 천적으로 제거시킨다.

한편, 사용자의 휴대폰(P)에서 발생되는 열에 의해 습기가 발생된 경우에는 제어부재(250)를 조작하여 발열히터(240)를 작동하킨 후, 습기가 발생한 휴대폰(P)의 습기를 제거하면 되는 것이다.

상기 제어부재(250)는 사용자가 휴대폰(P)의 오염정도를 판단하여 임의로 조작하여 살균 및 건조를 할 수 있다.

또한, 도 4c에 도시된 바와 같이, 휴대폰 외에도 여성들이 주로 이용하는 목걸이나 반지, 시계 등의 악세서리를 지지판(150)에 올려놓고 살균할 수 도 있는데, 그런 경우에는 휴대폰(P)과 동시에 악세서리를 살균 할 수도 있다.

만약, 휴대폰(P)을 충전하지 않을 경우 안내공(151)이 관통된 지지판(150)의 상면에 사용자가 소독 및 살균하고 싶은 악세서리를 올려놓고 제어부재(250)를 조작하여 제2 자외선램프(230)와 발열히터(240)를 작동하여 살균 및 건조를 하면 되고, 필요에 따라 제1,2 자외선램프(210)(230)와 발열히터(240)를 동시에 작동하여 살균 및 건조를 할 수 도 있는 것이다.

고안의 효과

이상에서와 같이 본 고안은, 케이스의 외부에 형성된 제어부재를 조작하여 제1,2 자외선램프와 발열히터를 작동하므로, 휴대폰 배터리를 충전시 휴대폰의 본체에 묻어 있는 세균의 오염 정도에 따라 선택적으로 살균 및 건조가 가능함과 동시에 휴대폰의 전, 후면을 골고루 살균시키므로 위생적이고, 고정판의 상측 단부에 안내공 이 관통된 지지판이 형성되어 시계, 목걸이, 반지 등의 악세서리를 살균할 수 있는 이점이 있는 것이다.

(57) 청구의 범위

청구항 1.

휴대폰(P)을 안착시키도록 안착공간(13)이 형성된 몸체(11)가 구비되고, 상기 안착부(13)의 하단부에 배터리를 충전하는 충전단자(12)가 구비되며, 상기 몸체(11)의 후방에 전원공급부(14)가 구비되는 휴대폰 충전기에 있어서,

상기 휴대폰(P)을 수용하도록 수용공간(111)이 형성된 몸체(110)가 구비되고, 상기 몸체(110)의 일측에 힌지(121)를 중심으로 회전하여 개폐시키는 커버(120)가 구비되며, 상기 몸체(110)의 내부에 일정각도 경사지며, 전면에 관통공(131)이 관통된 고정판(130)이 구비되고, 상기 고정판(130)의 상단부에 연장되며, 안내공(151)이 관통된 지지판(150)이 구비되고, 상기 지지판(150)의 일측에 악세서리를 안착시키도록 지지판(150)과 고정판(130)을 분리하는 돌출리브(140)가 상향으로 돌출되는 케이스(100)와;

상기 고정판(130)의 일측 단부에 휴대폰(P)의 전면을 살균시키는 제1 자외선램프(210)가 구비되고, 상기 케이스(100)의 후방에 휴대폰(P)의 후면을 살균 및 건조시키는 제2 자외선 램프(230)와 발열히터(240)를 지지하도록 지지편(220)이 구비되며, 상기 케이스(100) 전면에 제1,2 자외선램프(210)(230)와 발열히터(240)를 제어하는 제어부재(250)가 구비되는 살균부(200)가 구성되는 것을 특징으로 하는 살 균기능이 내장된 휴대폰 충전기.

청구항 2.

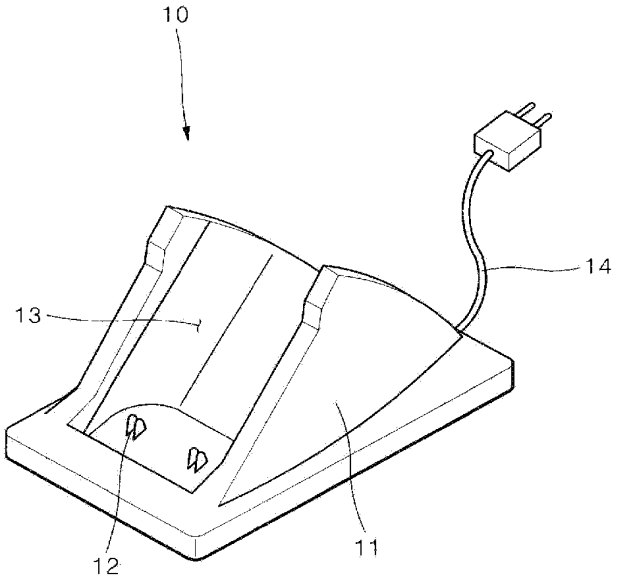
제 1항에 있어서, 상기 지지판(150)은,

상기 제2 자외선램프(230)에서 발산되는 자외선이 안내공(151)을 통해 상부로 전달되어 시계, 목걸이, 반지 등의 악세서리를 살균할 수 있도록 한 것을 특징으로 하는 살균기능이 내장된 휴대폰 충전기.

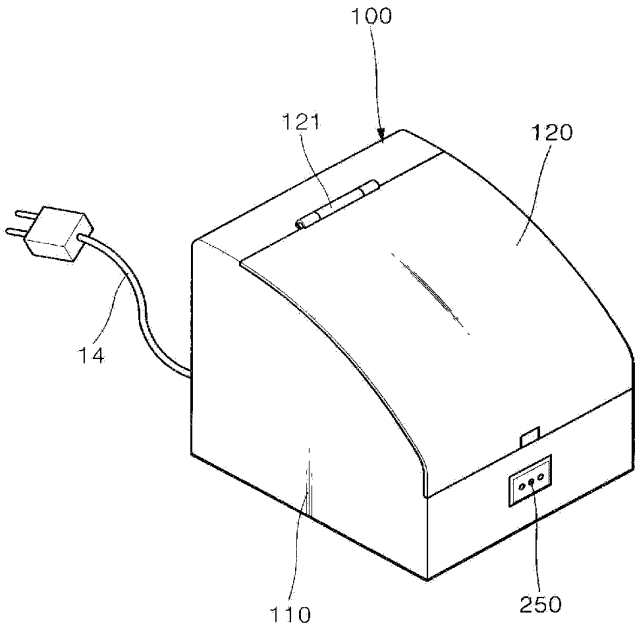
도면

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도면1

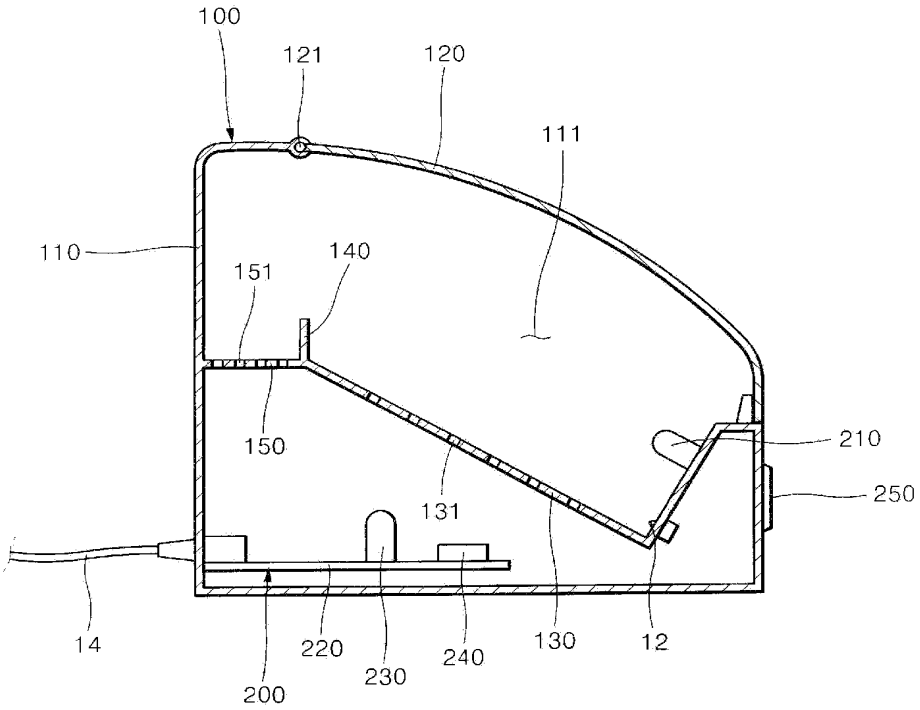


도면2

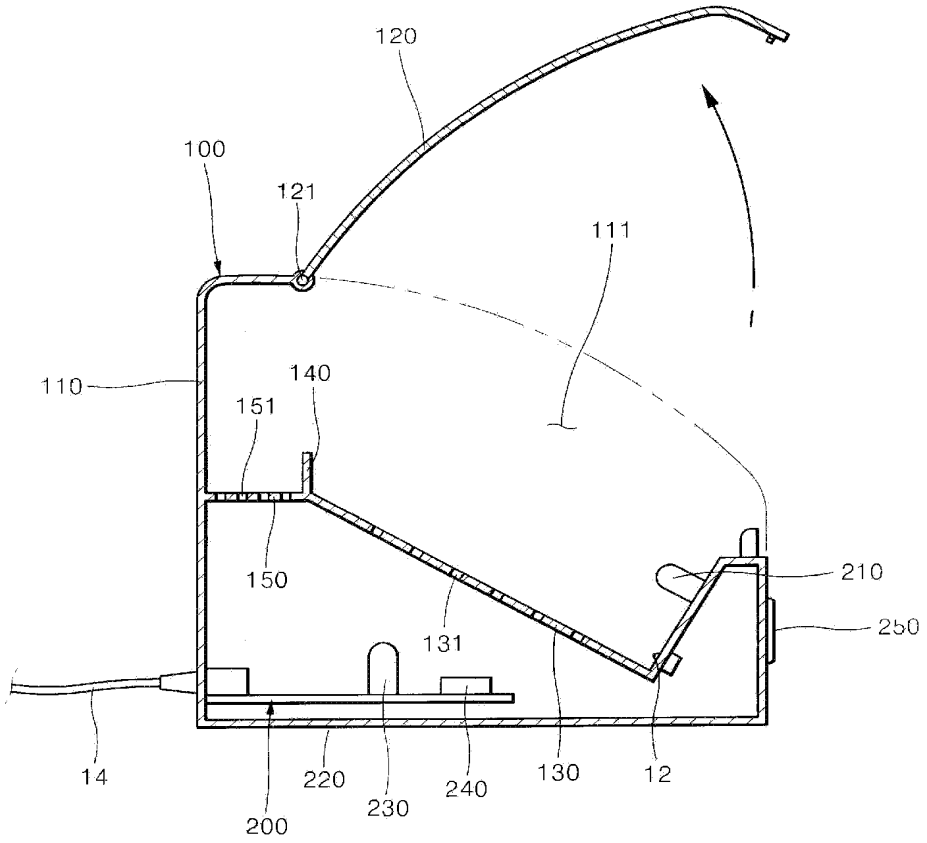


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도면3

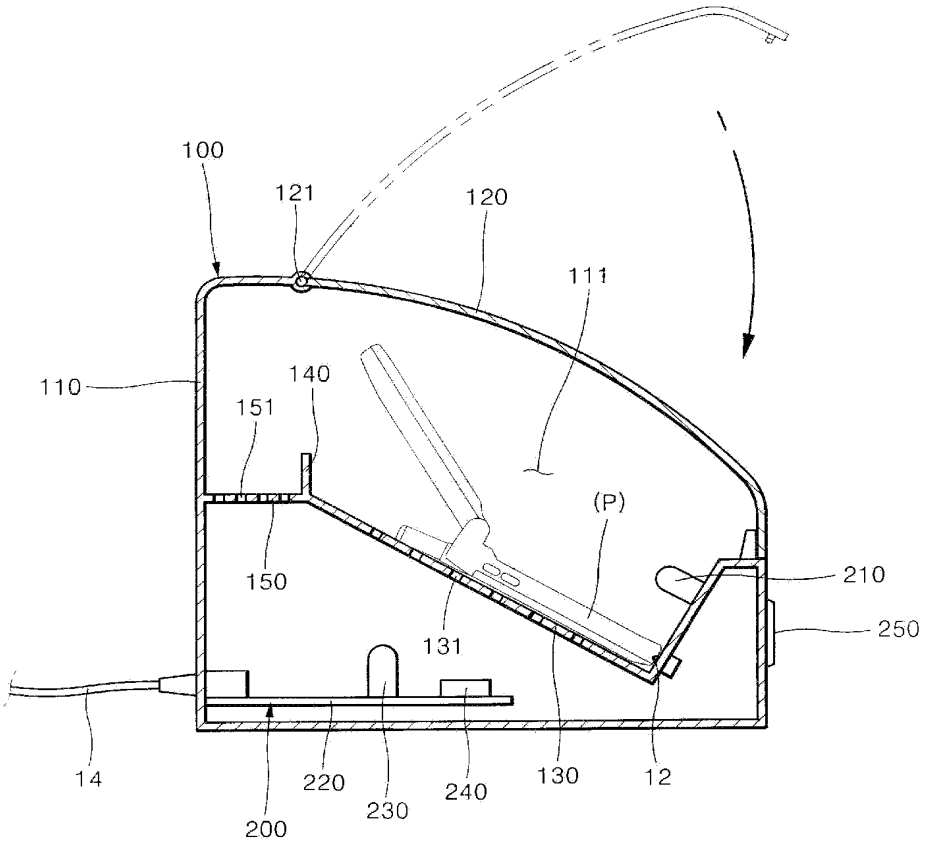


도면4a



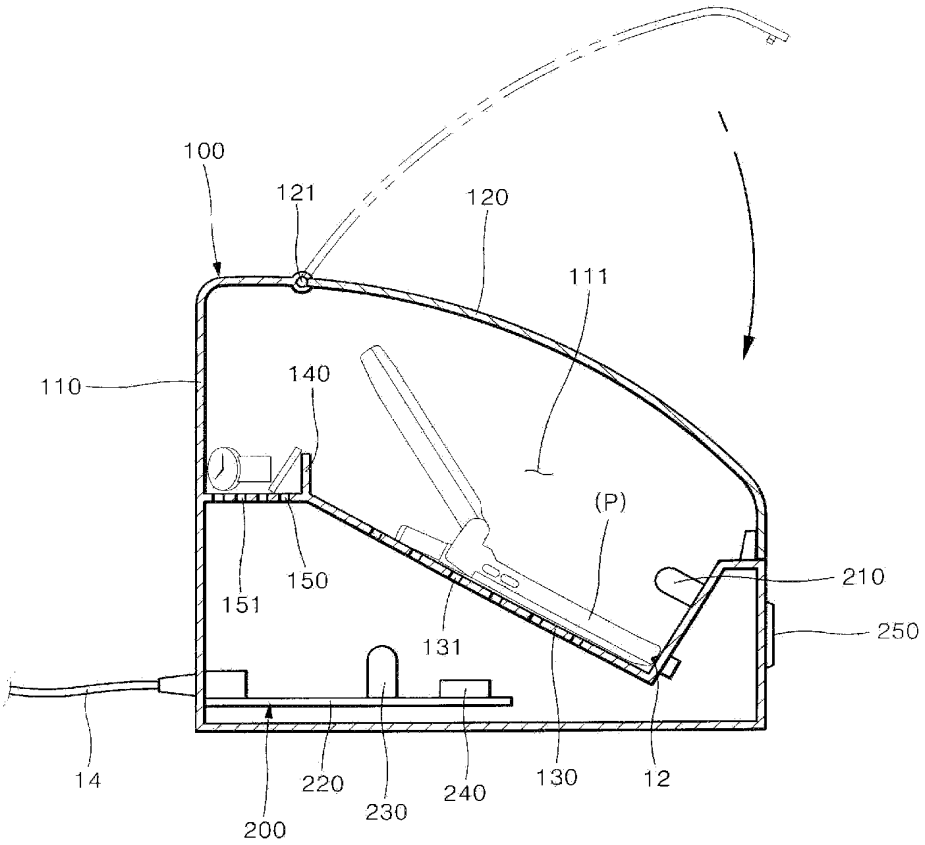
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도면4b



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도면4c



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ABSTRACT KR200410373Y1

[]

The present invention relates to a door handle sterilizing and drying device characterized by sterilizing and drying the door handle with hot air. The door handle sterilizing and drying device is installed at a distance from a door handle installed in a place where hygiene is sensitive, such as a place used by multiple users or a public restroom, to sterilize bacteria that may appear on the door handle and dry foreign substances such as water or sweat on the door handle, so that it can be used hygienically and safely.

Door handle, door, UV lamp, sterilization drying, hot air drying

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Patents KR200410373Y1

Drying Devices Having Disinfection Function For Door Knob

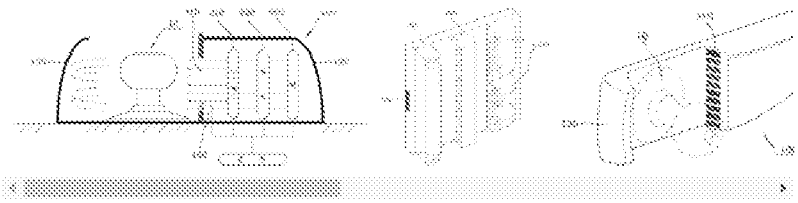
Abstract

translated from Korean

The present invention relates to a sterilizing dryer for door handles, characterized in that the door handles are sterilized and warm-air-dried, and are spaced apart from the door handles installed in doors where hygiene problems are sensitive, such as places used by various users or public toilets. The present invention relates to a sterilizing dryer for a door handle, which sterilizes germs that may occur in a door handle, and drys foreign substances such as water and sweat on the door handle, so that they can be used hygienically and safely.

Door handle, door, UV lamp, sterilization drying, warm air drying

Images (6)



Classifications

- A61L2/10 Ultraviolet radiation

View 3 more classifications

KR200410373Y1

South Korea

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Other languages: Korean

Inventor: 정준범

Worldwide applications

2005 KR

Application KR20200500357O4U events

2005-12-20 Application filed by 정준범

2005-12-20 Priority to KR20200500357O4U

2006-03-08 Application granted

2006-03-08 Publication of KR200410373Y1

Info: Cited by (11), Legal events, Similar documents, Priority and Related Applications

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Landscapes

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Claims (3)

Hide Dependent

translated from Korean

A housing part spaced apart from one side of the door handle and provided with a plurality of ventilation holes at one side adjacent to the door handle; UV lamp which is received inside the housing part and emits ultraviolet rays to the door handle to sterilize bacteria, etc .; A heat generating means accommodated in the housing part and installed adjacent to the UV lamp to adjust temperature using an electrical resistance; A sterilizing dryer for a door handle, characterized in that it is accommodated inside the housing portion, is installed adjacent to the heat generating means and generates an air flow to blow to the heat generating means to blow dry the door handle warm air. The method of claim 1, One side of the ventilation hole to further add a detection sensor, door handle sterilization dryer, characterized in that to selectively enable the operation of the door handle sterilization dryer when the grip of the door handle by the user. The method according to claim 1 or 2, wherein The other side of the door handle is further added with a reflecting plate having a certain height, sterilizing dryer for door handles, characterized in that the blowing sterilized warm air can be reflected toward the door handle.

Description

translated from Korean

Drying Devices Having Disinfection Function For Door Knob}

1 is a block diagram of a sterilization dryer for a door handle according to the present invention.

Figure 2 is an internal configuration of the door handle sterilization dryer according to the present invention.

Figure 3 is an embodiment of the door handle sterilization dryer according to the present invention.

Figure 4 is another embodiment of the door handle sterilization dryer according to the present invention.

5 is an operating state of the door handle sterilization dryer according to the present invention.

Figure 6 is an operational flow of the sterilization dryer for door handles according to the present invention.

* Description of the symbols for the main parts of the drawings *

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10: door handle 100: door handle sterilization dryer

110: ventilation hole 120: housing

130: reflector 150: detection sensor

210: UV lamp 220: heating means

230: blowing means

The present invention relates to a sterilizing dryer for door handles, characterized in that the door handles are sterilized and warm-air-dried, and are spaced apart from the door handles installed in doors where hygiene problems are sensitive, such as places used by various users or public toilets. The present invention relates to a sterilizing dryer for a door handle, which sterilizes germs that may occur in a door handle, and drys foreign substances such as water and sweat on the door handle, so that they can be used hygienically and safely.

In a public restroom in a general office building or a public restroom installed in a general outdoor area, a door handle formed on a door is hygienic and very sensitive because it is shared by several people. In addition, in addition to the bathroom, even in the case of a door handle or a door ring installed in the entrance of the building is a problem that is sensitive to the sanitary state.

In addition, in the case of the door handle of the toilet is a situation that the water is almost every day, even if the user wipes the water of the hand, the water on the door handle is often used again to get water on the hand. In addition, in general winter, the door handles are often cold due to the outside temperature, and in particular, door handles such as the front door that are exposed to the outside have been very cold and have a very difficult problem of being gripped by hand.

Thus, an antibacterial coating layer coated with an inorganic antimicrobial agent containing titanium dioxide having an antibacterial and deodorizing effect and nanosilver having an antibacterial effect is formed on the surface of the plating layer of the door handle by ultraviolet rays. Antibacterial handles for locks have been proposed. However, since the antimicrobial handle has an additional coating layer formed on the general door handle, the door handle generally needs to be newly replaced, thereby increasing the installation cost, and thus does not remove moisture from the door handle. The bactericidal effect is also difficult to expect.

In addition, a door handle having a heating function has been proposed, which inserts a heating wire into the grip portion of the door handle and mounts the control unit of the heating wire adjacent to the inside of the door so that the door handle can be opened or closed even in winter. Although the technology is provided, this also has the disadvantage of having a narrow range of use and the hassle of replacing the door and the door handle in use in the same manner as the above problem.

The present invention has been devised to solve the above problems, the door handle sterilization dryer for drying the foreign material such as water or sweat of the door handle and irradiated with ultraviolet rays to sterilize, so that the door handle can always be used sanitarily. To provide for that purpose.

Sterilizing dryer for a door handle according to the present invention In order to achieve the above object, the housing portion is provided spaced on one side of the door handle and provided with a plurality of ventilation holes on one side adjacent to the door handle, the housing UV lamps, which are housed inside the unit and emit ultraviolet rays to the door handle to sterilize germs, and heat generating means housed inside the housing unit and installed adjacent to the UV lamps to adjust temperature using electrical resistance. And, it is accommodated inside the housing portion, is installed adjacent to the heat generating means and generates air flow by blowing to the heat generating means and comprises a blowing means for drying the door handle hot air drying means for the door handle To provide.

In addition, one side of the ventilation hole is further provided with a sensor, so that when the grip of the door handle by the user to provide a door handle sterilization dryer, characterized in that to selectively enable the operation of the door handle sterilization dryer do.

In addition, the other side of the door handle is further provided with a reflecting plate having a predetermined height, to provide a sterilizing dryer for the door handle, characterized in that it can reflect the sterilized warm air blown toward the door handle.

Hereinafter, each preferred embodiment according to the present invention will be described in detail with reference to the accompanying drawings. In describing the present invention, a detailed description of related known technologies or configurations may unnecessarily obscure the subject matter of the present invention. If so, the detailed description thereof will be omitted.

1 to 2 are each a block diagram and an internal configuration of the door handle sterilization dryer according to the present invention.

As shown in each of Figures 1 to 2, the door handle sterilization dryer 100 according to the present invention is a housing portion 120 is provided with a plurality of ventilation holes 110 on one side, and the door handle (UV) 10 is composed of a UV lamp 210, a heating means 220 that can adjust the temperature by using an electrical resistance, and a blowing means 230 for drying the door handle 10, the ventilation hole 110 One side of the) may be configured by adding a sensor 150 and a reflecting plate 130 having a predetermined height on the other side of the door handle 10.

The housing part 120 has an inner accommodating part, and is mounted to be spaced apart from one side of the door handle 10, and a plurality of ventilation holes 110 are provided at one side adjacent to the door handle 10.

The ventilation hole 110 guides the ultraviolet rays emitted from the UV lamp 210, the heat generated by the heat generating means 220, and the wind direction generated by the blowing means 230 to the door handle 10, respectively. In order to do so, it is preferable to be configured to face the door handle.

The housing unit 120 may include a component such as the UV lamp 210, the heat generating means 220, the blowing means 230, and the like, which may be similar to the door and the material installed for the purpose of protection. It can be selected and configured with various materials and designs.

The UV lamp 210 is sufficient to use a general mercury lamp, and the UV light is accommodated in the housing portion 120 to emit ultraviolet light to the door handle to sterilize bacteria, depending on the state of use of the door to be installed It is preferable to configure by adjusting the intensity of the irradiated light.

The heating means 220 is configured to be accommodated in the housing 120, it is preferable to minimize the installation volume by using a simple structure that can control the temperature by using a general electrical resistance, use of the door to be installed it is preferable to configure by adjusting the intensity of the heat dissipated according to the state.

The blower means 230 is configured to be accommodated in the housing part 120 and is installed adjacent to the heat generating means 220 to generate an air flow and blow the air to the heat generating means 220 to open the door handle. It is preferable to install and configure so that a warm air may be dried. In addition, the blowing means 230 is preferably to be composed of a fan and a motor, it is preferable to configure by adjusting the wind direction is produced according to the state of use of the door.

In particular, one side of the ventilation hole 110 to further add a sensor 150, if the grip of the door handle 10 by the user can selectively operate the door handle sterilization dryer (100). Can be configured.

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The detection sensor 150 may be connected to the door handle 10 to sense a user's motion or to detect the presence or absence of a user's hand.

In addition, the other side of the door handle 10 so that the reflection plate 130 having a predetermined height is further added, the sterilized warm air passing through the blowing hole 110 through the door handle 10 toward the door handle 10. Allow it to be sent back.

The reflective plate 130 may be configured integrally with the housing unit 120, it is preferable that the reflective plate 130 is configured to select a material that can reflect the ultraviolet light emitted from the UV lamp.

3 to 4 each show embodiments of the door handle sterilization dryer according to the present invention, each embodiment according to the presence or absence of the reflector plate 130.

5 is an operation state diagram of the door handle sterilization dryer according to the present invention, the wind direction generated by the blowing means 230 passes through the heating means 220, UV lamp 210 by irradiating ultraviolet rays, a plurality of ventilation holes Guided to the door handle 10 through 110. In addition, by the reflection plate 130 installed on the other side of the door handle 10, the ultraviolet rays or the warm air passing through the door handle 10 are returned to the door handle 10 again, so as to further increase the effect of sterilization hot air drying. It is composed.

6 is an operation flowchart of the door handle sterilization dryer according to the present invention, and when the above-described detection sensor 150 is configured, the operation of the door handle sterilization dryer 10 is illustrated, and the user grips the door handle. After detecting the presence or absence of a user's hand, the sensor 150 is configured to start the operation by supplying power to each of the components (UV lamp, heat generating means, blowing means).

In the above but limited to the preferred embodiment according to the present invention, as described above, as the sterilization dryer for the door handle is configured integrally with the door handle, the present invention is not limited to the embodiment can be variously changed or modified Will be apparent to those skilled in the art.

The present invention is to maintain the sterilization and deodorization environment in the handle that the user holds by hand to prevent contamination by various germs and odors, etc. to maintain and create a more hygienic environment, and to comfortably hold the user even in winter This has the advantage of maintaining the proper temperature to open or close the door.

In addition, the present invention has the advantage of having an efficient cost reduction by simply installing and adding the sterilization dryer for the door handle without changing the structure on the door handle currently being used.

Cited By (11)

Publication number	Priority date	Publication date	Assignee	Title
KR101887393B1	2017-11-20	2018-08-10	왕승호	Handle with a sterilization function
KR20190079976A	2017-12-28	2019-07-08	차병미	Door handle disinfection device
KR102167793B1	2020-05-29	2020-10-19	해피이앤씨(주)	Sterilization disinfection device
KR102231400B1 *	2020-09-16	2021-03-24	이도현	Sterilizer for a bus stop bell
KR102310156B1 *	2021-02-25	2021-10-06	김용기	Sterilizing apparatus for door handle
KR20210133515A *	2020-04-29	2021-11-08	이정문	Elevator with disinfection equipment
WO2022015837A1 *	2020-07-17	2022-01-20	Germ Dome Industries Llc	Door handle sanitizing device
KR20220053073A	2020-10-21	2022-04-29	전주비전대학교산학협력단	Door handle disinfection device
US11400174B2	2011-03-23	2022-08-02	Germ Dome Industries Llc	System and apparatus for sanitizing a point of contact
KR20230039004A *	2021-09-13	2023-03-21	현대엘리베이터주식회사	Elevator Cage
KR20230045974A	2021-09-29	2023-04-05	김은주	Sterilization handle for door

Family To Family Citations

* Cited by examiner, † Cited by third party, ‡ Family to family citation

Similar Documents

Publication	Publication Date	Title
KR200410373Y1	2006-03-08	Drying Devices Having Disinfection Function For Door Knob
US10470620B2	2019-11-12	Bathroom management apparatus
JP2007232323A	2007-09-13	Ceiling fan
KR102022314B1	2019-11-04	lighting equipment sterilization
US20060120915A1	2006-06-08	Sterilization apparatus, and method for sterilizing surfaces
CN107586652B	2021-03-26	Bathroom management device

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Ex. 1002
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(12) 등록실용신안공보(Y1)

(51) 。Int. Cl.
A61L 2/10 (2006.01)
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(72) 고안자 정준원
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(74) 대리인 최한수

기초적요건 심사원 : 정재철

(54)문 손잡이용 살균건조기

요약

본 고안은 문 손잡이를 살균 및 온풍 건조시키는 것을 특징으로 하는 문 손잡이용 살균건조기에 관한 것으로서, 여러 사용자가 사용하는 장소나 공공 화장실 등과 같이 위생문제가 민감한 문에 설치되어 있는 문 손잡이에 이격되게 장착시켜, 문 손잡이에 생길 수 있는 세균의 살균과, 문 손잡이의 물이나 땀과 같은 이물질 등을 건조시켜, 위생적으로 안전하게 사용할 수 있도록 한 문 손잡이용 살균건조기에 관한 것이다.

대표도

도 1

색인어

문 손잡이, 도어, UV램프, 살균건조, 온풍건조

명세서

도면의 간단한 설명

도 1은 본 고안에 따른 문 손잡이용 살균건조기의 구성도.

도 2는 본 고안에 따른 문 손잡이용 살균건조기의 내부 구성도.

PS_000864

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도 3은 본 고안에 따른 문 손잡이용 살균건조기의 일 실시 예.

도 4는 본 고안에 따른 문 손잡이용 살균건조기의 다른 실시 예.

도 5는 본 고안에 따른 문 손잡이용 살균건조기의 작동 상태도.

도 6은 본 고안에 따른 문 손잡이용 살균건조기의 작동 흐름도.

도면의 주요부분에 대한 부호의 설명

10 : 문 손잡이 100 : 문 손잡이용 살균건조기

110 : 통풍홀 120 : 하우징부

130 : 반사판 150 : 감지 센서

210 : UV램프 220 : 발열 수단

230 : 송풍 수단

고안의 상세한 설명

고안의 목적

고안이 속하는 기술 및 그 분야의 종래기술

본 고안은 문 손잡이를 살균 및 온풍 건조시키는 것을 특징으로 하는 문 손잡이용 살균건조기에 관한 것으로서, 여러 사용자가 사용하는 장소나 공공 화장실 등과 같이 위생문제가 민감한 문에 설치되어 있는 문 손잡이에 이격되게 장착시켜, 문 손잡이에 생길 수 있는 세균의 살균과, 문 손잡이의 물이나 땀과 같은 이물질 등을 건조시켜, 위생적으로 안전하게 사용할 수 있도록 한 문 손잡이용 살균건조기에 관한 것이다.

일반 사무실 건물 내의 화장실이나, 일반 야외에 설치되어 있는 공중 화장실에 있어서, 문에 형성되는 문 손잡이의 경우, 여러 사람이 공동으로 사용하기 때문에 위생적으로 매우 민감한 부분이다. 또한, 화장실뿐만 아니라, 건물의 출입문에 설치되는 문 손잡이나 문고리의 경우에도 그 위생 상태에 대하여 민감하게 인식되는 문제점이다.

또한, 상기 화장실의 문 손잡이의 경우에는 거의 매일 물기가 묻어 있는 실정이며, 사용자가 손의 물기를 닦아도 문 손잡이에 묻어 있는 물 때문에 다시 손에 물이 묻곤 한다. 그리고 일반 겨울철에는 외부 온도 때문에 문 손잡이가 차갑게 되는 경우가 많으며 특히, 외기에 노출되어 있는 상태인 현관문 등의 문 손잡이는 매우 차가워서 손으로 파지하기가 매우 어려운 문제점이 있어 왔다.

이에, 문 손잡이의 도금 층 표면에 자외선에 의해 광 산화작용이 일어나면서 항균 탈취 작용을 하는 이산화티타늄과 항균작용을 하는 나노실버가 함유된 무기항균제로 코팅된 항균코팅층이 형성되어 구성된 것을 특징으로 하는 자물쇠용 항균 손잡이가 제안되어 있다. 하지만, 상기 항균 손잡이는 일반적인 문 손잡이에 부가적으로 코팅층이 형성되기 때문에 일반적으로 사용하는 문 손잡이를 새로이 교체하여야 하기 때문에 설치 비용의 증대를 가져오며, 문 손잡이의 습기를 제거하지 못하므로, 이에 따른 살균 효과 또한 기대하기 어렵다는 문제점이 있다.

또한, 발열 기능이 있는 문 손잡이가 제안되어 있는데, 이는 겨울철에도 편안하게 잡아서 문을 개방하거나 폐쇄할 수 있도록, 문 손잡이의 파지부내에 열선을 삽입하고 상기 열선의 제어부를 문 내부에 인접하여 장착시키는 기술이 제공되어 있으나, 이것 또한, 상술한 문제와 동일하게 사용중인 문과 문 손잡이부를 교체하여야 하는 번거로움과 활용범위가 좁은 단점이 지적되고 있다.

고안이 이루고자 하는 기술적 과제

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본 고안은 상기와 같은 문제점을 해결하기 위하여 안출된 것으로서, 문 손잡이의 물이나 땀과 같은 이물질 등을 건조시키고 자외선을 조사시켜 살균시킴으로써, 문 손잡이를 항시 위생적으로 사용할 수 있도록 한 문 손잡이용 살균건조기를 제공함에 그 목적으로 한다.

고안의 구성 및 작용

상기와 같은 목적을 달성하기 위하여 본 고안에 따른 문 손잡이용 살균건조기는, 문 손잡이의 일측에 이격되어 장착되며 상기 문 손잡이와 인접하는 일 측면에 복수의 통풍홀이 구비되는 하우징부와, 상기 하우징부의 내부에 수용되고 세균 등을 살균할 수 있는 자외선을 상기 문 손잡이에 발하는 UV램프와, 상기 하우징부의 내부에 수용되고 상기 UV램프와 인접하여 설치되어 전기저항을 이용하여 온도를 조절할 수 있는 발열 수단과, 상기 하우징부의 내부에 수용되며, 상기 발열 수단에 인접하여 설치되며 공기 흐름을 생성하여 상기 발열 수단으로 송풍시켜 상기 문 손잡이를 온풍 건조시키는 송풍수단으로 구성되는 것을 특징으로 하는 문 손잡이용 살균건조기를 제공한다.

또한, 상기 통풍홀의 일측에는 감지 센서가 더욱 부가되도록 하여, 사용자에 의한 문 손잡이의 파지가 감지되면 상기 문 손잡이용 살균건조기의 작동을 선택적으로 가능하게 한 것을 특징으로 하는 문 손잡이용 살균건조기를 제공한다.

또한, 문 손잡이의 타측에는 일정 높이를 가지는 반사판이 더욱 부가되어, 송풍 되는 살균 온풍을 문 손잡이 쪽으로 반사시킬 수 있는 것을 특징으로 하는 문 손잡이용 살균건조기를 제공한다.

이하, 본 고안에 따른 바람직한 각 실시 예를 첨부된 도면을 참조하여 상세히 살펴보면 다음과 같은데, 본 고안을 설명함에 있어서 관련된 공지기술 또는 구성에 대한 구체적인 설명이 본 고안의 요지를 불필요하게 흐릴 수 있다고 판단되는 경우에는 그 상세한 설명은 생략하기로 한다.

도 1 내지 도 2 각각은 본 고안에 따른 문 손잡이용 살균건조기의 구성도 및 내부 구성도이다.

도 1 내지 도 2 각각에서 보이는 것과 같이, 본 고안에 따른 문 손잡이용 살균건조기(100)는 일 측면에 복수의 통풍홀(110)이 구비되는 하우징부(120)와, 자외선을 상기 문 손잡이(10)에 발하는 UV램프(210)와, 전기저항을 이용하여 온도를 조절할 수 있는 발열 수단(220)과, 문 손잡이(10)를 건조시키는 송풍수단(230)으로 구성되며, 상기 통풍홀(110)의 일측에는 감지 센서(150)와, 문 손잡이(10)의 타측에 일정 높이를 가지는 반사판(130)이 더욱 부가되어 구성될 수 있다.

상기 하우징부(120)는 내부 수용부를 가지며, 문 손잡이(10)의 일측에 이격되어 장착되며, 상기 문 손잡이(10)와 인접하는 일 측면에는 복수의 통풍홀(110)이 구비되도록 구성된다.

상기 통풍홀(110)은 상기 UV램프(210)에서 조사되는 자외선을, 상기 발열 수단(220)에서 발생하는 열을, 상기 송풍수단(230)에서 발생하는 풍향을 각각 문 손잡이(10)에 가이드 하기 위해, 문 손잡이에 대향 되도록 구성하는 것이 바람직하다.

상기 하우징부(120)는 상기 UV램프(210), 발열 수단(220), 송풍수단(230) 등의 구성요소를 포함하여 보호하는 목적으로 설치되는 문과 그 재질을 유사하게 구성할 수 있음은 물론이고, 다양한 재질과 디자인으로 선택하여 구성할 수 있다.

상기 UV램프(210)는 일반적인 수은등을 사용하면 충분하며, 하우징부(120)의 내부에 수용되고 세균 등을 살균할 수 있는 자외선을 상기 문 손잡이에 발하도록 하며, 설치되는 문의 사용 상태에 따라 그 조사되는 빛의 세기를 조절하여 구성하는 것이 바람직하다.

상기 발열 수단(220)은 상기 하우징부(120)의 내부에 수용되도록 구성하고, 일반적인 전기저항을 이용하여 온도를 조절할 수 있는 단순한 구조를 이용하여 설치 부피를 최소화하는 것이 바람직하며, 설치되는 문의 사용 상태에 따라 그 발산되는 열의 세기를 조절하여 구성하는 것이 바람직하다.

상기 송풍수단(230)은 상기 하우징부의(120) 내부에 수용되도록 구성하고, 상기 발열 수단(220)에 인접하여 설치되도록 하여 공기 흐름을 생성하여 상기 발열 수단(220)으로 송풍시켜 상기 문 손잡이를 온풍 건조할 수 있도록 설치 구성하는 것이 바람직하다. 또한, 상기 송풍수단(230)은 팬과 모터로 구성되도록 하는 것이 바람직하며, 문의 사용 상태에 따라 그 생산되는 풍향을 조절하여 구성하는 것이 바람직하다.

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특히, 상기 통풍홀(110)의 일측에는 감지 센서(150)가 더욱 부가되도록 하여, 사용자에 의한 문 손잡이(10)의 파지가 감지되면 상기 문 손잡이용 살균건조기(100)의 작동을 선택적으로 가능하게 구성할 수 있다.

상기 감지 센서(150)는 문 손잡이(10)와 연결되어 사용자의 동작을 감지하거나, 사용자의 손의 유무를 감지하도록 하는 등의 구성이면 충분하다.

또한, 상기 문 손잡이(10)의 타측에는 일정 높이를 가지는 반사판(130)이 더욱 부가되도록 하여, 상기 송풍홀(110)을 지나 문 손잡이(10)를 거쳐 지나는 살균 온풍을 문 손잡이(10) 쪽으로 다시 되돌려 보낼 수 있도록 한다.

상기 반사판(130)은 상기 하우징부(120)과 일체로 하여 구성할 수도 있으며, 상기 UV램프에서 조사되는 자외선을 반사시킬 수 있는 재질을 선택하도록 구성하는 것이 바람직하다.

도 3 내지 도 4 각각은 본 고안에 따른 문 손잡이용 살균건조기의 실시 예들을 보여주는 것으로 상기 반사판(130)의 유무에 따른 각 실시 예이다.

도 5는 본 고안에 따른 문 손잡이용 살균건조기의 작동 상태도로서, 송풍수단(230)에서 발생시킨 풍향이 발열 수단(220)을 거치고, UV램프(210)는 자외선을 조사시킴으로써, 복수의 통풍홀(110)을 통해 상기 문 손잡이(10)로 가이드 된다. 또한, 상기 문 손잡이(10)의 타측에 설치된 반사판(130)에 의해 상기 문 손잡이(10)를 지나는 자외선이나 온풍을 다시 문 손잡이(10)로 되돌려 보내져, 살균 온풍건조의 효과를 더욱 올릴 수 있도록 구성된다.

도 6은 본 고안에 따른 문 손잡이용 살균건조기의 작동 흐름도로서, 상술한 감지 센서(150)를 구성하였을 경우, 문 손잡이용 살균건조기(10)의 작동을 나타낸 것으로서, 사용자의 문 손잡이의 파지나 사용자의 손의 유무를 상기 감지 센서(150)가 감지한 후, 상기 각 구성요소들(UV램프, 발열 수단, 송풍 수단)에게 전원을 공급하여 동작을 개시시키도록 구성된다.

상기에서는 본 고안에 따른 바람직한 실시한 예에 한정하여 상술하였으나, 상기 문 손잡이용 살균건조기가 문 손잡이와 일체로 구성하는 것과 같이, 본 고안이 상기 실시예에 한정되지 않고 다양하게 변경 또는 수정될 수 있음은 당업자에 자명하다 할 것이다.

고안의 효과

본 고안은 사용자가 손으로 잡는 손잡이에 살균 및 탈취 환경이 유지되도록 하여 각종 세균 및 악취 등에 의해 오염되는 것을 방지함으로써 더욱 위생적인 환경을 유지 및 조성할 수 있는 이점과, 겨울철에도 사용자가 편안하게 잡아서 문을 개방하거나 폐쇄할 수 있도록 적정 온도를 유지할 수 있는 이점이 있다.

또한, 본 고안은 현재 사용 중인 문 손잡이에 구조 변경 없이, 문 손잡이용 살균건조기 간단히 설치 부가시킴으로써, 효율적인 비용의 절감을 가지는 이점이 있다.

(57) 청구의 범위

청구항 1.

문 손잡이의 일측에 이격되어 장착되며, 상기 문 손잡이와 인접하는 일 측면에 복수의 통풍홀이 구비되는 하우징부와,

상기 하우징부의 내부에 수용되고 세균 등을 살균할 수 있는 자외선을 상기 문 손잡이에 발하는 UV램프와,

상기 하우징부의 내부에 수용되고 상기 UV램프와 인접하여 설치되어 전기저항을 이용하여 온도를 조절할 수 있는 발열 수단과,

상기 하우징부의 내부에 수용되며, 상기 발열 수단에 인접하여 설치되며 공기 흐름을 생성하여 상기 발열 수단으로 송풍시켜 상기 문 손잡이를 온풍 건조시키는 송풍수단으로 구성되는 것을 특징으로 하는 문 손잡이용 살균건조기.

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청구항 2.

제 1항에 있어서,

상기 통풍홀의 일측에는 감지 센서가 더욱 부가되도록 하여, 사용자에 의한 문 손잡이의 파지가 감지되면 상기 문 손잡이용 살균건조기의 작동을 선택적으로 가능하게 한 것을 특징으로 하는 문 손잡이용 살균건조기.

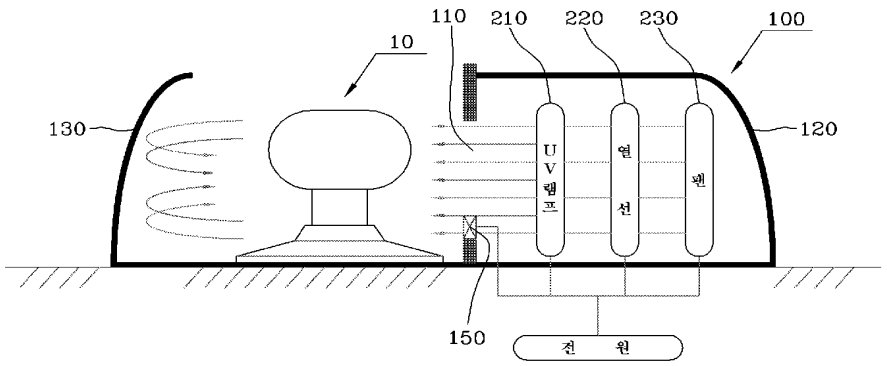
청구항 3.

제 1항 또는 제 2항 선택되는 어느 하나의 항에 있어서,

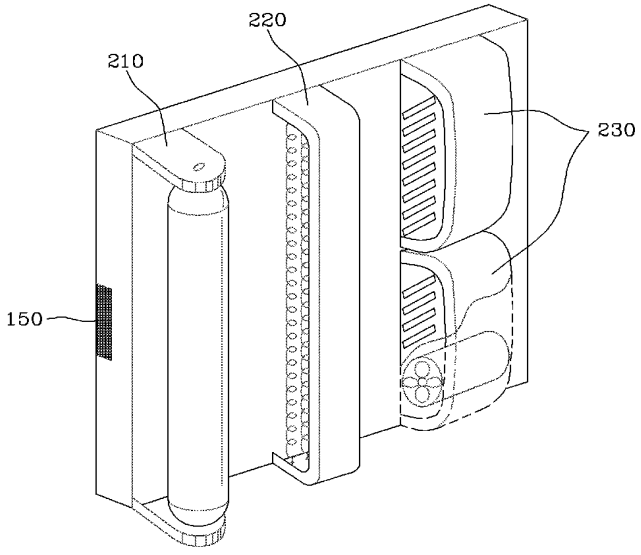
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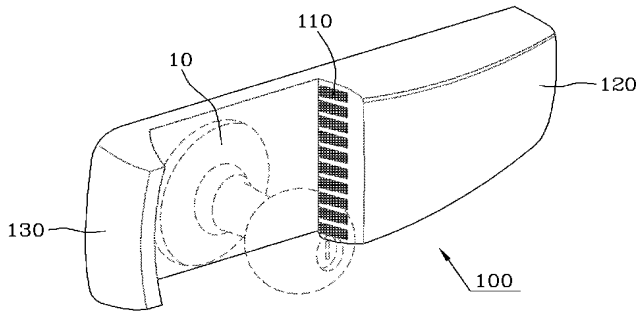
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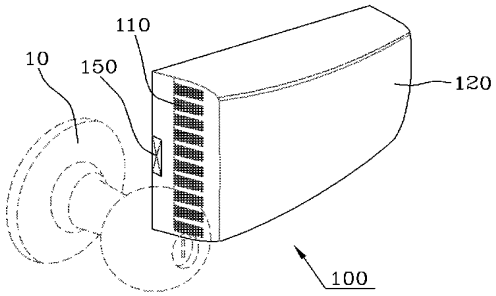
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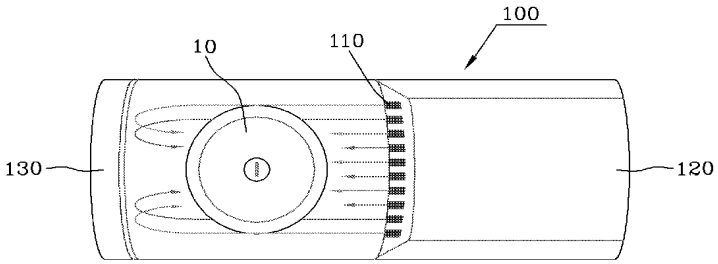
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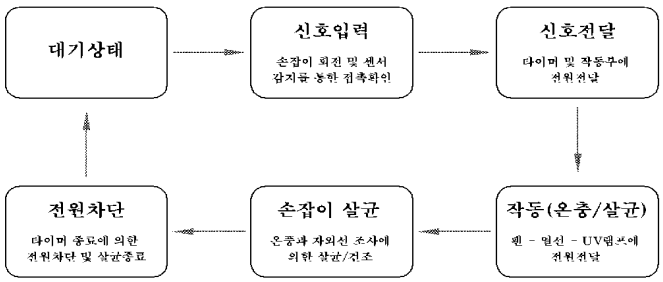
도면4



도면5



도면6



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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Dean Schumacher

First Named Inventor: Dean Schumacher | Confirmation No.: 7738

Serial No.: 18/804,396 | Examiner: Jason Y. KO

Filed: August 14, 2024 | Group Art Unit: 1711

For: SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT

Attorney Docket No.: AGD0100.7

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. § 1.97

Commissioner for Patents
United States Patent and Trademark Office
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In compliance with the duty of disclosure under 37 C.F.R. § 1.56 and § 1.97-1.98, the references listed and identified on the attached Forms PTO/SB/08A are being submitted herewith for consideration by the Examiner. The following information is intended to satisfy the requirement for a concise explanation of relevance under 37 CFR §1.98(a)(3) and MPEP §609:

CN2236317 (Y): An English language Abstract of the foreign language document is provided herewith, which was obtained from Espacenet (https://worldwide.espacenet.com).

CN1269602 (A): An English language Abstract of the foreign language document is provided herewith, which was obtained from Espacenet (https://worldwide.espacenet.com).

CN101951004 (A): An English language Abstract of the foreign language document is provided herewith, which was obtained from Espacenet (https://worldwide.espacenet.com).

JPH07265394 (A): An English language Abstract of the foreign language document is provided herewith, which was obtained from Espacenet (https://worldwide.espacenet.com).

JP2012216299 (A): An English language Abstract of the foreign language document is provided herewith, which was obtained from Espacenet (https://worldwide.espacenet.com).

KR20010053840 (A): An English language Abstract of the foreign language document is provided herewith, which was obtained from Espacenet (https://worldwide.espacenet.com).

KR20030033475 (A): An English language Abstract of the foreign language document is provided herewith, which was obtained from Espacenet (https://worldwide.espacenet.com).

KR200338371 (Y1): An English language Abstract of the foreign language document is provided herewith, which was obtained from Google Patents (https://patents.google.com).

KR200357216 (Y1): An English language Abstract of the foreign language document is provided herewith, which was obtained from Google Patents (https://patents.google.com).

KR200371154 (Y1): An English language Abstract of the foreign language document is provided herewith, which was obtained from Google Patents (https://patents.google.com).

KR200375295 (Y1): An English language Abstract of the foreign language document is provided herewith, which was obtained from Google Patents (https://patents.google.com).

KR20060012144 (A): An English language Abstract of the foreign language document is provided herewith, which was obtained from Espacenet (https://worldwide.espacenet.com).

KR200410373 (Y1): An English language Abstract of the foreign language document is provided herewith, which was obtained from Google Patents (https://patents.google.com).

KR20060115457 (A): An English language Abstract of the foreign language document is provided herewith, which was obtained from Espacenet (https://worldwide.espacenet.com).

KR200439969 (Y1): An English language Abstract of the foreign language document is provided herewith, which was obtained from Google Patents (https://patents.google.com).

KR100956373 (B1): An English language Abstract of the foreign language document is provided herewith, which was obtained from Espacenet (https://worldwide.espacenet.com).

KR20110024651 (A): An English language Abstract of the foreign language document is provided herewith, which was obtained from Espacenet (https://worldwide.espacenet.com).

WO2004080494 (A1): An English language Abstract of the foreign language document is provided herewith, which was obtained from Espacenet (https://worldwide.espacenet.com).

WO2006022466 (A1): An English language Abstract of the foreign language document is provided herewith, which was obtained from Espacenet (https://worldwide.espacenet.com).

WO2006075894 (A1): An English language Abstract of the foreign language document is provided herewith, which was obtained from Espacenet (https://worldwide.espacenet.com).

WO2007010255 (A1): An English language Abstract of the foreign language document is provided herewith, which was obtained from Espacenet (https://worldwide.espacenet.com).

WO2007036130 (A1): An English language Abstract of the foreign language document is provided herewith, which was obtained from Espacenet (https://worldwide.espacenet.com).

WO2008040316 (A1): An English language Abstract of the foreign language document is provided herewith, which was obtained from Espacenet (https://worldwide.espacenet.com).

Citation of the listed references is not to be construed as an admission that any of the references are "material" as defined under 37 C.F.R. § 1.56(b). Form PTO/SB/08A is included herewith. Consideration and entry into the record of these references is respectfully requested.

Please charge any fees associated with this information disclosure statement to deposit account 50-5080.

Respectfully submitted,

By: _/Quincy J. Harrison/_____
Quincy J. Harrison
Reg. No. 65,374

Date: __2/20/2025_____

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Espacenet

KR200439969Y1 STERILIZING APPARATUS FOR MOBILECOMMUNICATION TERMINAL

Applicants:

Inventors:

Classifications:

IPC ***A61L2/10; H02J7/00;***

CPC **A61L2/10 (KR);** A61L2202/11 (KR); A61L2202/122 (KR); A61L2202/16 (KR);

Priorities: KR20070002378U 2007-02-09

Application: KR20070002378U·2007-02-09

Publication: KR200439969Y1·2008-05-15

Published as: KR200439969Y1

STERILIZING APPARATUS FOR MOBILECOMMUNICATION TERMINAL

Abstract

The present invention is to provide the sterilizing for mobile phone apparatus which at the same time, can obtain the advertising effect from the indication of trademark part installed at the upper case it is the apparatus for sterilizing the cellular phone particularly, by using the ultra-violet ray lamp.The present invention is characterized that it is combined with the upper base lid, consisting of the transparent material and the upper case which is connected to the hinge section, combined in the specified region and upper base lid and hinge section so that the upper base lid rotate and builds in the ultra-violet ray lamp and it is combined with the upper case and the power supply unit is built-in. And the lower case which comprises the inclined side in order to set up the cellular phone is included. The power supply device is operated in case it is electrically connected and the upper base lid is closed and the ultra-violet ray lamp is operated in the power supply device, the ultra-violet ray lamp and hinge.KEYWORDSThe cellular phone, sterilization, hinge, indication of trademark part, hinge section.

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Patents KR200439969

Sterilizing apparatus for mobilecommunication terminal

Abstract

The present invention is a device for sterilizing a mobile phone, and more particularly, to provide a mobile phone sterilizer which can simultaneously obtain the advertising effect through the trademark display unit is installed on the upper case to sterilize the mobile phone using an ultraviolet lamp.
The present invention is an upper cover made of a transparent material, a hinge portion coupled to a predetermined portion so that the upper cover is rotated, the upper case connected to the upper cover and the hinge portion, the upper case and the UV case, and the upper case and it is coupled to the power supply unit and includes a lower case including an inclined surface for installing a mobile phone, the power supply unit and the ultraviolet lamp and the hinge is electrically connected when the upper cover is closed when the power supply is activated And operating the ultraviolet lamp.
Mobile phone, sterilization, hinge, trademark, hinge

Images (6)



Classifications

- A61L2/10 Ultra-violet radiation

View 3 more classifications

KR200439969Y1
South Korea

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Other languages: Korean

Inventor: 박경택, 안정선

Worldwide applications

2007 KR

Application KR2020070002378U events

2007-02-09 Application filed by 박경택, 안정선
2007-02-09 Priority to KR2020070002378U
2008-05-15 Application granted
2008-05-15 Publication of KR200439969Y1

Info: Cited by (1), Legal events, Similar documents, Priority and Related Applications

External links: Espacenet, Global Dossier, Discuss

Claims (4)

Hide Dependent

1. Top cover made of transparent material,

   A hinge portion coupled to a predetermined portion to rotate the upper cover;

   An upper case connected to the upper cover and the hinge part to impart an ultraviolet lamp;

   The lower case is coupled to the upper case and the power supply is built in, and the lower case includes an inclined surface for installing a mobile phone.

   Including,

   The power supply unit, the ultraviolet lamp and the hinge are electrically connected to each other. When the upper cover is closed, the power supply unit is operated to operate the ultraviolet lamp, and a trademark display unit is provided on the surface of the upper case that is positioned corresponding to the ultraviolet lamp. Mobile phone sterilizer, characterized in that provided.

2. delete
3. delete
4. delete

Description

Mobile phone sterilizer {STERILIZING APPARATUS FOR MOBILECOMMUNICATION TERMINAL}

1 is a perspective view of a mobile phone sterilizer according to the present invention.

Figure 2 is an exploded perspective view of the mobile phone sterilizer according to the present invention.

Figure 3 is a side cross-sectional view of the mobile phone sterilizer according to the present invention.

Figure 4a, 4b is an enlarged cross-sectional view showing the operating state of the hinge portion according to the present invention.

5 is a schematic perspective view showing another embodiment of the present invention.

*** Description of the symbols for the main parts of the drawings ***

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10 top cover 11 hinge

12: switch bar 20: upper case

21: switch 30: lower case

40: battery cover 50: trademark display

51: UV lamp 100: hinge portion

The present invention is a device for sterilizing a mobile phone, and more particularly, to provide a mobile phone sterilizer which can simultaneously obtain the advertising effect through the trademark display unit is installed on the upper case to sterilize the mobile phone using an ultraviolet lamp.

In general, the mobile communication terminal may be contaminated by the user in contact with the user's saliva or hand, and also stored in a bag or pocket, and thus may be easily exposed to germs depending on the storage location. In addition, the mobile communication terminal may infect bacteria through a user's ear, nose, mouth, etc. during a call, so a necessity of sterilization function of the mobile communication terminal is required.

Conventional mobile communication terminals sterilize bacteria contaminated with the mobile communication terminal by using a sterilizer or a charger equipped with a sterilization function, but the sterilizer may be used by using a device used for sterilizing a conventional toothbrush. It is bulky, complicated in structure, and difficult to move.

In addition, since the sterilizer and the charger are connected to a computer via USB, power is supplied, so that the sterilizer and the charger cannot be used in a space in which the computer is not provided.

The present invention is to solve the problems as described above, as a device for sterilizing a mobile phone, and more particularly, to provide a mobile phone sterilization device to sterilize a mobile phone using an ultraviolet lamp.

1 is a perspective view of a mobile phone sterilizer according to the present invention.

2 is an exploded perspective view of the mobile phone sterilizer according to the present invention.

Figure 3 is a side cross-sectional view of the mobile phone sterilizer according to the present invention.

As shown in Figures 1 to 3, the mobile phone sterilizer of the present invention is the top cover 10 made of a transparent material, the hinge portion 100 is coupled to a predetermined portion so that the top cover 10 can rotate; The upper case 10 is connected to the upper cover 10 and the hinge part 100 to impart an ultraviolet lamp 51, and is coupled to the upper case 20, and a power supply device is installed, and a mobile phone is installed. It consists of a lower case 30 including an inclined surface in order to.

The upper cover 10 is made of a transparent material, and serves to protect the mobile phone 1 during sterilization of the mobile phone 1 according to the purpose of the present invention. In addition, the upper cover 10 is preferably composed of a plastic of a transparent material so that the user can accurately check whether the mobile phone 1 is mounted and sterilizing.

The upper case 20 is connected to the upper cover 10 and the hinge 11 so that the ultraviolet lamp is installed. In addition, the upper case 20 is preferably made of a size that fits the average body shape of the Korean people so that the user can conveniently grip when traveling or transporting, it can adjust the size with respect to the typical mobile phone size.

The hinge 11 is a device for inducing the upper case 20 and the upper cover 10 to be opened and closed with a predetermined distance, and is preferably provided on both sides of the upper case 20. That is, holes are formed on both sides of the upper cover 10, and grooves of the upper case 20 are formed at positions corresponding to the holes so that the upper cover 10 can be opened and closed. In addition, the stopper may be formed at any position of the upper cover 10 to maintain a constant separation.

4A and 4B are enlarged cross-sectional views illustrating an operating state of the hinge unit according to the present invention.

As shown in Figure 4a, 4b, the hinge portion 100 of the present invention, the hinge 11 is provided at a predetermined position to open and close the upper cover 10 and the upper case 20, and the hinge 11 And a switch bar 12 provided in the upper cover 10 and positioned vertically when the upper cover 10 is closed, and positioned in a horizontal direction when the upper cover 10 is opened; A switch 21 is provided in the upper case 20 in correspondence with the switch bar 12, and the switch bar 12 is a part in contact with the switch 21 around the hinge 11. When the upper cover 10 is closed, the switch 21 is smaller in width than the portion that is not in contact with 21 to press the switch 21 to operate the power supply.

Here, the switch bar 12 is preferably formed in a bar shape formed in a predetermined direction.

The hinge 11 of the hinge portion 100 may have various definitions, but in the present invention, the hinge 11 is defined as a general hinge for opening and closing a predetermined case and cover with a predetermined groove and a hole.

The ultraviolet lamp 51 is a lamp that can also be used for advertising by emitting light to the trademark display unit 50 to dissipate ultraviolet rays and sterilize bacteria.

The lower case 30 is coupled to the upper case 20 and a power supply device (not shown) is installed.

The power supply device may be connected to a disposable or secondary battery, and this power connection method uses a general method, and thus a detailed description thereof will be omitted. In addition, the battery cover 40 is mounted to the lower case 30 to protect the battery used in the power supply.

In addition, the power supply device, the ultraviolet lamp 51 and the switch 21 are electrically connected, and when the upper cover 10 is closed, the power supply device operates to operate the ultraviolet lamp 51.

In addition, the power supply device uses a power source having a voltage drop of a USB power source or a home power source.

On the other hand, the upper surface of the upper case 20 which is located to correspond to the ultraviolet lamp 51 of the present invention is provided with a trademark display unit 50 of a transparent synthetic resin material. Therefore, the present invention is to sterilize the mobile phone (1) and at the same time there is an effect that can be carried out with the advertisement of a specific company, the reference numeral S in the drawing is a sponge processed into a predetermined shape when inserting the mobile phone 1 It is only to be able to easily take out the mobile phone (1) after sterilization so as not to go deep into the upper case (20).

Hereinafter, a method of using the mobile phone sterilizer according to the present invention will be described.

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First, when the upper cover 10 is opened in a predetermined direction, the mobile phone 1 is stably docked in a predetermined manner in a space formed by the upper case 20 and the lower case 30.

When the upper cover 10 is closed, the inside of the upper case 20 is sealed, and then the switch 21 connected to the hinge 11 connected to the upper cover 10 or the upper case 20.) is operated to operate the ultraviolet lamp 51.

In addition, at this time, the trademark display unit 50 located on the surface of the upper cover 10, which is located corresponding to the ultraviolet lamp 51 is formed of a transparent material can emit some light of the lamp 51..

Therefore, the present invention not only sterilizes the mobile phone 1, but also enhances the effect of the logo or mark and image advertisement of the company designed on the trademark display unit 50 corresponding to the light emitted from a part of the lamp 51. have.

Here, it is natural that the ultraviolet lamp 51 can be operated not only by the disposable battery or the secondary battery but also by a general household power source.

On the other hand, Figure 5 is a schematic perspective view showing another embodiment of the present invention.

As shown in FIG. 5, the upper case 20 and the lower case are connected to a power line (not shown) when the mobile phone 1 is charged so that an input terminal (not shown) that is commonly used may be inserted and coupled. The charging terminal 60 is mounted at a predetermined position between the terminals 30, and the other end of the power line 70 having a predetermined length connected to one side of the charging terminal 60 connects the input terminal 80. It is preferable to sterilize the mobile phone 1 by using the sterilization apparatus of the present invention and to charge the battery of the mobile phone 1.

The present invention described above is not limited to the above-described embodiment and the accompanying drawings, it is possible that various substitutions, changes and modifications within the scope without departing from the technical spirit of the present invention in the technical field to which the present invention belongs it will be clear to those of ordinary knowledge.

The present invention can easily sterilize the mobile phone, and has the effect of simultaneously charging the exhausted mobile phone battery during the sterilization time.

In addition, the present invention is provided with a trademark display unit having an advertising function on the outside, so that the light emitted from the ultraviolet lamp can be displayed to the outside to obtain the advertising effect to make the trademark display stand out, it is possible to reduce the heat generated by.

Cited By (1)

Publication number	Priority date	Publication date	Assignee	Title
KR200474491Y1	2013-04-04	2014-09-22	권영신	Toothbrush rack

Family To Family Citations

* Cited by examiner, † Cited by third party, ‡ Family to family citation

Similar Documents

Publication	Publication Date	Title
CN201768186U	2011-03-23	Automatic induction sterilizer for mobile phones
US6953940B2	2005-10-11	Hand-held germicidal lamp with safety features
US20140264070A1	2014-09-18	Ultraviolet Disinfection Case
CN202236462U	2012-05-30	Rotating door type multi-purpose ultraviolet disinfection device
US10186886B2	2019-01-22	Charging apparatus for mobile device and multi-station charging apparatus using the same
USD527302S1	2006-08-29	Hand held vacuum device
US6991346B2	2006-01-31	Portable light source with mirror
US7718906B2	2010-05-18	Hand-held devices with touch sensing on/off operation
EP3020649B1	2019-07-17	Electric oral hygiene device storage container
US9289523B2	2016-03-22	Universal UV sterilizer
AT260864T	2004-03-15	Portable hydrogen source
PL1530019T3	2012-08-31	A control unit for a defence-spray container in combination with a light source
HK1073095A1	2005-09-23	Sealed container having double lids
EP2571538B1	2017-05-03	Ophthalmic lens disinfecting base
GB2465920A	2010-06-09	Waterproof portable lamp
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EP1683038A4	2012-06-06	Portable medical information device with dynamically configurable user interface
US8481970B2	2013-07-09	Sanitizer for portable electronic devices
PT1337262E	2008-10-24	Improved ophthalmic and contact lens solutions with a peroxide source and a cationic polymeric preservative
KR101682894B1	2016-12-06	Cosmetic case with puff sterilizing unit
EP1701631B1	2013-02-27	Touch-activated purse illumination assembly
MXPA05007524A	2005-09-21	Liquid tooth whitening gel.
CA2316086A1	2002-02-07	Writing implement sterilization apparatus
RU2005102590A	2005-09-10	Capping device containing swivelly attached cap formed in closed provision
TWI625810B	2018-06-11	Mobile phone charger with sterilization ultraviolet led

Priority And Related Applications

Priority Applications (1)

Application	Priority date	Filing date	Title
KR20200700002378U	2007-02-09	2007-02-09	Sterilizing apparatus for mobilecommunication terminal

Applications Claiming Priority (1)

Application	Filing date	Title
KR20200700002378U	2007-02-09	Sterilizing apparatus for mobilecommunication terminal

Legal Events

Date	Code	Title	Description
2007-02-09	A201	Request for examination	
2007-12-17	E902	Notification of reason for refusal	
2008-04-16	E701	Decision to grant or registration of patent right	
2008-05-08	REGI	Registration of establishment	
2013-02-15	FPAY	Annual fee payment	Payment date: 20130215 Year of fee payment: 6
2014-02-17	FPAY	Annual fee payment	Payment date: 20140217 Year of fee payment: 7
2015-05-08	FPAY	Annual fee payment	Payment date: 20150508 Year of fee payment: 8
2016-07-08	FPAY	Annual fee payment	Payment date: 20160708 Year of fee payment: 9
2017-02-10	EXPY	Expiration of term	

Concepts

machine-extracted

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Name	Image	Sections	Count	Query match
sterilising		title,abstract,description	16	0.000
mobile communication		title,description	7	0.000
materials		claims,abstract,description	7	0.000

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≈ corresponding	claims,description	4	0.000
≈ effects	abstract,description	6	0.000

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(12) 등록실용신안공보(Y1)

(45) 공고일자 2008년05월15일
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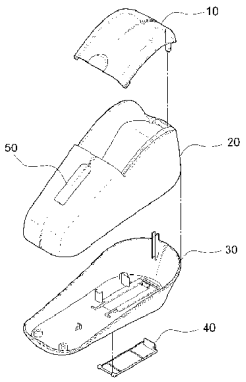
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(57) 요 약

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본 고안은 투명 재질로 이루어진 상부 덮개와, 상기 상부 덮개가 회전할 수 있도록 일정 부위에 결합되는 힌지부와, 상기 상부 덮개와 상기 힌지부로 연결되어 자외선램프를 내설한 상부 케이스와, 상기 상부 케이스와 결합되고 전원장치가 내설되며, 휴대폰을 설치하기 위하여 경사진면을 포함하는 하부 케이스를 포함하되, 상기 전원 장치와 자외선램프와 상기 힌지는 전기적으로 연결되어 상기 상부 덮개가 닫힐 경우 상기 전원장치가 작동되어 상기 자외선램프를 동작시키는 것을 특징으로 한다.

대표도 - 도2



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실용신안 등록청구의 범위

청구항 1

투명 재질로 이루어진 상부 덮개와,

상기 상부 덮개가 회전할 수 있도록 일정 부위에 결합되는 힌지부와,

상기 상부 덮개와 상기 힌지부로 연결되어 자외선램프를 내설한 상부 케이스와,

상기 상부 케이스와 결합되고 전원장치가 내설되며, 휴대폰을 설치하기 위하여 경사진면을 포함하는 하부 케이스를

포함하되,

상기 전원 장치와 자외선램프와 상기 힌지는 전기적으로 연결되어 상기 상부 덮개가 닫힐 경우 상기 전원장치가 작동되어 상기 자외선램프를 동작시키고, 상기 자외선램프에 대응되게 위치되는 상기 상부 케이스의 표면에는 상표표시부가 구비되는 것을 특징으로 하는 휴대폰 살균장치.

청구항 2

삭제

청구항 3

삭제

청구항 4

삭제

명 세 서

고안의 상세한 설명

고안의 목적

고안이 속하는 기술 및 그 분야의 종래기술

<12> 본 고안은 휴대폰을 살균하기 위한 장치로서, 보다 상세하게는 자외선 램프를 이용하여 휴대폰을 살균하는 동시에 상부 케이스에 설치되는 상표표시부를 통해 광고효과를 동시에 얻을 수 있는 휴대폰 살균장치를 제공한다.

<13> 일반적으로, 이동통신 단말기는 사용자의 타액 또는 손과 접촉되어 사용자에 의해 오염될 수 있으며, 또한 가방 또는 주머니 등에 보관되므로 보관 장소에 따라 세균에 노출되기 쉽다. 또한, 상기 이동통신 단말기는 통화 중 사용자의 귀, 코, 입 등을 통해 세균을 감염시킬 우려가 있어, 상기 이동통신 단말기의 살균 기능의 필요성이 요구된다.

<14> 종래의 이동통신 단말기는 별도 구비된 살균기 또는 살균 기능이 구비된 충전기를 이용하여 상기 이동통신 단말기에 오염된 세균을 살균하기도 하나, 상기 살균기는 기존의 칫솔 살균에 사용했던 장치를 그대로 이용해서 사용하여 부피가 크고, 구조가 복잡하며, 이동이 어려운 문제점이 있다.

<15> 또한, 상기 살균기 및 충전기는 USB를 통하여 컴퓨터에 연결을 해야만 전원이 공급되므로 상기 컴퓨터가 구비되지 않은 공간에서는 사용할 수 없어 공간 제약에 따른 효율성이 크게 저하되는 문제점이 생긴다.

고안이 이루고자 하는 기술적 과제

<16> 본 고안은 상기와 같은 문제점을 해결하기 위한 것으로서, 휴대폰을 살균하기 위한 장치로서, 보다 상세하게는 자외선 램프를 이용하여 휴대폰을 살균할 수 있도록 한 휴대폰 살균장치를 제공하고자 안출된 목적이 있다.

고안의 구성 및 작용

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<17> 도 1은 본 고안에 의한 휴대폰 살균장치의 사시도 이다.

<18> 도 2는 본 고안에 의한 휴대폰 살균장치의 분해 사시도 이다.

<19> 도 3은 본 고안에 의한 휴대폰 살균장치의 측 단면도이다.

<20> 도 1 내지 도 3에서 보는 바와 같이, 본 고안의 휴대폰 살균장치는 투명 재질로 이루어진 상부 덮개(10)와, 상기 상부 덮개(10)가 회전할 수 있도록 일정 부위에 결합되는 힌지부(100)와, 상기 상부 덮개(10)와 상기 힌지부(100)로 연결되어 자외선램프(51)를 내설한 상부 케이스(20)와, 상기 상부 케이스(20)와 결합되고 전원장치가 내설되며, 휴대폰을 설치하기 위하여 경사진면을 포함하는 하부 케이스(30)로 구성된다.

<21> 상기 상부 덮개(10)는 투명 재질로 이루어지고, 본 고안의 목적에 따른 휴대폰(1)을 살균하는 동안 상기 휴대폰(1)을 보호하는 역할을 한다. 또한, 상부 덮개(10)는 사용자가 휴대폰(1)이 장착되어 살균 중인지를 정확히 확인할 수 있도록 투명재질의 플라스틱으로 구성되는 것이 바람직하다.

<22> 상기 상부 케이스(20)는 상기 상부 덮개(10)와 힌지(11)로 연결되어 자외선램프가 내설된다. 또한, 상부 케이스(20)는 사용자가 여행 또는 운반 시 편리하게 파지할 수 있도록 대한민국 국민의 평균 체형에 맞는 크기로 제작되는 것이 바람직하며, 통상적인 휴대폰 크기와 관련하여 그 크기를 조절할 수 있다.

<23> 상기 힌지(11)는 상기 상부 케이스(20)와 상부 덮개(10)가 일정한 이격을 가지고 개폐될 수 있도록 유도하는 장치로서, 상기 상부 케이스(20) 양측에 구비되는 것이 바람직하다. 즉, 상기 상부 덮개(10) 양측에 홀을 형성하고, 상기 홀에 대응하는 위치에 상기 상부 케이스(20)의 홈을 형성하여 상기 상부 덮개(10)가 개폐될 수 있도록 한다. 또한, 일정한 이격을 유지하기 위하여 상기 상부 덮개(10) 임의의 위치에 스토퍼를 형성할 수도 있다.

<24> 도 4a, 4b는 본 고안에 따른 힌지부의 작동상태를 도시해 보인 확대 단면도이다.

<25> 도 4a, 4b에 도시된 바와 같이, 본 고안의 힌지부(100)는, 상기 상부 덮개(10)와 상부 케이스(20)가 개폐되도록 일정 위치에 구비되는 힌지(11)와, 상기 힌지(11)에 대응되어 상기 상부 덮개(10)에 구비되고 상기 상부 덮개(10)가 닫힐 경우 수직 방향으로 위치하고, 상기 상부 덮개(10)가 오픈될 경우 수평 방향으로 위치하는 스위치바(12)와, 상기 스위치바(12)와 대응되어 상기 상부 케이스(20)에 스위치(21)를 구비하되, 상기 스위치바(12)는 힌지(11)를 중심으로 상기 스위치(21)와 접촉되는 부분이 상기 스위치(21)와 접촉되지 않는 부분보다 너비가 작아 상기 스위치(21)가 상기 상부 덮개(10)가 닫힐 경우 상기 스위치(21)를 눌러 상기 전원장치를 작동시킨다.

<26> 여기서, 상기 스위치바(12)는 일정 방향으로 형성된 바 형태로 형성됨이 바람직하다.

<27> 상기 힌지부(100)의 힌지(11)는 다양한 정의가 있을 수 있지만, 본 고안에서는 일정한 홈과 홀을 가지고 소정의 케이스와 커버를 개폐하는 일반적인 힌지로 한정하여 정의한다.

<28> 상기 자외선램프(51)는 자외선을 발산하여 세균을 멸균하는 동시에 하기되는 상표표시부(50)에 빛을 발산하여 광고용으로서도 사용 가능한 램프이다.

<29> 상기 하부 케이스(30)는 상기 상부 케이스(20)와 결합되고 전원장치(미도시)가 내설된다.

<30> 상기 전원장치는 일회용 또는 2차 전지와 연결될 수 있으며, 이러한 전원 연결 방법은 일반적인 방법을 사용하므로 자세한 설명은 생략한다. 또한, 상기 전원장치에 사용되는 전지를 보호하기 위하여 건전지 커버(40)가 상기 하부 케이스(30) 하부에 장착된다.

<31> 그리고, 상기 전원 장치와 자외선램프(51)와 상기 스위치(21)는 전기적으로 연결되어 상기 상부 덮개(10)가 닫힐 경우 상기 전원장치가 작동하여 상기 자외선 램프(51)를 동작시킨다.

<32> 또한, 상기 전원장치는 USB 전원 또는 가정용 전원의 전압을 강하시킨 전원을 사용한다.

<33> 한편, 본 고안의 상기 자외선램프(51)에 대응되게 위치되는 상기 상부 케이스(20)의 표면에는 투명 합성수지 재질의 상표표시부(50)가 구비된다. 따라서, 본 고안은 휴대폰(1)을 살균함과 동시에 특정 회사의 광고까지 더불어 수행할 수 있는 효과가 있게 되는 것이며, 도면상 미 설명부호 S는 소정 형상으로 가공된 스폰지로서 휴대폰(1) 삽입시 상부 케이스(20)의 깊은 곳으로 들어가지 않도록 하여 살균 후 상기 휴대폰(1)을 용이하게 꺼낼 수 있도록 하면 되는 것이다.

<34> 이하, 본 고안에 따른 휴대폰 살균장치의 사용 방법에 대하여 설명한다.

<35> 먼저, 상기 상부 덮개(10)를 일정 방향으로 오픈하면, 상기 상부 케이스(20)와 하부 케이스(30)로 이루어지는

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공간상에 상기 휴대폰(1)을 일정한 방법으로 안정적으로 도킹시킨다.

<36> 그리고, 상기 상부 덮개(10)를 닫으면, 상기 상부 케이스(20)의 내부는 밀폐되게 되며, 이후 상기 상부 덮개(10) 또는 상부 케이스(20)에 연결되어 있는 힌지(11)에 연결된 스위치(21)가 작동하여 상기 자외선램프(51)가 작동하게 된다.

<37> 또한, 이때 상기 자외선램프(51)에 대응되게 위치되는 상기 상부 덮개(10)의 표면에 위치하는 상표표시부(50)는 투명 재질로 형성되어 상기 램프(51)의 일부 빛을 발산시킬 수 있게 된다.

<38> 따라서, 본 고안은 상기 휴대폰(1)을 살균할 뿐 아니라, 상기 램프(51)의 일부에 발산되는 빛에 따라 대응되는 상표표시부(50)에 도안된 회사의 로고나 표장 및 이미지 광고 효과를 높일 수 있다.

<39> 여기서, 상기 자외선램프(51)를 작동시키는 것은 상기 일회용 전지 또는 2차 전지 뿐만 아니라 일반 가정용 전원에 의해서도 가능한 것은 당연하다.

<40> 한편, 도 5는 본 고안의 다른 실시예를 도시해 보인 개략적인 사시도 이다.

<41> 도 5에 도시된 바와 같이 휴대폰(1) 충전시 전원선(도시하지 않음)과 연결되어 통상적으로 사용되는 입력단자(도시하지 않음)가 삽입.결합될 수 있도록 상기 상부 케이스(20)와 하부 케이스(30)의 사이 소정의 위치에 충전단자(60)를 장착시키고, 상기 충전단자(60)와 일측이 연결된 소정 길이의 전원선(70) 타측은 입력단자(80)를 연결.형성하여 본 고안의 살균장치를 이용하여 휴대폰(1)을 살균하는 동시에 휴대폰(1)의 전지를 충전할 수 있도록 함이 바람직하다.

<42> 이상에서 설명한 본 고안은 전술한 실시예 및 첨부된 도면에 의해 한정되는 것은 아니며, 본 고안의 기술적 사상을 벗어나지 않는 범위 내에서 여러 가지 치환, 변경 및 변형이 가능하다는 것은 본 고안이 속하는 기술분야에서 통상의 지식을 가진 자에게 있어 명백하다 할 것이다.

고안의 효과

<43> 본 고안에 의하여 휴대폰을 용이하게 살균할 수 있으며, 살균하는 시간 동안 소진된 휴대폰 전지를 동시에 충전할 수 있는 효과가 있다.

<44> 또한, 본 고안에 의하여 외부에 광고 기능을 갖는 상표표시부를 구비하여 자외선 램프로부터 발산되는 빛이 외부로 표출될 수 있도록 하여 상기 상표표시부를 돋보이게 하는 광고 효과를 얻을 수 있으며, 본 고안에 자외선 램프에 의해 발생하는 열을 감소시킬 수 있다.

도면의 간단한 설명

<1> 도 1은 본 고안에 의한 휴대폰 살균장치의 사시도.

<2> 도 2는 본 고안에 의한 휴대폰 살균장치의 분해 사시도.

<3> 도 3은 본 고안에 의한 휴대폰 살균장치의 측 단면도.

<4> 도 4a, 4b는 본 고안에 따른 힌지부의 작동상태를 도시해 보인 확대 단면도.

<5> 도 5는 본 고안의 다른 실시예를 도시해 보인 개략적인 사시도.

<6> ***도면의 주요 부분에 대한 부호의 설명***

<7> 10 : 상부 덮개 11 : 힌지

<8> 12 : 스위치바 20 : 상부 케이스

<9> 21 : 스위치 30 : 하부 케이스

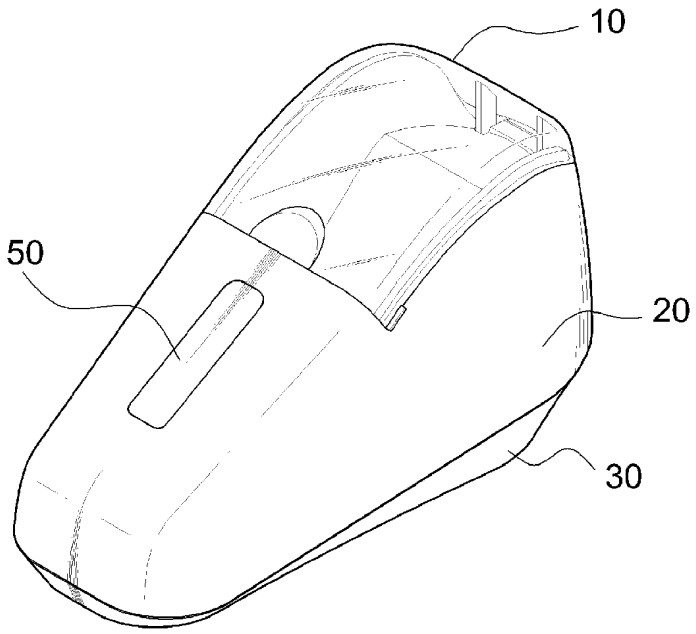
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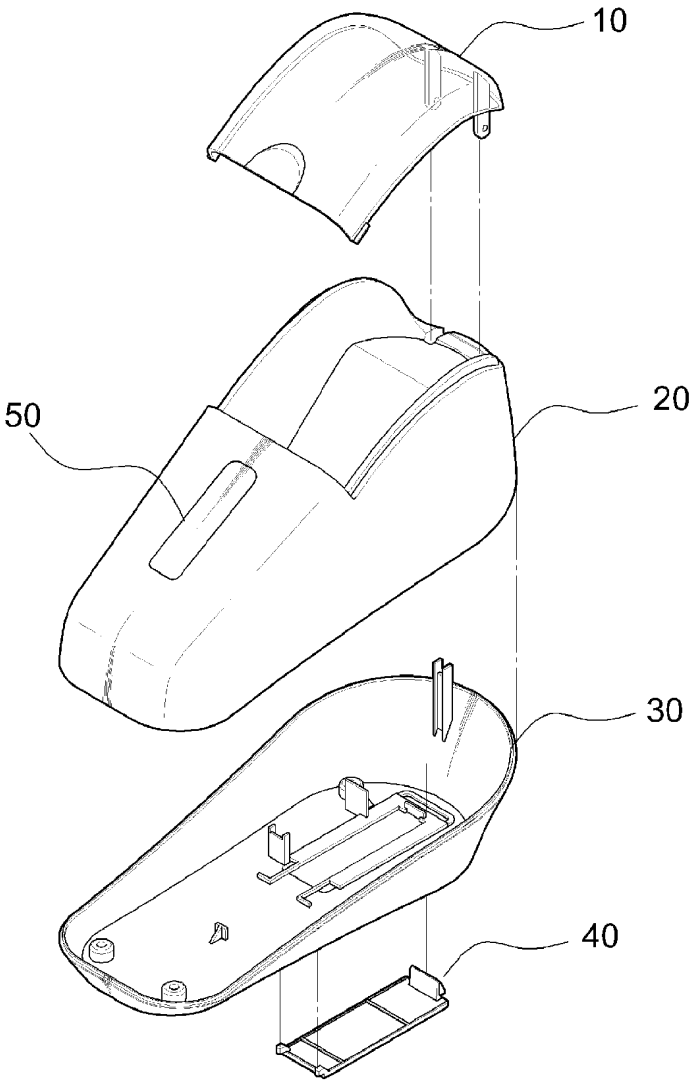
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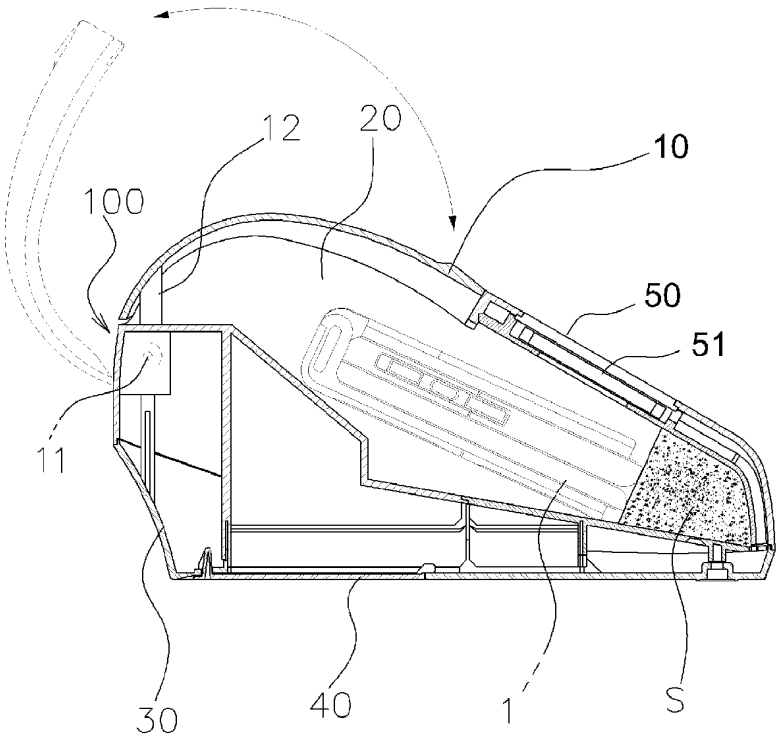
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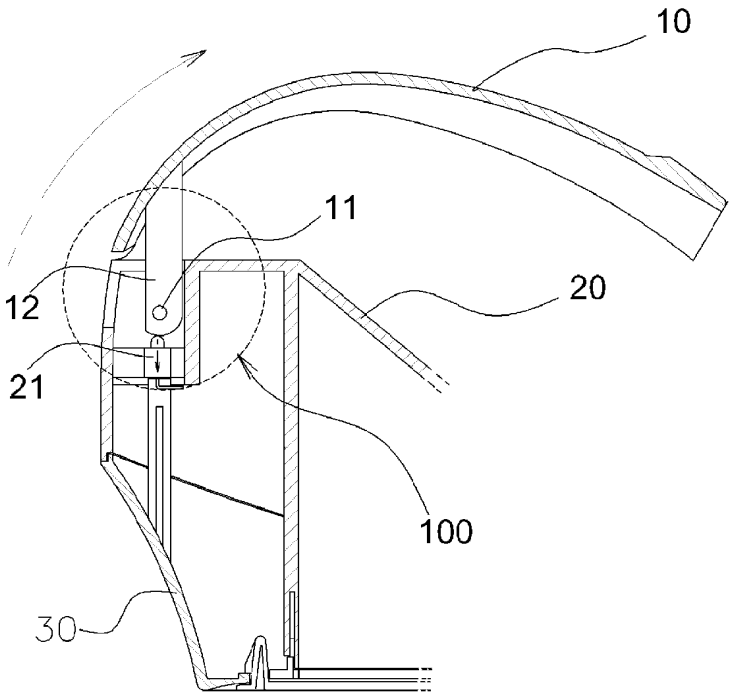


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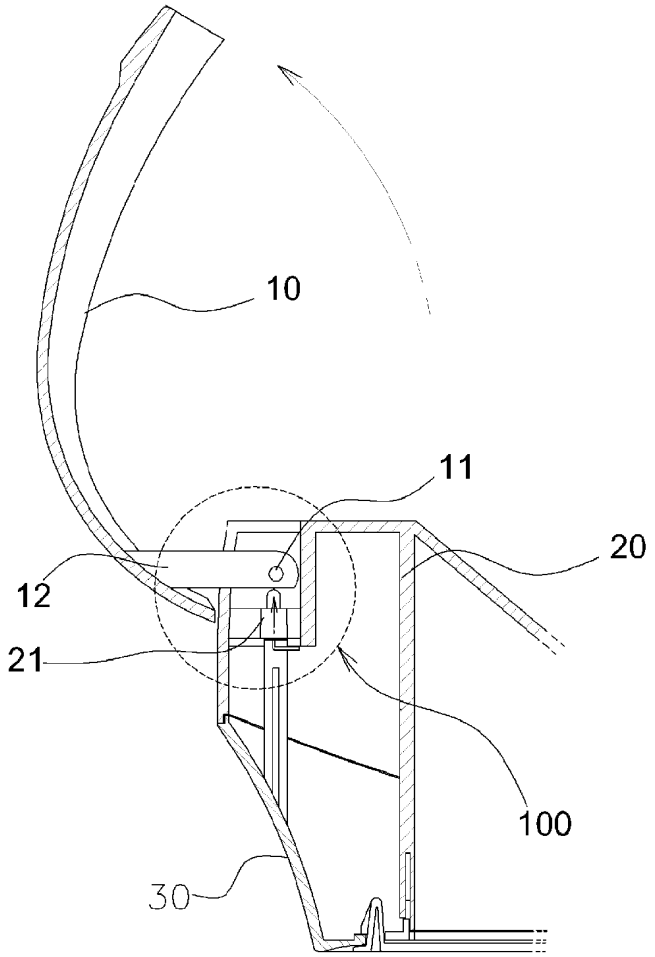


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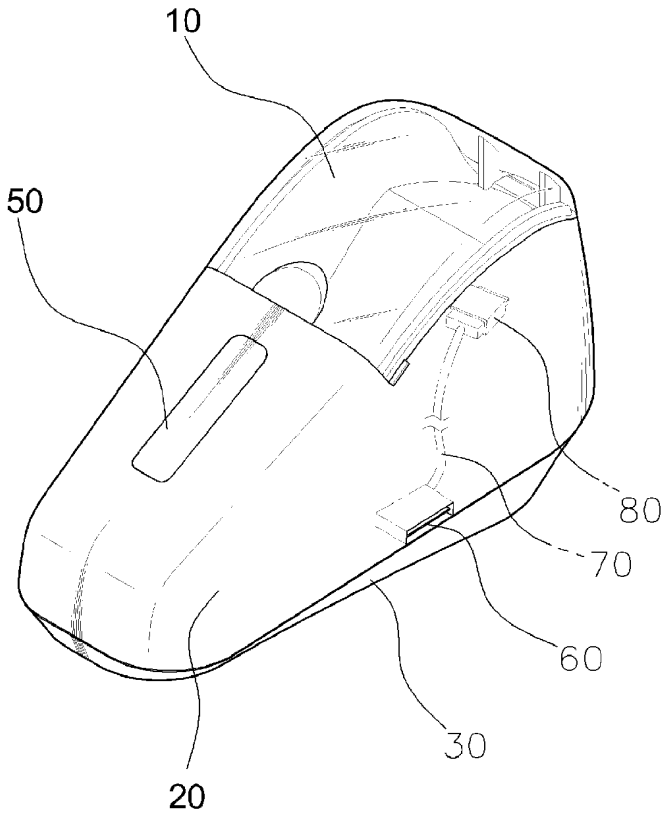
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CN1269602A Ultraviolet surface cleaning machine

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The wording below is an initial machine translation of the original publication. To generate a version using the latest translation technology, go to the original language text and use Patent Translate.

UV surface cleaning machine

The present invention relates to a surface cleaning machine, in particular, using ultraviolet light to remove organic substances adhering to surfaces of substrates (semiconductors and semiconductor devices, integrated circuits, liquid crystal devices, quartz resonators, surface acoustic wave devices, printed circuit boards, etc.) washing machine.

Ultraviolet surface cleaning technology is a non-contact high-cleanness dry surface cleaning technology developed in the late 1980s. It utilizes photon to photocatalytic and oxidizing organic compounds to remove organic substances adhering to the surface of the substrate. purpose. The cleaning principle is: when an organic compound (hydrocarbon) absorbs ultraviolet photon energy, it is decomposed into ions, free atoms, excited molecules or neutral molecules. This is called the organic photosensitive process. Oxygen in the atmosphere absorbs ultraviolet light and produces ozone (O3) and atomic oxygen (O). Ozone also has a strong absorption effect on ultraviolet light. Under the action of photons, ozone decomposes into oxygen (O2) and atomic oxygen (O). Since the atomic oxygen (O) is extremely active, the photodegradation of carbon and hydrocarbons on the surface of the substrate is converted into a volatile gas (carbon dioxide, nitrogen, water vapor, etc.) by the oxidation thereof to escape the surface of the substrate, thereby Achieve the purpose of thoroughly removing organic substances adhering to the surface of the substrate. Japanese Patent No. 4-12743 proposes an ultraviolet ozone cleaning device. In order to shorten the starting time of the ultraviolet light source in the device, a heat collecting plate is designed, which is close to the light emitting portion of the low pressure mercury lamp, so that it absorbs the light emitted from the lamp wall. The heat is transferred to the lamp port of the mercury lamp, so that the temperature of the lamp port rises rapidly to the minimum starting temperature without heating means in the working chamber. Further, as in Japanese Patent Laid-Open No. Hei 9-120950 and No. 61-194830, an ultraviolet generator is equipped with an ozone generator, and ozone is sent to the working chamber through the air supply duct. The purpose is to directly decompose ozone under ultraviolet light to generate atomic oxygen, increase the amount of atomic oxygen involved in oxidation, and enhance the oxidation of organic matter decomposition products. In fact, such measures are difficult to ensure a good cleaning effect. According to the working mechanism of ultraviolet ozone cleaning, ultraviolet light plays the dual task of light and oxidation. Therefore, there is a trade-off between the amount of ozone between the ultraviolet light source and the substrate being cleaned. In other words, the amount of ozone in between can not be too much or too little. If the amount of ozone is insufficient, the amount of atomic oxygen generated by the decomposition of ozone is insufficient under the action of ultraviolet light, and the decomposition product on the surface of the substrate to be cleaned cannot be oxidized in time to generate a volatile gas escape surface. This slows down the cleaning rate. On the contrary, the amount of ozone is too much, a large amount of ultraviolet light is absorbed by the ozone, and a large amount of atomic oxygen is generated, and the ultraviolet illuminance which is finally irradiated onto the surface of the substrate to be cleaned is lowered, so that the organic compound on the surface cannot be sufficiently decomposed to participate in oxidation, and the result is the same. It also affects the cleaning rate. Therefore, it can be concluded that in the cleaning process, the amount of ozone is not as good as possible, and the illuminance of the light source, the distance between the light source and the substrate to be cleaned, and the like should be comprehensively considered to obtain the best. Cleaning rate.

The purpose of the invention is to provide an ultraviolet light surface cleaning machine with reasonable design, simple structure, simple operation, safety and reliability, good cleaning effect, fast speed and consistency.

In order to achieve the above object, the technical solution to solve the problem of the present invention is: the ultraviolet light surface cleaning machine is mainly composed of an ultraviolet light source system, a conveying system for conveying the cleaned substrate, an air exhaust system, a safety protection and fault display system, and an electric appliance control and power supply. System and other components. The light source system uses a newly developed cold-emitting cathode and has a high-intensity ultraviolet light tube of a specific wavelength, which is arranged in parallel to form a surface light source. Its strength should be able to take into account the photosensitivity and oxidation of organic matter to achieve the best light cleaning effect. Through scientific

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calculation, the distance between the lamps and the distance between the light source and the substrate to be cleaned are correctly selected, so that the surface of the substrate to be cleaned has both sufficient illuminance and good illumination uniformity. Above the light source is a mirror that reflects light to converge and reflect ultraviolet light to increase the illumination of the surface of the substrate being cleaned. Coupled with a leakage-sensing transformer designed for the light source, it can be started up quickly in a normal working environment and can reach normal working conditions in a short time. The conveyor system uses two sets of small roller transmissions driven by sprocket and chain. The small rollers only point in point contact with the edge portions on both sides of the substrate to be cleaned. Moreover, the small roller is made of anti-ultraviolet light and ozone-proof material to prevent the conveying mechanism from polluting the surface of the substrate to be cleaned. The motor speed of the transmission mechanism is controlled by the frequency converter, so that the transmission rate will not fluctuate due to the fluctuation of the grid voltage, and the speed regulation range is large, stable and reliable. The exhaust system is mainly composed of air inlet, air duct partition, air duct buffer baffle, wind window, ventilation duct, current limiting valve, ventilation pipe joint and air exhaust device, etc. In the air duct design, the light source and the cleaned base should be considered. The important relationship between the amount of ozone between the sheets is such that the air flow between the light source and the substrate to be cleaned is kept stable under working conditions. The restrictor valve is used to control the amount of exhaust air so that the amount of ozone is always at its best. The safety protection and fault display system includes two parts: the detection and alarm circuit of the ultraviolet light tube open circuit and the lamination detection and alarm circuit. The former uses the Hall sensor to detect the filament current, and does not affect the electrical parameters of the light source circuit. By setting the adjustable comparison voltage, it is possible to detect not only the open circuit of the filament, but also to alarm when the lamp is aged to a certain extent. The latter uses an integrated diffused photoelectric switch and solid state relay for high reliability and sensitivity. The whole machine is divided into two parts: the studio and the electrical control and power supply room. The working room is equipped with a set of cold-emitting cathodes arranged in parallel and having high-intensity ultraviolet light tubes with specific wavelengths to form an ultraviolet light source with a moderate size. A light-reflecting mirror is placed above the light source to converge and reflect the ultraviolet light to increase the illumination of the surface of the substrate being cleaned. Two small rollers driven by a sprocket and a chain are disposed under the substrate to be cleaned, and the small roller is in point contact only with the edge portions on both sides of the substrate to be cleaned, and the sprocket is driven by a motor installed in the electric appliance control and power supply room. The motor speed is controlled by a frequency converter. The entrance and exit of the cleaned substrate are opened on both sides of the studio, and the air inlet is provided on both sides of the inlet and outlet, and a wind channel partition is arranged between the two air inlets to guide the wind to form a wind channel. There is a wind window at the bottom of the studio. The wind window is provided with a buffer baffle of the air duct. The wind window is connected with the ventilation duct, and the ventilation duct is equipped with a limited flow valve. A connector for the ventilation duct is arranged at the lower rear of the electrical control and the power chamber housing, and is connected to the ventilation duct and externally connected to the air exhaust device. In the electrical control and power supply room, there are also electrical control circuit boards, leakage inductance transformers and frequency converters. The alarm lights are installed above the studio. The invention adopts a stainless steel structure which does not generate a source of dust and organic pollution, so as to ensure that no dust is generated in the working area, and the substrate to be cleaned operates in a non-polluting environment.

Compared with the prior art, the positive effects of the present invention are:

1.The design is reasonable and the structure is simple.

Since the ultraviolet light source system of the present invention adopts the newly developed cold-emitting cathode and has a high-intensity ultraviolet light tube with a specific wavelength, the parallel arrangement constitutes a surface light source, and a reflector for reflecting light is arranged above the light source for collecting and reflecting ultraviolet light. Light to increase the illuminance of the surface of the substrate being cleaned. Through scientific calculation, the distance between the lamps and the distance between the light source and the substrate to be cleaned are correctly selected, so that the surface of the substrate to be cleaned has both sufficient illuminance and good illumination uniformity to achieve The best cleaning results. It is equipped with a leakage inductance transformer specially designed for this light source, so that it can start up quickly in a normal working environment and can reach normal working condition in a short time. In the design of the air duct, the important relationship between the amount of ozone between the light source and the substrate to be cleaned is fully considered, so that the air flow between the light source and the substrate to be cleaned is kept stable under the working condition. The restrictor valve is used to control the amount of exhaust air so that the amount of ozone is always at its best. Therefore, it is not necessary to equip the working chamber with an ozone generator as in Japanese Patent Laid-Open No. Hei 9-120950 and No. 61-194830, and to send ozone into the

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working chamber through the air supply duct, and ozone is directly decomposed under ultraviolet light to generate atomic oxygen, increasing The amount of atomic oxygen involved in oxidation enhances the oxidation of organic matter decomposition products. It is also not necessary to configure a heating system under the substrate to be cleaned to improve cleaning efficiency. It is not necessary to add a heat collecting plate in the working chamber like the Japanese Patent No. 4-127430 to quickly reach the normal operating temperature of the ultraviolet light tube.

2.The cleaning effect is good, the speed is fast, and the consistency is good.

For the same reason as described above, the result is that the cleaning effect of the present invention is good. The ITO glass test piece cleaned by the ultraviolet surface cleaning machine of the present invention is sent to the Auger electron spectrometer of the analysis center of the Chemistry Department of Tsinghua University, and the result has reached "atomic cleanliness". Moreover, the cleaning effect of the surface of the substrate to be cleaned is good, the cleaning rate is fast, and the cleaning rate is 2 to 3 pieces/min.

3.Safe and reliable.

Since the conveying system of the present invention adopts a small roller driving method driven by a sprocket and a chain, the small roller is in point contact only with the edge portions on both sides of the substrate to be cleaned, and the contact surface is actively small. The small roller is also made of anti-ultraviolet light and ozone-proof material, which effectively prevents the conveying mechanism from contaminating the substrate to be cleaned. Further, the present invention employs a stainless steel structure which does not generate a source of dust and organic matter, and therefore, does not generate dust, and ensures that the substrate to be cleaned operates in a non-polluting environment. The drive motor of the transmission mechanism is controlled by a frequency converter whose transmission rate does not fluctuate due to fluctuations in the grid voltage. And the speed range is large, stable and reliable. The invention is also equipped with a safety protection and fault display system, which can automatically detect the selection of the film, monitor the working state of the light source and the automatic alarm of the whole machine failure.

The ultraviolet surface cleaning machine of the present invention will be further described in detail below with reference to the accompanying drawings and embodiments.

Figure 1 is a front elevational view of the ultraviolet surface cleaning machine of the present invention;

Figure 2 is a plan view of the ultraviolet surface cleaning machine of the present invention;

Figure 3 is a left side view of the ultraviolet surface cleaning machine of the present invention;

4 is a block diagram showing the principle of the open circuit detection and alarm circuit of the ultraviolet light tube of the ultraviolet light surface cleaning machine of the present invention;

Figure 5 is a block diagram showing the principle of the lamination detecting and alarming circuit of the ultraviolet light surface cleaning machine of the present invention;

Figure 6 is a schematic view showing the arrangement of the ultraviolet light tube of the ultraviolet surface cleaning machine of the present invention and the direction of the substrate to be cleaned;

Fig. 7 is a schematic view showing the sliding type conveying mechanism of the ultraviolet surface cleaning machine of the present invention.

The ultraviolet surface cleaning machine of the invention mainly comprises an ultraviolet light source system, a transmission system, an exhaust system, a safety protection and fault display system, an electrical control and a power supply system, and the like. In this embodiment, the whole machine is divided into a studio 1 and an electrical control and power supply room 14 in two parts. As can be seen from Fig. 1, Fig. 2 and Fig. 3, a set of cold cathodes arranged in parallel with the direction in which the substrate to be cleaned 4 is arranged in the working chamber 1 is placed above the substrate to be cleaned 4 and has a specific wavelength of 185 nm and 254 nm. High-intensity ultraviolet light tubes form an ultraviolet light source with a moderate size. Scientifically, the distance between the light source lamps is 5-10 mm, and the distance between the lamp tube and the substrate 4 to be cleaned is 10-20 mm to ensure that the surface of the substrate to be cleaned 4 has sufficient illumination, and Have better illumination uniformity. Above the light source is a mirror 2 for

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reflecting light for concentrating and reflecting ultraviolet light to increase the illuminance of the surface of the substrate 4 to be cleaned. The ultraviolet light tube is equipped with a specially designed leakage inductance transformer 19, which is installed in the electric appliance control and power supply room 14, which enables the ultraviolet light tube to start up quickly in a normal working environment and can reach a normal working state in a short time. Two small rollers 9 driven by the sprocket 17 and the chain 18 are disposed under the cleaned substrate 4, and the small roller 9 is provided with an anti-UV and ozone-proof rubber ring to increase the friction. The small roller 9 is in point contact only with the edge portions on both sides of the substrate 4 to be cleaned, and the sprocket 17 is driven by a motor 16 mounted in the electric appliance control and power supply chamber 14, and the rotational speed of the motor 16 is controlled by a frequency converter. The inlet 1 and the outlet 6 of the substrate 4 to be cleaned are opened on both sides of the working chamber 1. The inlet 5 and the outlet 6 are provided with air inlets 7 on both sides, and a duct partition 8 is arranged between the two air inlets 7 for guiding The wind is routed to form a wind tunnel. The bottom of the working chamber 1 is provided with a wind window 21, and the wind window 21 is provided with a buffer baffle 10 of the air duct, the wind window 21 is connected with the ventilation duct 11, and the ventilation duct 11 is equipped with a limited flow valve. 12. A connector 13 for the ventilation duct is provided in the lower portion of the housing of the appliance control and power supply chamber 14, and is internally connected to the ventilation duct 11 and externally connected to the exhaust device, thereby constituting the exhaust system of the present invention. The safety protection and fault display system mainly includes two parts: the detection and alarm circuit of the ultraviolet light tube open circuit and the lamination detection and alarm circuit. As can be seen from Fig. 4, the detection and alarm circuit of the ultraviolet light tube open circuit is mainly composed of the detection circuit. Comparing the voltage setting circuit, the comparison circuit, the impedance conversion circuit, the solid state relay and the warning lamp 20, etc., the Hall sensor is used to detect the filament current of the ultraviolet lamp, and the electrical parameters of the light source circuit are not affected. Through the adjustable comparison voltage setting, not only the current of the filament can be detected, but also the alarm can be performed when the lamp is aged to a certain extent. It can be seen from Fig. 5 that the lamination detection and alarm circuit is mainly composed of photoelectric switch detection circuit, preset pulse width circuit, comparison circuit, solid state relay and alarm lamp 20, etc., and adopts integrated diffused photoelectric switch and solid state relay. With high reliability and high sensitivity, the time interval can be continuously adjusted from 1 to 30 seconds. When two pieces of the substrate 4 to be cleaned produce a lamination, the width of the photoelectric signal detected by the photoelectric switch increases, which is different from the width of the photoelectric signal corresponding to the width of the substrate 4 to be cleaned, and a pulse signal is generated after comparison to control Real-time relays for alarms. All electrical control sections are centrally mounted on the electrical control circuit board 15 of the electrical control and power supply compartment 14 with an alarm light 20 mounted above the working chamber 1. The invention adopts a stainless steel structure which does not generate a source of dust and organic pollution, so as to ensure that no dust is generated in the working area, and the substrate to be cleaned operates in a pollution-free environment.

In actual work, first turn on the air in the fan extractor. The ultraviolet lamp is then illuminated, and after the preheating, the motor 16 is actuated, and the motor 16 drives the small roller 9 through the sprocket 17 and the chain 18. The substrate 4 to be cleaned automatically (or manually) enters the working chamber 1 from the inlet 5 and falls onto the small roller 9. Smoothly transferred to the exit 6. Under the irradiation of ultraviolet light, the organic matter on the surface of the clear substrate 4 absorbs the ultraviolet photon energy, and then decomposes into ions, free atoms, excited molecules and neutral molecules; the oxygen in the atmosphere absorbs ultraviolet light. Ozone O3 and atomic oxygen O are then produced. Under the action of photons, ozone O3 is decomposed into oxygen O2 and atomic oxygen O. Since the atomic oxygen is extremely active, the photodegradation of carbon and hydrocarbons on the surface of the substrate 4 to be cleaned can be synthesized under its oxidation. Volatile gases (carbon dioxide, nitrogen, water vapor, etc.) escape from the surface of the substrate 4 to be cleaned, and are discharged from the outside of the machine by the exhaust system, thereby completely eliminating the organic substances adhering to the surface of the substrate 4 to be cleaned.

Figure 6 is another embodiment of the light source system 3 of the ultraviolet surface cleaning machine of the present invention. It can be seen from Fig. 6 that the light source system 3 of the machine adopts a set of high-intensity ultraviolet light tubes with cold emitting cathodes arranged perpendicularly to the direction of transport of the substrate 4 to be cleaned and having specific wavelengths of 185 nm and 254 nm, forming an area of moderate size. The ultraviolet light source 3, the distance between the lamps and the distance between the tube and the substrate 4 to be cleaned are the same as in the previous embodiment.

Figure 7 is still another embodiment of the ultraviolet light surface cleaner transfer system of the present invention. As can be seen from Fig. 7, the transport system can be designed as a slide-type transport mechanism The slide plate 22 is placed in the chute 24 on both sides of the working chamber 1. The slide plate 22 is

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provided with a rotary workpiece table 23 driven by a motor, and the slide plate 22 can be manually Alternatively, the substrate 4 to be cleaned placed on the workpiece stage 23 can achieve a more uniform ultraviolet illuminance.

The invention can be widely used for cleaning in semiconductor and semiconductor devices, integrated circuits, liquid crystal display devices, quartz resonators, surface acoustic wave devices, CCD devices, printed circuit boards, and CD, DVD, LD optical discs, etc.; Important process equipment to improve the process level and ensure product quality.

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CN1269602A Ultraviolet surface cleaning machine

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1.The utility model relates to an ultraviolet light surface cleaning machine, which mainly comprises an ultraviolet light source system, a conveying system and an exhausting system, and is characterized in that: the whole machine is divided into a working chamber 1 and an electrical control and a power supply room 14; the light source system adopts a The newly developed cold-emitting cathode and high-intensity ultraviolet light tube with specific wavelength are arranged in parallel to form the surface light source 3, which is installed above the cleaned substrate 4 of the working chamber 1, and the mirror 2 for reflecting light is arranged above the light source 3. The ultraviolet light tube is equipped with a specially designed leakage inductance transformer 19, which is installed in the electric appliance control and power supply room 14; a conveying system is arranged below the cleaned substrate 4, and the transmission system adopts two groups driven by the sprocket 17 and the chain 18 The small roller 9 transmission mode, the small roller 9 sets have anti-UV and anti-ozone rubber rings, and are in point contact with the edge portions of the two sides of the substrate 4 to be cleaned, and the sprocket 17 is mounted on the motor 16 of the electric appliance control and power supply chamber 14. Drive, the motor 16 is controlled by a frequency converter; the exhaust system is mainly composed of an air inlet 7, a duct partition 8, a wind window 21, a duct cushioning plate 10, a ventilation duct 11, a flow restricting valve 12, a ventilation pipe joint 13 and Exhaust device, etc. The air inlet 7 is provided on both sides of the inlet 5 and the outlet 6 of the substrate 4 to be cleaned, and the air passage partition 8 is arranged between the two air inlets 7. The windshield 21 is opened at the bottom of the working chamber 1 and the wind window 21 is provided. There is a channel buffer baffle 10, the wind window 21 is connected to the ventilation duct 11, the ventilation duct 11 is equipped with a limited flow valve 12, and a ventilation pipe joint 13 is installed in the lower part of the housing of the electric appliance control and power supply room 14 for ventilation and internal ventilation. The pipeline 11 is connected and externally connected with the air exhaust device; the invention also has a full-automatic safety protection and fault display system for the detection and alarm circuit of the ultraviolet light tube open circuit and the lamination detection and alarm circuit, the former is mainly composed of the detection circuit and the comparison. The voltage setting circuit, the comparison circuit, the impedance conversion circuit, the solid state relay and the warning lamp 20 are composed of a Hall sensor for detecting the filament current of the ultraviolet lamp, and the adjustable comparison voltage setting can not only detect the filament current, but also It can also realize alarm when the lamp tube is aging to a certain extent; the latter is mainly composed of photoelectric switch detection circuit, preset pulse width circuit, comparison circuit, solid state relay and alarm lamp 20, etc. The diffused photoelectric switch and solid state relay have high reliability and high sensitivity. All electrical control parts are installed centrally on the electrical control circuit board 15 of the electrical control and power supply room 14; the upper part of the working room 1 is equipped with an alarm. Lamp 20; the present invention employs a stainless steel structure that does not generate a source of dust and organic contamination.

2.The ultraviolet surface cleaning machine according to claim 1, wherein the light source system uses a set of high-intensity ultraviolet light tubes capable of emitting wavelengths of 185 nm and 254 um, and the high-intensity ultraviolet light tube and the substrate 4 to be cleaned. The conveying direction is arranged in parallel or vertically to form an ultraviolet light source 3 having a moderate size. The distance between the lamps is 5 to 10 mm, and the distance between the tube and the substrate 4 to be cleaned is 10 to 20 mm.

3.The ultraviolet surface cleaning machine according to claim 1, wherein the conveying system adopts a slide type conveying mechanism, and the sliding plate 22 is placed in the sliding groove 24 on both sides of the working chamber 1, and the sliding plate 22 is provided with a rotating workpiece driven by a motor. The table 23, the slide plate 22 can be manually or electrically operated, and the cleaned substrate 4 placed on the workpiece stage 23 can obtain a more uniform ultraviolet illuminance.

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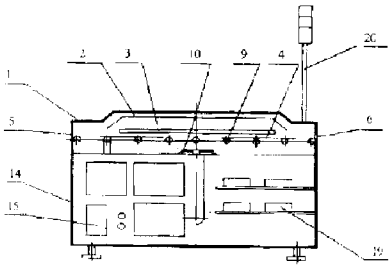
代理人 王克刚

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[54]发明名称 紫外光表面清洗机

[57]摘要

本发明公开了一种利用紫外光清除基片表面有机物的紫外光表面清洗机，主要由紫外光光源系统、传送系统、排风系统、安全保护与故障显示系统和电器控制与电源系统等组成，具有设计合理、结构简单、操作简便、安全可靠、清洗效果好、速率快和一致性好等特点。经本发明清洗后的基片能达到"原子清洁度"，清洗速率为2～3片/分。本发明可广泛用于半导体器件、集成电路、液晶显示器件，石英谐振器、声表面波器件和印刷电路板等生产制造中的清洗。



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权 利 要 求 书

1. 一种紫外光表面清洗机，主要由紫外光光源系统、传送系统、排风系统等组成，其特征在于：整机分为工作室 1 和电器控制与电源室 14 两大部分；光源系统采用一组最新研制的冷发射阴极并具有特定波长的高强度紫外光灯管，平行排列组成面光源 3，安装在工作室 1 被清洗基片 4 的上方，光源 3 上方装有反射光的反射镜 2，紫外光灯管配有专门设计的漏感变压器 19，安装在电器控制与电源室 14；位于被清洗基片 4 的下方设有传送系统，传送系统采用两组由链轮 17 和链条 18 带动的小滚轮 9 传动方式，小滚轮 9 套有防紫外、防臭氧的橡胶圈，与被清洗基片 4 两侧的边缘部分点接触，链轮 17 由安装在电器控制与电源室 14 的马达 16 驱动，马达 16 由变频调速器控制；排风系统主要由进风口 7、风道隔断 8、风窗 21、风道缓冲档板 10、通风管道 11、限流阀门 12、通风管接头 13 和排风装置等组成，在被清洗基片 4 的进口 5 和出口 6 的两侧设有进风口 7，两进风口 7 之间装有风道隔断 8，工作室 1 底部开有一个风窗 21，风窗 21 上设有风道缓冲档板 10，风窗 21 与通风管道 11 相连，通风管道 11 装有限流阀门 12，在电器控制与电源室 14 壳体的后下方装有通风管接头 13，内与通风管道 11 相连，外与排风装置连接；本发明还设有紫外光灯管断路的检测与报警电路和迭片检测与报警电路的全自动安全保护与故障显示系统，前者主要由检测电路、比较电压设置电路、比较电路、阻抗变换电路、固态继电器和报警灯 20 等组成，采用霍耳传感器检测紫外光灯管的灯丝电流，通过可调的比较电压的设置，不仅可以检测灯丝的电流，而且还可实现灯管老化至一定程度时，也能报警；后者主要由光电开关检测电路、预置脉宽电路、比较电路、固态继电器和报警灯 20 等组成，采用一体化的漫射式光电开关和固态继电器，具有高可靠性和高灵敏度，所有电器控制部分都集中安装在电器控制与电源室 14 的电器控制线路板 15 上；工作室 1 的上方装有报警灯 20；本发明均采用不会产生尘源和有机物污染源的不锈钢结构。

2. 根据权利要求 1 所述的紫外光表面清洗机，其特征于：光源系统采用一组能发射波长为 185nm 和 254nm 的高强度紫外光灯管，高强度紫外光灯管与被清洗基片 4 的传送方向平行排列或垂直排列，组成一个面积大小适中的紫外光面光源 3，灯管之间的距离为 5～10mm，灯管与被清洗基片 4 的距离为 10～20mm。

3. 根据权利要求 1 所述的紫外光表面清洗机，其特征在于：传送系统采用滑板式传送机构，滑板 22 置于工作室 1 两侧的滑槽 24 内，滑板 22 上装有由马达驱动的旋转工件台 23，滑板 22 可以手动或电动，放在工件台 23 上的被清洗的基片 4 可获得更加均匀的紫外光照度。

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紫外光表面清洗机

本发明涉及一种表面清洗机，尤其是利用紫外光清除粘附在基片（半导体和半导体器件、集成电路、液晶器件、石英谐振器、声表面波器件、印制电路板等）表面有机物的清洗机。

紫外光表面清洗技术是国际上八十年代后期发展起来的非接触式高清洁度干法表面清洁处理技术，它利用光子对有机化合物的光敏和氧化作用达到清除粘附在基片表面有机物质的目的。其清洗原理是：当有机化合物（碳氢化合物）吸收了紫外光子能量后，分解为离子、游离态原子、受激分子或中性分子，这就是所谓的有机物光敏过程。大气中的氧气在吸收了紫外光之后，产生臭氧（O_3）、原子氧（O）。臭氧对紫外光同样具有强烈的吸收作用，在光子作用下，臭氧又会分解为氧气（O_2）和原子氧（O）。由于原子氧（O）极其活泼，基片表面上的碳和碳氢化合物的光敏分解物在它的氧化作用下化合成可挥发气体（二氧化碳、氮气和水蒸汽等）逸出基片表面，从而达到彻底清除粘附在基片表面有机物质的目的。日本专利平 4－12743 提出了一个紫外光臭氧清洗装置，为了缩短该装置中的紫外光源的启动时间，设计了一种集热板，靠近低压汞灯的发光部位，使其吸收灯壁发出的热量，并把这热量传导给汞灯的灯口，从而在工作室内没有加热手段的条件下，使灯管口的温度迅速上升到最低启动温度。又如日本专利平 9－120950 和昭 61－194830 都在紫外光清洗装置配备了臭氧发生器，并把臭氧通过送风管送入工作室。目的是使臭氧在紫外光照射下直接分解产生原子氧，增加参与氧化作用的原子氧的数量，加强对有机物分解物的氧化作用。实际上，这样的措施很难保证达到良好的清洗效果。根据紫外光臭氧清洗的工作机理，紫外光担当着光敏和氧化的双重任务。因此，对于处在紫外光源和被清洗基片之间的臭氧量有一个折衷值。也就是说其间的臭氧量既不能过多，也不能过少。如果臭氧量不足，在紫外光作用下，臭氧分解产生的原子氧数量不足，被清洗基片表面的分解物不能及时地被氧化而生成可挥发性气体逸出表面。由此使得清洗速率减慢。相反，臭氧量过多，大量的紫外光被臭氧吸收，产生大量的原子氧，最终照射到被清洗基片表面上的紫外光照度降低，使得表面上的有机化合物不能充分分解参与氧化，其结果同样也会影响到清洗速率。因此，可以得出这样的结论，在清洗过程中，臭氧的数量并非越多越好，而应该综合考虑光源的照度、光源与被清洗基片之间的距离等诸多因素，以获得最佳的清洗速率。

本发明的目的就是为了能够向社会提供一种设计合理、结构简单、操作简便、安全可靠、清洗效果好、速率快、一致性好的紫外光表面清洗机。

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为实现上述目的，本发明解决问题的技术方案是：紫外光表面清洗机主要由紫外光光源系统、传送被清洗基片的传送系统、排风系统、安全保护与故障显示系统和电器控制与电源系统等组成。光源系统采用最新研制成功的冷发射阴极并具有特定波长的高强度紫外光灯管，平行排列组成面光源。其强度应能兼顾有机物的光敏和氧化作用，以达到最佳的光清洗效果。通过科学测算，正确选用灯管之间的距离和光源与被清洗基片之间的距离，使得被清洗基片表面既有足够强的照度，又有较好的照度均匀度。光源上方装有反射光的的反射镜，用来会聚和反射紫外光，以增加被清洗基片表面的照度。再配上专为该光源设计的漏感变压器，使其在正常的工作环境中启动快，能在短时间内达到正常工作状态。传送系统采用两组由链轮和链条带动的小滚轮传动方式，小滚轮仅与被清洗基片两侧的边缘部分点接触。而且，小滚轮选用防紫外光、防臭氧材料，以防传送机构对被清洗基片表面的污染。传送机构的马达转速由变频调速器控制，使其传送速率不会因电网电压的起伏而波动，且调速范围大，稳妥可靠。排风系统主要由进风口、风道隔断、风道缓冲档板、风窗、通风管道、限流阀门，通风管接头和排风装置等组成，在风道设计中应考虑光源与被清洗基片之间臭氧量的重要关系，使其在工作状态下保持光源与被清洗基片之间空气流量的稳定。限流阀用以控制排风量的大小，使其臭氧量始终处于最佳状态。安全保护与故障显示系统包括紫外光灯管断路的检测与报警电路和迭片检测与报警电路两部分，前者采用霍耳传感器检测灯丝电流，不影响光源电路的电气参数。通过对可调的比较电压的设置，不仅可以检测灯丝的断路，而且还可实现灯管老化至一定程度时也能进行报警。后者采用一体化的漫射式光电开关和固态继电器，具有高可靠性和高灵敏度。整机分为工作室和电器控制与电源室两大部分，工作室内装有一组平行排列的冷发射阴极并具有特定波长的高强度紫外光灯管，组成一个面积大小适中的紫外光面光源。光源上方装有反射光的反射镜，用来会聚和反射紫外光，以增加被清洗基片表面的照度。位于被清洗基片下方设置了两组由链轮和链条带动的小滚轮，小滚轮仅与被清洗基片两侧的边缘部分点接触，链轮由安装在电器控制与电源室内的马达驱动，马达转速由变频调速器控制。工作室的两侧开有被清洗基片的进口和出口，进出口的两侧设有进风口，两进风口之间装有风道隔断，用来引导风的路线以形成风道。工作室的底部开有风窗，风窗上设有风道的缓冲档板，风窗与通风管道相连，通风管道装有限流阀门。在电器控制与电源室壳体的后下方装有通风管道的接头，内与通风管道连接，外与排风装置相连。在电器控制与电源室内还装有电器控制线路板、漏感变压器和变频调速器等，工作室的上方装有报警灯。本发明采用不会产生尘源和有机物污染源的不锈钢结构，以保证工作区内不会产生尘埃，使被清洗基片在无污染环境中工作。

与现有技术相比，本发明的积极效果是：

1. 设计合理、结构简单。

由于本发明的紫外光光源系统采用最新研制成功的冷发射阴极并具有特定波长的高强度紫外光灯管，平行排列组成面光源，光源上方装有反射光的反射镜，用来会聚

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和反射紫外光，以增加被清洗基片表面的照度。通过科学测算，又正确选用了灯管之间的距离和光源与被清洗基片之间的距离，使得被清洗基片表面既有足够强的照度，又有较好的照度均匀度，以达到最佳的清洗效果。配上专为该光源设计的漏感变压器，使其在正常的工作环境中启动快，能在短时间内达到正常工作状态。在风道设计中又充分考虑了光源与被清洗基片之间臭氧量的重要关系，使其在工作状态下保持光源与被清洗基片之间空气流量的稳定。限流阀用以控制排风量的大小，使其臭氧量始终处于最佳状态。因此，不必如日本专利平 9－120950 和昭 61－194830 那样，在工作室内配备臭氧发生器，并把臭氧通过送风管送入工作室，臭氧在紫外光照射下直接分解产生原子氧，增加参与氧化作用的原子氧的数量，增强对有机物分解物的氧化作用。也不用在被清洗基片下方配置加热系统，以提高清洗效率。更不必像日本专利平 4－127430 那样，在工作室内增添集热板才使紫外光灯管迅速达到正常工作温度。

2. 清洗效果好，速率快，一致性好。

由于上述同样的原因，其结果使得本发明的清洗效果好。经本发明紫外光表面清洗机清洗后的 ITO 玻璃试片送清华大学化学系分析中心的俄歇电子能谱仪检测，其结果已达到“原子清洁度”。而且，被清洗基片表面的清洗效果一致性好，清洗速率快，清洗速率为 2～3 片/分。

3. 安全、可靠。

由于本发明的传送系统采用由链轮和链条带动的小滚轮传动方式，小滚轮仅与被清洗基片两侧的边缘部分点接触，接触面积极小。而小滚轮又采用防紫外光、防臭氧材料，有效地防止了传送机构对被清洗基片的污染。此外，本发明采用不会产生尘源和有机物污染源的不锈钢结构，因此，不会产生尘埃，能保证被清洗基片是在无污染环境中工作。传送机构的驱动马达由变频调速器控制，其传送速率不会因电网电压的起伏而波动。而且调速范围大，稳妥可靠。本发明还配备了安全保护与故障显示系统，能自动检测选片、监察光源工作状态以及整机故障的自动报警。

下面结合附图和实施例对本发明紫外光表面清洗机再作进一步的详细说明。

图 1 为本发明紫外光表面清洗机的主视图；

图 2 为本发明紫外光表面清洗机的俯视图；

图 3 为本发明紫外光表面清洗机的左视图；

图 4 为本发明紫外光表面清洗机紫外光灯管断路检测与报警电路原理方框图；

图 5 为本发明紫外光表面清洗机迭片检测与报警电路原理方框图；

图 6 为本发明紫外光表面清洗机紫外光灯管与被清洗基片传送方向垂直排列示意图；

图 7 为本发明紫外光表面清洗机滑板式传送机构示意图。

本发明紫外光表面清洗机主要由紫外光光源系统、传送系统、排风系统、安全保护与故障显示系统和电器控制与电源系统等组成。在本实施例中，整机分为工作室 1 和电器控制与电源室 14 两大部分。从图 1、图 2 和图 3 可以看出，工作室 1 内位于被

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清洗基片 4 的上方装有一组与被清洗基片 4 传送方向平行排列的冷阴极发射并具有 185nm 和 254nm 特定波长的高强度紫外光灯管，组成一个面积大小适中的紫外光面光源 3。通过科学测算，使光源灯管之间的距离为 5 ~ 10mm，灯管与被清洗基片 4 之间的距离为 10 ~ 20mm，以保证被清洗基片 4 表面既有足够强的照度，又有较好的照度均匀度。光源上方装有反射光的反射镜 2，用来会聚和反射紫外光，以增加被清洗基片 4 表面的照度。紫外光灯管配有专门设计的漏感变压器 19，安装在电器控制与电源室 14 内，它使紫外光灯管在正常工作环境中启动快，能在短时间内达到正常工作状态。位于被清洗基片 4 的下方设置了两组由链轮 17 和链条 18 带动的小滚轮 9，小滚轮 9 套有防紫外，防臭氧的橡胶圈，以增加摩擦力。小滚轮 9 仅与被清洗基片 4 两侧的边缘部分点接触，链轮 17 由安装在电器控制与电源室 14 内的马达 16 驱动，马达 16 转速由变频调速器控制。工作室 1 的两侧开有被清洗基片 4 的进口 5 和出口 6，进口 5 和出口 6 的两侧设有进风口 7，两进风口 7 之间装有风道隔断 8，用来引导风的路线以形成风道，工作室 1 的底部开有一个风窗 21，风窗 21 上设有风道的缓冲档板 10，风窗 21 与通风管道 11 相连，通风管道 11 装有限流阀门 12，在电器控制与电源室 14 壳体的后下方装有通风管道的接头 13，内与通风管道 11 相连，外与排风装置连接，由此构成本发明的排风系统。安全保护与故障显示系统主要包括紫外光灯管断路的检测与报警电路和迭片检测与报警电路两大部分，从图 4 可以看出，紫外光灯管断路的检测与报警电路主要由检测电路，比较电压设置电路、比较电路、阻抗变换电路、固态继电器和报警灯 20 等组成，采用霍耳传感器检测紫外光灯管的灯丝电流，不影响光源电路的电气参数。通过可调的比较电压的设置，不仅可以检测灯丝的电流，而且还可实现灯管老化至一定程度时，也能进行报警。从图 5 可以看出，迭片检测与报警电路主要由光电开关检测电路、预置脉宽电路、比较电路、固态继电器和报警灯 20 等组成，采用一体化的漫射式光电开关和固态继电器，具有高可靠性和高灵敏度，其时间间隔的连续可调范围为 1 ~ 30 秒。当有两块被清洗基片 4 产生迭片时，光电开关检测的光电信号的宽度增加，这与被清洗基片 4 宽度对应的光电信号宽度不同，两者比较后产生一个脉冲信号，去控制固态继电器而实现报警。所有电器控制部分都集中安装在电器控制与电源室 14 的电器控制线路板 15 上，工作室 1 的上方装有报警灯 20。本发明均采用不会产生尘源和有机物污染源的不锈钢结构，以保证工作区内不会产生尘埃，使被清洗基片在无污染环境中工作。

实际工作时，先打开通风机抽出机内的空气。接着点亮紫外光灯管，预热后开动马达 16，马达 16 通过链轮 17 和链条 18 带动小滚轮 9。被清洗基片 4 自动（或手动）由入口 5 进入工作室 1，落到小滚轮 9 上。平稳地传送至出口 6。传送过程中在紫外光的照射下，被清清基片 4 表面的有机物吸收了紫外光子能量后，分解为离子、游离态原子、受激分子和中性分子；大气中的氧气在吸收了紫外光之后产生臭氧 O_3、原子氧 O。在光子作用下，臭氧 O_3 又会分解为氧 O_2 和原子氧 O，由于原子氧极其活泼，被清洗基片 4 表面上的碳和碳氢化合物的光敏分解物在它的氧化作用下化合成可挥发气体

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(二氧化碳、氮气和水蒸汽等) 逸出被清洗基片 4 的表面，由排风系统排出机外，从而达到彻底清除粘附在被清洗基片 4 表面上有机物质的目的。

图 6 为本发明紫外光表面清洗机的光源系统 3 另一种实施例。从图 6 可以看出，该机的光源系统 3 采用一组与被清洗基片 4 传送方向垂直排列的冷发射阴极并具有 185nm 和 254nm 特定波长的高强度紫外光灯管，组成一个面积大小适中的紫外光面光源 3，灯管之间的距离和灯管与被清洗基片 4 之间的距离和前实施例一样。

图 7 为本发明紫外光表面清洗机传送系统的又一种实施例。从图 7 可以看出，该传送系统可以设计为滑板式传送机构，滑板 22 置于工作室 1 两侧的滑槽 24 内，滑板 22 上装有由马达驱动的旋转工件台 23，滑板 22 可以手动或电动，放在工件台 23 上的被清洗基片 4 可以获得更加均匀的紫外光照度。

本发明可广泛用于半导体和半导体器件、集成电路、液晶显示器件、石英谐振器、声表面波器件、CCD 器件、印制电路板以及 CD、DVD、LD 光盘等生产制造中的清洗；这是提高工艺水平，保证产品质量的重要工艺设备。

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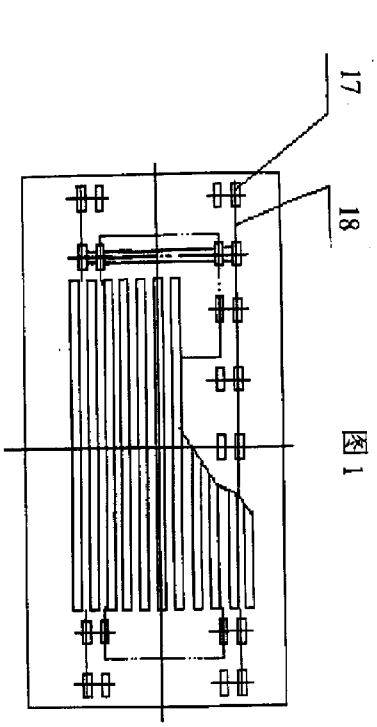


图2

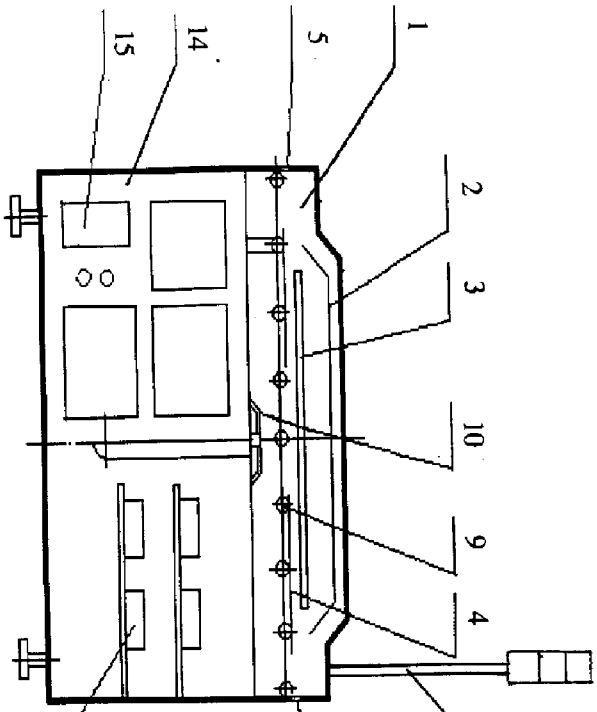


图1

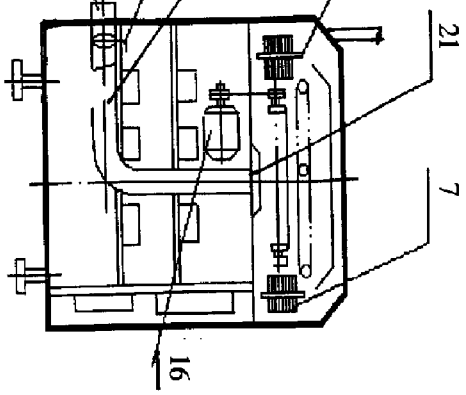


图3

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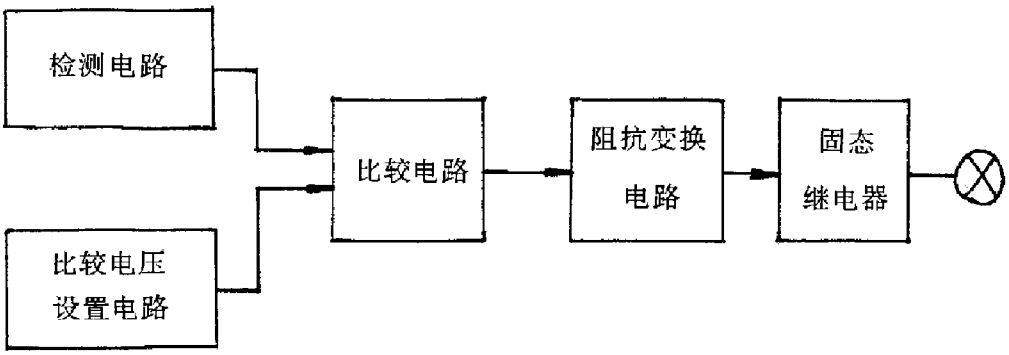


图 4

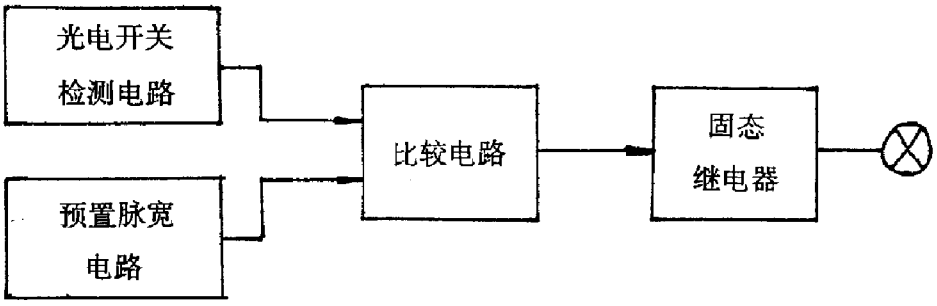


图 5

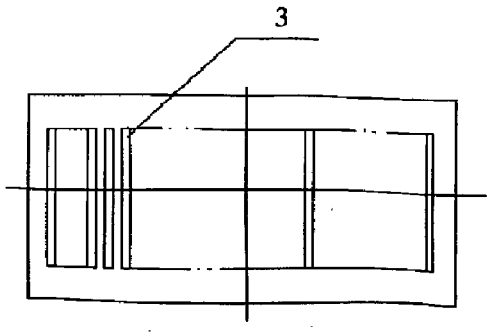


图 6

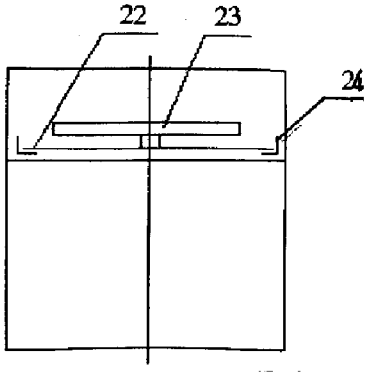


图 7

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Application Number	18804396
Filing Date	2024-08-14
First Named Inventor	Dean Schumacher
Art Unit	1711
Examiner Name	Jason Y. Ko
Attorney Docket Number	AGD0100.7

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	Attorney Docket Number	AGD0100.7

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	Examiner Name	Jason Y. Ko
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Name/Print	Quincy J. Harrison	Registration Number	65374

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KR20060115457A STERILIZING AND CHARGING APPARATUS FOR MOBILE COMMUNICATION TERMINALS IN CONSOL BOX FOR VEHICLES

Applicants: BAEK HYO JEONG [KR]

Inventors: BAEK HYO JEONG [KR]

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STERILIZING AND CHARGING APPARATUS FOR MOBILE COMMUNICATION TERMINALS IN CONSOL BOX FOR VEHICLES

Abstract

A sterilizing/charging apparatus for a mobile terminal installed in a consol box of a vehicle is provided to easily sterilize the mobile terminal which is rigidly fixed by an adhesive sheet. A charge terminal groove(7) is formed on one side of the receiving space(3), and a cover(4) is fixed to an upper portion of a cable mounting part(9). A circular guide roller(30) is positioned under a groove(6) of the cover. A guide rod is spaced apart from a bottom surface of the cover. A stopper is inserted in the guide rod. A spiral spring is fixed to one side of the stopper. A wire releasing prevention plate is fixed to a cable fixing groove of the stopper. A guide groove is formed on a bottom surface of the cover. A cable is wound around the wire releasing prevention plate. A charge terminal(41) is connected to an end of a cable.

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(54) **STERILIZING/CHARGING APPARATUS FOR MOBILE TERMINAL INSTALLED IN CONSOL BOX OF VEHICLE**

(57) Abstract:

PURPOSE: A sterilizing/charging apparatus for a mobile terminal installed in a consol box of a vehicle is provided to easily sterilize the mobile terminal which is rigidly fixed by an adhesive sheet.

CONSTITUTION: A charge terminal groove(7) is formed on one side of the receiving space(3), and a cover(4) is fixed to an upper portion of a cable mounting part(9). A circular guide roller(30) is positioned under a groove(6) of the cover. A guide rod is spaced apart from a bottom surface of the cover. A stopper is inserted in the guide rod. A spiral spring is fixed to one side of the stopper. A wire releasing prevention plate is fixed to a cable fixing groove of the stopper. A guide groove is formed on a bottom surface of the cover. A cable is wound around the wire releasing prevention plate. A charge terminal(41) is connected to an end of a cable.

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For more registration information

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전체 청구항 수 : 총 4 항

(54) 차량용 콘솔박스에 내설된 이동통신 단말기용 살균/충전장치

(57) 요약

본 발명은 특허출원 제2004-77695호의 이용발명으로서 차량용 콘솔박스에 내설된 이동통신 단말기용 살균/충전 장치에 관한 것이며; 그 목적은 단말기에 기생하는 각종세균을 살균하고, 다른 종류의 범용충전단자로 교체가능한 구조를 가지며, 상기 범용충전단자가 연결된 케이블이 거치대로부터 소정길이 신출가능한 구조를 이루어 단말기의 충전 및 데이터 교환용 USB단자에 용이하게 결합가능하고, 거치대 내측 저면에 접착시트 또는 흡착부재를 구비하여 단말기가 유동없이 안착가능한 차량용 콘솔박스에 내설된 이동통신 단말기용 살균/충전 장치를 제공함에 있다.

상기 목적달성을 위한 본 발명은 차량 실내에 설치되고 수납공간부(3)와 덮개(2)가 구비되는 콘솔박스(C)에 있어서, 상기 콘솔박스(C)의 상부 일측에 형성되는 조작스위치(8)를 통해 수납공간부(3)의 내측에 설치된 자외선 램프(5)가 작동되고, 상기 수납공간부(3)의 하부에는 소정크기의 케이블장착부(9)가 형성되며, 상기 수납공간부(3)의 상부로 덮개(2)가 개폐가능토록 결합되고, 상기 덮개(2)의 상부에는 거치부(4a)가 형성되며, 상기 케이블장착부(9)로부터 인출된 범용충전단자(41)에 이동통신 단말기를 결합시키고 덮개(2)를 덮은 후, 조작스위치(8)를 작동시킴으로서, 이동통신 단말기를 충전과 동시에 살균하는 차량용 콘솔박스에 내설된 이동통신 단말기용 살균/충전 장치에 관한 것을 그 기술적 요지로 한다.

대표도

도 1

특허청구의 범위

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청구항 1.

차량 실내에 설치되고 수납공간부(3)와 덮개(2)가 구비되는 콘솔박스(C)에 있어서,

상기 콘솔박스(C)의 상부 일측에 형성되는 조작스위치(8)를 통해 수납공간부(3)의 내측에 설치된 자외선 램프(5)가 작동되고, 상기 수납공간부(3)의 하부에는 소정크기의 케이블장착부(9)가 형성되며, 상기 수납공간부(3)의 상부로 덮개(2)가 개폐가능토록 결합되고,

상기 수납공간부(3)의 일측에는 소정크기의 홈이 형성되는 범용충전단자 안착홈(7)과;

상기 안착홈(7)의 중앙 하부에 관통홈(6)이 위치되고 타측에 거치부(4a)가 형성되며 상기 케이블장착부(9)를 밀폐하도록 케이블장착부(9)의 상부에 안착되어 고정되는 커버(4)와;

상기 커버(4)의 관통홈(6)의 하부에 위치되어 외주연에 오목한 권취홈(31)이 형성되고 직립되어 전후방으로 회전가능토록 고정되는 원형 가이드롤러(30)와;

상기 커버(4)의 저면으로부터 소정간격 이격되고 전후방측으로 소정길이 신장되어 양단이 고정부재(33)로 고정결합되는 가이드봉(32)과;

상기 가이드봉(32)이 정배면으로 삽입관통되고 내측에 케이블고정홈(11,12)이 형성되어 정면과 일측으로 관통되며 타측에는 걸림돌기(13)가 형성되는 스토퍼(10)와;

상기 스토퍼(10)의 배면에 일측이 고정되고 타측은 상기 가이드봉(32)의 후방측 일단에 가이드봉(32)과 함께 고정부재(33)로 고정되는 스파이럴스프링(14)과;

상기 스토퍼(10)의 케이블고정홈(11,12)이 개방된 일측에 소정크기의 공간이 형성되도록 소정간격 이격되어 고정결합되는 판형 선이탈방지판(15)과;

상기 커버(4)의 저면에 가이드봉(32)과 나란하게 형성되어 상기 스토퍼(10)의 걸림돌기(13)를 전후방으로 안내하는 가이드홈(16)과;

상기 선이탈방지판(15)의 내측에 소정길이가 권취되어 스토퍼(10)의 케이블고정홈(11,12)의 일측으로 삽입되고 전방으로 인출되어 가이드롤러(30)의 권취홈(31)에 걸쳐 관통홈(6)을 관통하여 상기 커버(4)의 상부로 인출되는 케이블(40)과;

상기 커버(4)의 상부로 인출된 케이블(40)의 단부에 결합되는 범용충전단자(41)로 구성되는 것을 특징으로 하는 차량용 콘솔박스에 내설된 이동통신 단말기용 살균/충전 장치.

청구항 2.

제 1 항에 있어서,

상기 범용충전단자(41)와 케이블(40)의 결합은 외측면에 핸들부(51)와 숫나사부(52)와 단자(53)가 형성되어 케이블(40) 단부에 고정되는 단자소켓(50)이 상기 범용충전단자(41)의 배면 내측에 형성되는 암나사부(54)에 나사결합되어 분리결합 가능한 구조로 형성되는 것을 특징으로 하는 차량용 콘솔박스에 내설된 이동통신 단말기용 살균/충전 장치.

청구항 3.

제 1 항에 있어서,

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상기 범용충전단자(41)와 케이블(40)의 결합은 범용충전단자(41)로부터 소정길이 인출되는 케이블(40)의 단부에 암소켓(60)을 형성하고, 상기 커버(4)의 관통홈(6)을 관통하여 인출되는 케이블(40)의 단부에 숫소켓(61)을 형성하여 상기 암소켓(60)과 숫소켓(61)이 끼움결합되어 분리결합가능한 구조로 형성되는 것을 특징으로 하는 차량용 콘솔박스에 내설된 단말기용 살균/충전 장치.

청구항 4.

제 1 항에 있어서,

상기 스토퍼(10)는 하부면에 정면과 측면으로 관통되는 케이블고정홈(11)이 형성되고 케이블고정홈(11)이 관통되는 측면의 타측에 하향하여 소정길이 신장되는 걸림돌기이탈방지구(18)가 형성되는 상부스토퍼(17)와;

상기 상부스토퍼(17)의 케이블고정홈(11)에 대응하는 케이블고정홈(12)이 상부면에 형성되고 배면측에 원통형 스프링고정구(19)가 형성되며 상기 걸림돌기이탈방지구(18)에 대응하는 측면의 전방에서 소정간격 이격되어 후방으로 소정길이 신장되고 단부에서 하향으로 절곡되는 걸림돌기(13)가 형성되고 정면에서 배면을 관통하는 가이드봉관통공(21)이 형성되는 하부스토퍼(20)로 구성되는 것을 특징으로 하는 차량용 콘솔박스에 내설된 이동통신 단말기용 살균/충전 장치.

명세서

발명의 상세한 설명

발명의 목적

발명이 속하는 기술 및 그 분야의 종래기술

본 발명은 특허출원 제2004-77695호의 이용발명으로서 차량용 콘솔박스에 내설된 이동통신 단말기용 살균/충전 장치에 관한 것으로, 보다 상세하게는 단말기에 기생하는 각종세균을 살균하고, 다른 종류의 범용충전단자로 교체가능한 구조를 가지며, 상기 범용충전단자가 연결된 케이블이 거치대로부터 소정길이 삽출가능한 구조를 이루어 단말기의 충전 및 데이터 교환용 USB단자에 용이하게 결합가능하고, 거치대 내측 저면에 접착시트 또는 흡착부재를 구비하여 단말기가 유동없이 안착가능한 차량용 콘솔박스에 내설된 이동통신 단말기용 살균/충전 장치에 관한 것이다.

휴대폰이나 PDA 등의 이동통신 단말기는 사용자의 음성을 수음하고 이를 이동통신망을 통해 상대방에게 전달하는 통신기능을 구비하는데, 그 특성상 사용자의 입에서 나오는 타액에 의해 오염되기 쉬울 뿐만 아니라 사용자의 얼굴에 밀착 사용됨에 따라 땀이나 화장품 등으로 오염되기 쉽다.

이와 같이 오염된 이동통신 단말기는 각종 세균의 번식에 적합한 환경을 제공함에 따라 단말기 사용자의 호흡기 또는 직접적인 접촉을 통하여 대단히 유해할 수 있으며, 통상 단말기를 손으로 파지하여 사용함에 따라 단말기에서 기생하는 각종 유해 세균이 사용자의 손을 통해 타인, 특히 유아에게 전달되어 감염을 일으킬 수 있다는 문제점이 있다.

또한, 단말기의 충전 및 데이터 교환용 USB 단자에 대응하는 범용충전단자가 거치대의 하단에 고정된 상태로 있음으로써, 이동통신 단말기를 결합시키는데 많은 불편함이 있었다.

또한, 국가별로 이동통신의 단말기의 충전 및 데이터교환용 USB단자와 범용충전단자의 핀수가 8핀, 16핀 및 24핀 등으로 달라 호환성의 문제점이 있었다.

또한, 크기가 천차만별로 제조되는 단말기 중 매우 작은 단말기의 경우 거치대 내부에서 유동하게 되면 불안정한 문제점이 있었다.

또한, 차량운행중 이동통신단말기의 배터리가 다 되었으나 추가 배터리가 없는 경우, 별도의 충전키트가 없으면 단말기를 충전할 수 없는 문제점이 있었다.

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발명이 이루고자 하는 기술적 과제

본 발명은 이와 같은 종래의 문제점을 해결하기 위하여 안출되는 것으로, 단말기에 기생하는 각종세균을 살균하고, 다른 종류의 범용충전단자로 교체가능한 구조를 가지며, 상기 범용충전단자가 연결된 케이블이 거치대로부터 소정길이 삽출가능한 구조를 이루어 단말기의 충전 및 데이터 교환용 USB단자에 용이하게 결합가능하고, 거치대 내측 저면에 접착시트 또는 흡착부재를 구비하여 단말기가 유동없이 안착가능한 차량용 콘솔박스에 내설된 이동통신 단말기용 살균/충전 장치를 제공함을 목적으로 한다.

상기 목적을 달성하기 위한 본 발명은 차량 실내에 설치되고 수납공간부(3)와 덮개(2)가 구비되는 콘솔박스(C)에 있어서, 상기 콘솔박스(C)의 상부 일측에 형성되는 조작스위치(8)를 통해 수납공간부(3)의 내측에 설치된 자외선 램프(5)가 작동되고, 상기 수납공간부(3)의 하부에는 소정크기의 케이블장착부(9)가 형성되며, 상기 수납공간부(3)의 상부로 덮개(2)가 개폐가능토록 결합되고, 상기 수납공간부(3)의 일측에는 소정크기의 홈이 형성되는 범용충전단자 안착홈(7)과; 상기 안착홈(7)의 중앙 하부에 관통홈(6)이 형성되고 타측에 거치부(4a)가 형성되며 상기 케이블장착부(9)를 밀폐하도록 케이블장착부(9)의 상부에 안착되어 고정되는 커버(4)와; 상기 커버(4)의 관통홈(6)의 하부에 위치되어 외주연에 오목한 권취홈(31)이 형성되고 직립되어 전후방으로 회전가능토록 고정되는 원형 가이드롤러(30)와; 상기 커버(4)의 저면으로부터 소정간격 이격되고 전후방측으로 소정길이 신장되어 앙단이 고정부재(33)로 고정결합되는 가이드봉(32)과; 상기 가이드봉(32)이 정배면으로 삽입관통되고 내측에 케이블고정홈(11,12)이 형성되어 정면과 일측으로 관통되며 타측에는 걸림돌기(13)가 형성되는 스토퍼(10)와; 상기 스토퍼(10)의 배면에 일측이 고정되고 타측은 상기 가이드봉(32)의 후방측 일단에 가이드봉(32)과 함께 고정부재(33)로 고정되는 스파이럴스프링(14)과; 상기 스토퍼(10)의 케이블고정홈(11,12)이 개방된 일측에 소정크기의 공간이 형성되도록 소정간격 이격되어 고정결합되는 판형 선이탈방지판(15)과; 상기 커버(4)의 저면에 가이드봉(32)과 나란하게 형성되어 상기 스토퍼(10)의 걸림돌기(13)를 전후방으로 안내하는 가이드홈(16)과; 상기 선이탈방지판(15)의 내측에 소정길이가 권취되어 스토퍼(10)의 케이블고정홈(11,12)의 일측으로 삽입되고 전방으로 인출되어 가이드롤러(30)의 권취홈(31)에 걸쳐 관통홈(6)을 관통하여 상기 커버(4)의 상부로 인출되는 케이블(40)과; 상기 커버(4)의 상부로 인출된 케이블(40)의 단부에 결합되는 범용충전단자(41)로 구성되는 차량용 콘솔박스에 내설된 이동통신 단말기용 살균/충전 장치를 제공함에 그 목적이 달성된다.

또한, 상기 범용충전단자(41)와 케이블(40)의 결합은 외측면에 핸들부(51)와 숫나사부(52)와 단자(53)가 형성되어 케이블(40) 단부에 고정되는 단자소켓(50)이 상기 범용충전단자(41)의 배면 내측에 형성되는 암나사부(54)에 나사결합되어 분리결합가능한 구조로 형성되거나, 또는 범용충전단자(41)로부터 소정길이 인출되는 케이블(40)의 단부에 암소켓(60)을 형성하고, 상기 커버(4)의 관통홈(6)을 관통하여 인출되는 케이블(40)의 단부에 숫소켓(61)을 형성하여 상기 암소켓(60)과 숫소켓(61)이 끼움결합되어 분리결합가능한 구조로 형성되는 것이 바람직하다.

또한, 상기 스토퍼(10)는 하부면에 정면과 측면으로 관통되는 케이블고정홈(11)이 형성되고 케이블고정홈(11)이 관통되는 측면의 타측에 하향하여 소정길이 신장되는 걸림돌기이탈방지구(18)가 형성되는 상부스토퍼(17)와; 상기 상부스토퍼(17)의 케이블고정홈(11)에 대응하는 케이블고정홈(12)이 상부면에 형성되고 배면측에 원통형 스프링고정구(19)가 형성되며 상기 걸림돌기이탈방지구(18)에 대응하는 측면의 전방에서 소정간격 이격되어 후방으로 소정길이 신장되고 단부에서 하향으로 절곡되는 걸림돌기(13)가 형성되고 정면에서 배면을 관통하는 가이드봉관통공(21)이 형성되는 하부스토퍼(20)로 구성되는 것이 바람직하다.

또한, 상기 가이드홈(16)은 소정길이 후방에서 전방으로 직진하여 형성되다가 전방 소정위치에서 소정곡률로 절곡되었다가 다시 직진하여 형성되며, 상기 절곡되는 위치에 갈고리 형상의 걸림턱(22)이 형성되고 걸림턱(22)에 대향하는 위치에 소정경사를 갖는 이탈부(23)가 형성되는 것이 바람직하다.

또한, 상기 거치부(4a) 내측 저면에 소정의 접착력을 갖는 시트지(70)를 부착하거나 또는 흡착구(72)를 상부로 향하도록 하나 이상의 흡착부재(71)의 하부를 고정하여 단말기가 안착후 유동이 적도록 하는 것이 바람직하다.

발명의 구성

이하, 본 발명의 실시예를 첨부 도면을 참조하여 상세히 설명하면 다음과 같다.

도 1 은 본 발명을 적용한 살균/충전 장치가 차량의 콘솔박스에 내설된 상태를 보이는 사용상태도 및 측단면도이고, 도 2 는 본 발명을 적용한 살균/충전 장치의 스토퍼의 전체구성을 보이는 사시도이고, 도 3a 와 3b 는 본 발명을 적용한 살균/충

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전 장치의 스토퍼의 작동상태를 보이는 저면도이고, 도 4a 와 4b 는 본 발명을 적용한 살균/충전 장치의 범용충전단자와 케이블의 결합부를 보이는 부분상세도이고, 도 5a 와 5b 는 본 발명을 적용한 살균/충전 장치의 거치대 내측에 접착시트 또는 흡착부재가 구비된 상태를 보이는 상태도이다.

우선, 본 발명의 차량용 콘솔박스(C)에 내설된 이동통신 단말기용 살균/충전 장치(1)는 차량 실내에 설치되고 수납공간부(3)와 덮개(2)가 구비되는 콘솔박스(C)에 있어서, 상기 콘솔박스(C)의 상부 일측에 형성되는 조작스위치(8)를 통해 수납공간부(3)의 내측에 설치된 자외선 램프(5)가 작동되고, 상기 수납공간부(3)의 하부에는 소정크기의 케이블장착부(9)가 형성되며, 상기 수납공간부(3)의 상부로 덮개(2)가 개폐가능토록 결합되고, 안착홈(7)과 커버(4)와 가이드롤러(30)와 가이드봉(32)과 스토퍼(10)와 스파이럴스프링(14)과 선이탈방지판(15)과 가이드홈(16)과 케이블(40)과 범용충전단자(41)로 구성된다.

상기 안착홈(7)은 도 1에서 보는 바와 같이 상기 수납공간부(3)의 일측에 위치되어 소정크기의 홈을 형성하여 범용충전단자(41)가 안착될 수 있는 공간을 형성한다.

상기 커버(4)는 상기 안착홈(7)의 중앙 하부에 관통홈(6)이 위치되고 타측상부에 거치부(4a)가 형성되며 상기 케이블장착부(9)를 밀폐하도록 케이블장착부(9)의 상부에 안착되어 고정된다.

상기 가이드롤러(30)는 원형으로 상기 커버(4)의 관통홈(6)의 하부에 위치되어 외주연에 오목한 권취홈(31)이 형성되고 직립되어 전후방으로 회전가능토록 고정되어, 케이블(40)을 상기 권취홈(31)에 걸어 전후방으로 이동이 용이하도록 가이드하는 역할을 한다.

상기 가이드봉(32)은 상기 커버(4)의 저면으로부터 소정간격 이격되고 전후방측으로 소정길이 신장되어 양단이 고정부재(33)로 고정결합되어, 스토퍼(10)가 관통되어 결합됨으로써 전후방향으로 이동이 용이하도록 가이드한다.

상기 스토퍼(10)는 상기 가이드봉(32)이 정배면으로 삽입관통되고 내측에 케이블고정홈(11,12)이 형성되어 정면과 일측으로 관통되며 타측에는 걸림돌기(13)가 형성되어, 스토퍼(10)의 내측에 형성된 케이블고정홈(11,12)에 케이블(40)을 삽입시켜 스토퍼(10)와 함께 케이블(40)이 이동되도록 고정시키고, 상기 가이드봉(32)을 따라 전후방향으로 이동이 가능케 된다.

또한, 상기 스토퍼(10)는 도 2 에서 보는 바와 같이 하부면에 정면과 측면으로 관통되는 케이블고정홈(11)이 형성되고 케이블고정홈(11)이 관통되는 측면의 타측에 하향하여 소정길이 신장되는 걸림돌기이탈방지구(18)가 형성되는 상부스토퍼(17)와; 상기 상부스토퍼(17)의 케이블고정홈(11)에 대응하는 케이블고정홈(12)이 상부면에 형성되고 배면측에 원통형 스프링고정구(19)가 형성되며 상기 걸림돌기이탈방지구(18)에 대응하는 측면의 전방에서 소정간격 이격되어 후방으로 소정길이 신장되고 단부에서 하향으로 절곡되는 걸림돌기(13)가 형성되고 정면에서 배면을 관통하는 가이드봉관통공(21)이 형성되는 하부스토퍼(20)로 구성되는 것이 바람직하다.

상기 스토퍼(10)의 케이블고정홈(11,12)은 'ㄱ'자 형상을 갖도록 형성되는 것이 바람직하나, 다수 번 절곡되는 어떠한 형상으로 형성되어도 무방하다.

상기 스파이럴스프링(14)은 상기 스토퍼(10)의 배면측의 스프링고정구(19)에 일측이 고정되고 타측은 상기 가이드봉(32)의 후방측단과 함께 고정부재(33)로 고정되어, 상기 스토퍼(10)가 전진되었을 때 후방으로 복귀시키는 인장력을 갖는다.

상기 선이탈방지판(15)은 판형으로, 상기 스토퍼(10)의 케이블고정홈(11,12)이 개방된 일측에 소정크기의 공간이 형성되도록 소정간격 이격되어 고정결합되어, 상기 선이탈방지판(15)과 커버(3)의 저면에 형성되는 케이블장착부(9)의 일부공간에 케이블(40)을 일정부분 수용하여 상기 스토퍼(10)가 이동시 케이블(40)이 소정길이 전후이동이 가능토록 한다.

상기 가이드홈(16)은 도 3a에서 보는 바와 같이 상기 커버(3)의 저면에 가이드봉(32)과 나란하게 형성되어 상기 스토퍼(10)의 걸림돌기(13)를 전후방으로 안내한다.

또한, 상기 가이드홈(16)은 상기 커버(3)의 저면에 가이드봉(32)과 나란하게 형성되어 상기 스토퍼(10)의 걸림돌기(13)를 전후방으로 안내하기 위하여, 소정길이 후방에서 전방으로 직진하여 형성되다가 전방 소정위치에서 소정곡률로 절곡되었다가 다시 직진하여 형성되며, 상기 절곡되는 위치에 갈고리 형상의 걸림턱(22)이 형성되고 걸림턱(22)에 대향하는 위치

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에 소정경사를 갖는 이탈부(23)가 형성되어, 상기 스토퍼(10)의 걸림돌기(13)가 상기 가이드홈(16)을 따라 전진하다가 전진하는 힘이 없어지게 되면, 상기 걸림턱(22)에 들어가 걸림상태가 되고, 다시 스토퍼(10)에 전진하는 힘이 작용하면 상기 걸림돌기(13)는 전진하여 이탈부(23)를 타고 상승하면서 측면으로 이탈되어 걸림턱(22)을 통과하여 후진하게 된다.

상기 케이블(40)은 상기 선이탈방지판(15)의 내측에 소정길이가 권취되어 스토퍼(10)의 케이블고정홈(11,12)의 일측으로 삽입되고 전방으로 인출되어 가이드롤러(30)의 권취홈(31)에 걸쳐 관통홈(6)을 관통하여 상기 커버(4)의 상부로 인출된다.

상기 범용충전단자(41)는 상기 커버(4)의 상부로 인출된 케이블(40)의 단부에 결합되는데, 범용충전단자(41)와 케이블(40)의 결합은 외측면에 핸들부(51)와 숫나사부(52)와 단자(53)가 형성되어 케이블(40) 단부에 고정되는 단자소켓(50)이 상기 범용충전단자(41)의 배면 내측에 형성되는 암나사부(54)에 나사결합되어 분리결합가능한 구조로 형성하거나, 또는 범용충전단자(41)로부터 소정길이 인출되는 케이블(40)의 단부에 암소켓(60)을 형성하고, 상기 커버(4)의 관통홈(6)을 관통하여 인출되는 케이블(40)의 단부에 숫소켓(61)을 형성하여 상기 암소켓(60)과 숫소켓(61)이 끼움결합되어 분리결합가능한 구조로 형성하여, 범용충전단자(41)의 핀수가 국제적으로 아직 통일화되지 않아 핀수가 서로 다른 범용충전단자(41)를 교환 가능토록 구성한다.

또한, 도 5a 및 도 5b에서 보는 바와 같이 상기 거치부(4a)의 내측에 소정의 접착력을 갖는 시트지(70)를 부착하거나, 또는 흡착구(72)를 상부로 향하도록 하부가 고정된 하나 이상의 흡착부재(71)를 구비하여 단말기가 거치부(4a)에 안착후 유동이 없거나 적도록 하는 것이 바람직하다.

이하, 본 발명을 실시예를 통하여 구체적으로 설명한다.

상기 수납공간부(3)의 내부 일측에 소정크기의 홈을 갖는 범용충전단자 안착홈(7)을 형성하고, 상기 범용충전단자 안착홈(7)의 중앙에 관통홈(6)이 위치되도록 커버(4)의 일측에 형성하고 상기 관통홈(6)의 하부에는 외주연에 오목한 권취홈(31)이 형성되고 직립되는 원형 가이드롤러(30)를 전후방으로 회전가능토록 고정한다.

다음, 커버(4)의 하부면에 정면과 측면으로 관통되는 케이블고정홈(11)이 형성되고 케이블고정홈(11)이 관통되는 측면의 타측에 하향하여 소정길이 신장되는 걸림돌기이탈방지구(18)가 형성되는 상부스토퍼(17)와; 상기 상부스토퍼(17)의 케이블고정홈(11)에 대응하는 케이블고정홈(12)이 상부면에 형성되고 배면측에 원통형 스프링고정구(19)가 형성되며 상기 걸림돌기이탈방지구(18)에 대응하는 측면의 전방에서 소정간격 이격되어 후방으로 소정길이 신장되고 단부에서 하향으로 절곡되는 걸림돌기(13)가 형성되고 정면에서 배면을 관통하는 가이드봉관통공(21)이 형성되는 하부스토퍼(20)로 구성되는 스토퍼(10)에 케이블(40)을 상기 케이블고정홈(11,12)에 넣고 고정시킨 후, 하부스토퍼(20)의 배면측에 형성된 스프링고정구(19)에 스파이럴스프링(14)의 일단을 걸고, 상부스토퍼(17)와 하부스토퍼(20)를 결합시킨다.

다음, 전후방측으로 소정길이 신장되는 가이드봉(32)을 상기 결합된 하부스토퍼(20)의 전후방으로 형성된 가이드봉관통공(21)에 삽입하고, 상기 커버(4)의 저면에 전후방측으로 형성되어 상기 스토퍼(10)의 걸림돌기(13)를 전후방으로 안내하도록 형성된 가이드홈(16)에 상기 스토퍼(10)의 걸림돌기(13)가 삽입되면서 동시에 상기 가이드봉(32)이 커버(4)의 저면으로부터 소정간격 이격되도록 고정부재(33)를 이용하여 양단을 고정결합시킨다. 이때, 후방측 고정부재(33)를 결합하면서 상기 스파이럴스프링(14)의 타단을 함께 고정시킨다.

다음, 상기 스토퍼(10)의 케이블고정홈(11,12)이 개방된 일측에 소정크기의 공간이 형성되도록 소정간격 이격되어 고정결합되는 판형 선이탈방지판(15)을 설치하여, 상기 스토퍼(10)에 고정되고 일측으로 인출된 케이블(40)을 소정길이 상기 선이탈방지판(15)의 내측에 권취하여 스토퍼(10)가 전후운동을 하는 동안 케이블(40)이 당기지 않으며, 커버(4)의 하측에 고정될 기판 및 전자부품(도시없음)과 간섭이 일어나지 않도록 한다.

다음, 상기 케이블(40)은 스토퍼(10)의 케이블고정홈(11,12)에 고정되고 전방으로 인출되어 가이드롤러(30)의 권취홈(31)에 걸쳐져 관통홈(6)을 관통하여 상기 커버(4)의 상부로 인출시켜 단부에 범용충전단자(41)를 결합한다.

이때, 상기 범용충전단자(41)와 케이블(40)의 결합은 도 4a 및 도 4b에서 보는 바와 같은 2가지 구조 중에 택일하여 사용할 수 있다. 물론, 이를 일정부분 변형한 다른 구조도 본 발명의 구조에 속한다.

첫 번째 구조는 도 4a에서 보는 바와 같이 외측면에 핸들부(51)와 숫나사부(52)와 단자(53)가 형성되어 케이블(40) 단부에 고정되는 단자소켓(50)이 상기 범용충전단자(41)의 배면 내측에 형성되는 암나사부(54)에 나사결합되어 분리결합가능

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한 구조로 형성하는 것과, 두 번째 구조는 도 4b에서 보는 바와 같이 범용충전단자(41)로부터 소정길이 인출되는 케이블(40)의 단부에 암소켓(60)을 형성하고, 상기 커버(4)의 관통홈(6)을 관통하여 인출되는 케이블(40)의 단부에 숫소켓(61)을 형성하여 상기 암소켓(60)과 숫소켓(61)이 끼움결합되어 분리결합가능한 구조로 형성하는 것이다.

다음, 상기 수납공간부(3)의 안착홈()이 형성된 측면에 자외선 램프(5)를 안착고정시킨다.

다음, 덮개(2)가 상기 수납공간부(3)를 완전히 개폐가능하도록 일측을 결합시킨다.

이외에 전원인가 및 기판 등의 다른 부품의 조립은 도면에 나타난 구조 및 종래기술을 이용하여 행할 수 있으며, 이를 본 발명에서는 언급하지 않는다. 이로써 모든 조립을 완료한다.

상기된 방법으로 조립된 본 발명의 차량용 콘솔박스에 내설된 이동통신 단말기용 살균/충전 장치(1)의 작동상태를 설명하면 다음과 같다.

먼저, 본 발명의 차량용 콘솔박스에 내설된 이동통신 단말기용 살균/충전 장치(1)의 덮개(2)를 열어제치면 거치부(4a)가 개방되고 내측 전방에 위치된 범용충전단자(41)를 일정길이 잡아당겨 이동통신 단말기(도시없음)의 충전 및 데이터교환용 USB단자(도시없음)에 삽입하여 결합한다. 이때, 범용충전단자(41)가 상기 USB단자에 결합이 용이하도록 케이블(40)은 소정길이 잡아당겨진 상태에서 고정되었다가, 다시 한번 케이블(40)을 당겼다가 놓게 되면 케이블(40) 및 범용충전단자(41)는 커버(4)의 관통홈(6)에 형성된 가이드롤러(30)를 따라 케이블장착부(9)로 삽입되게 된다.

이러한 케이블(40)이 걸림상태 및 걸림해제상태로 되는 작동과정을 세부적으로 설명하면 다음과 같다.

상기 범용충전단자(41)와 함께 케이블(40)이 잡아당겨짐에 따라, 상기 스토퍼(10)는 도 3a에서 보는 바와 같은 후방 초기위치에서 점차적으로 전진되고, 스토퍼(10)의 걸림돌기(13)는 가이드홈(16)을 따라 소정길이 전진하게 된다. 상기 가이드홈(16)은 소정곡률로 절곡되었다가 다시 직진하도록 형성되어, 상기 스토퍼(10)의 걸림돌기(13)는 가이드홈(16)을 따라 절곡된 후 계속 전진을 하게 된다.

다음, 케이블(40)을 놓아 잡아당기는 힘을 제거하게 되면, 상기 스토퍼(10)는 배면에 결합된 스파이럴스프링(14)의 인장력에 의해 후진을 시작하게 되고, 후진하다가 절곡된 위치에 이르러 갈고리 형상의 걸림턱(22)에 걸리게 되어 도 3b에서 보는 바와 같이 스토퍼(10)는 멈추게 되고 걸림상태가 되어 케이블(40)은 소정길이 신장된 채로 고정된다.

다음, 케이블(40)을 다시 잡아당겼다가 놓게 되면, 스토퍼(10)는 걸림턱(22)으로부터 전진하여 걸림턱(22)에 대향하는 위치에 형성된 소정경사를 갖는 이탈부(23)를 따라 상승하다가 측면의 가이드홈(16)으로 이탈되어 걸림상태가 해제되고, 상기 이탈부(23)로부터 측면으로 이탈하는 힘과 스파이럴스프링(14)의 인장력에 의해 걸림돌기(13)는 걸림턱(22)으로 유입되지 않고 계속 후진하여 후방의 초기위치로 되돌아오게 되고 상기 소정길이 인출되었던 케이블(40)은 삽입되어 범용충전단자(41)가 범용충전단자 안착홈(7)에 안착되어 있던 초기상태로 되돌아가게 된다. 이때, 상부스토퍼(17)에 걸림돌기이탈방지구(18)는 걸림돌기(13)의 측면으로의 이동을 제한하여, 상기와 같이 걸림돌기(13)가 상하 외에도 이탈부(23)로 인하여 측면으로 작용하는 힘을 받게 되어 부러지거나 휘어지는 것을 방지하는 역할을 한다.

상기와 같이 인출된 상태에서 고정되는 상기 범용충전단자(41)가 해당국가 및 지역에 해당되는 핀수(8핀, 16핀 및 24핀)와 동일하지 않다면, 미리 제공된 다른 종류의 범용충전단자로 교체한다. 교체방법은 다음 2가지 구조로 제공될 수 있다.

첫 번째 구조에 따른 교체방법은 도 4a에서 보는 바와 같이 범용충전단자(41)의 케이블 연결부에 위치된 핸들부(51)를 한 손으로 잡고, 다른 손으로는 범용충전단자(41)를 잡아 시계반대방향으로 회전시키면 분리되어 핸들부(51) 내측으로 신장되어 형성된 단자(53)가 인출되고, 상기 범용충전단자(41)로부터 단자(53)가 분리된다. 결합방법은 시계방향으로 회전시키는 것을 제외하고는 동일하다.

두 번째 구조에 따른 교체방법은 도 4b에서 보는 바와 같이 범용충전단자(41)로부터 소정길이 인출되는 케이블(40)의 단부에 형성된 암소켓(60)을 상기 커버(4)의 관통홈(6)을 관통하여 인출되는 케이블(40)의 단부에 형성된 숫소켓(61)으로부터 소정 힘 이상으로 잡아당기면, 암소켓(60)과 숫소켓(61)이 분리된다. 결합방법은 암소켓(60)과 숫소켓(61)을 억지끼움방식으로 밀어넣으면 걸림결합되어 잘 빠지지 않게 된다.

다음, 상기된 구조 중 한 가지 구조로 충전 및 데이터교환용 USB단자에 상기 범용충전단자(41)를 결합하고, 상기 케이블(40)을 당겼다가 놓으면 케이블(40)은 걸림상태가 해제되어 스파이럴스프링(14)의 인장력에 의해 후진되어 상기 범용충

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전단자(41)는 상기 범용충전단자 안착홈(7)에 삽입되고 이와 결합된 이동통신 단말기는 거치부(4a) 내측에 안착된다. 도 5a 및 도 5b에서 보는 바와 같이 단말기의 안착시 거치부(4a) 내측 저면에 구비된 소정의 접착력을 갖는 시트지(70) 또는 흡착구(72)를 상부로 향하도록 하부가 고정된 하나 이상의 흡착부재(71)를 구비하여 단말기의 거치부(4a) 안착이후 유동을 최소화하도록 한다.

다음, 덮개(2)를 덮어 거치부(4a)를 밀폐하고, 조작스위치(8)를 눌러 원하는 시간만큼 살균함과 동시에 충전을 하게 된다. 소정시간동안의 살균이 완료되면, 자외선 램프(5)로의 전원은 차단되지만 충전은 계속 진행되고 충전이 완료되면 LED램프(도시없음)가 푸른색으로 변경되거나 액정에 정보를 표시하여 사용자에게 충전완료 사실을 알리게 된다.

다음, 사용자는 덮개(2)를 열어제치어 수납공간부(3)를 개방하고, 이동통신 단말기를 들고 잡아당기면 연결된 범용충전단자(41)와 케이블(40)은 소정길이 인출되어 고정된다.

다음, 사용자는 범용충전단자(41)를 이동통신 단말기로부터 분리하고 범용충전단자(41)를 잡아당겼다가 놓으면, 범용충전단자(41)와 케이블(40)은 다시 관통홈(6)으로 유입되어 범용충전단자 안착홈(7)에 안착되게 되어, 다음 충전 및 살균을 할 수 있는 초기 상태가 된다.

이로써, 사용자는 차량운행 또는 여행 중에도 언제 어디서나 간편하게 이동통신 단말기를 충전 및 살균할 수 있어, 출퇴근 및 차량운행을 자주 하는 현대인에게 매우 편리하고 위생적인 충전 및 살균장치를 제공하게 된다.

본 발명은 상술한 특정의 바람직한 실시예에 한정되지 아니하며, 청구범위에서 청구하는 본 발명의 요지를 벗어남이 없이 당해 발명이 속하는 기술분야에서 통상의 지식을 가진 자라면 누구든지 다양한 변형실시가 가능한 것은 물론이고, 그와 같은 변경은 청구범위 기재의 범위 내에 있게 된다.

발명의 효과

상기와 같은 구성 및 작용에 의해 기대할 수 있는 본 발명의 효과는 다음과 같다.

단말기에 기생하는 각종세균을 살균하고, 다른 종류의 범용충전단자로 교체가능한 구조를 가지며, 상기 범용충전단자가 연결된 케이블이 거치대로부터 소정길이 삽출가능한 구조를 이루어 단말기의 충전 및 데이터 교환용 USB단자에 용이하게 결합가능하고, 상기 거치대의 내측 저면에 접착시트 또는 흡착부재를 구비하여 단말기가 유동없이 안착가능한 차량용 콘솔박스에 내설된 이동통신 단말기용 살균/충전 장치를 제공할 수 있는 매우 유용한 발명인 것이다.

도면의 간단한 설명

도 1 은 본 발명을 적용한 살균/충전 장치가 차량의 콘솔박스에 내설된 상태를 보이는 사용상태도 및 측단면도

도 2 는 본 발명을 적용한 살균/충전 장치의 스토퍼의 전체구성을 보이는 사시도

도 3a 와 3b 는 본 발명을 적용한 살균/충전 장치의 스토퍼의 작동상태를 보이는 저면도

도 4a 와 4b 는 본 발명을 적용한 살균/충전 장치의 범용충전단자와 케이블의 결합부를 보이는 부분상세도

도 5a 와 5b 는 본 발명을 적용한 살균/충전 장치의 거치대 내측에 접착시트 또는 흡착부재가 구비된 상태를 보이는 상태도

<도면의 주요부분에 대한 부호의 설명>

1 : 본 고안의 살균/충전 장치 2 : 덮개

3 : 수납공간부 4 : 커버

4a : 거치부 5 : 자외선 램프

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6 : 관통홈 7 : 범용충전단자 안착홈

8 : 조작스위치 9 : 케이블장착부

10 : 스토퍼 11,12 : 케이블고정홈

13 : 걸림돌기 14 : 스파이럴스프링

15 : 선이탈방지관 16 : 가이드홈

17 : 상부스토퍼 18 : 걸림돌기이탈방지구

19 : 스프링고정구 20 : 하부스토퍼

21 : 가이드봉관통공 22 : 걸림턱

23 : 이탈부 30 : 가이드롤러

31 : 권취홈 32 : 가이드봉

33 : 고정부재 40 : 케이블

41 : 범용충전단자 50 : 단자소켓

51 : 핸들부 52 : 숫나사부

53 : 단자 54 : 암나사부

60 : 암소켓 61 : 숫소켓

70 : 시트지 71 : 흡착부재

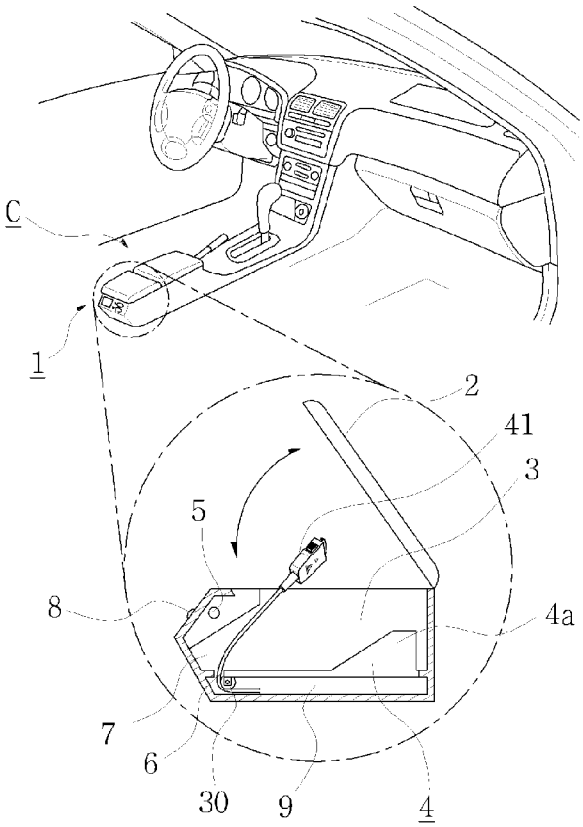
72 : 흡착구 C : 콘솔박스

도면

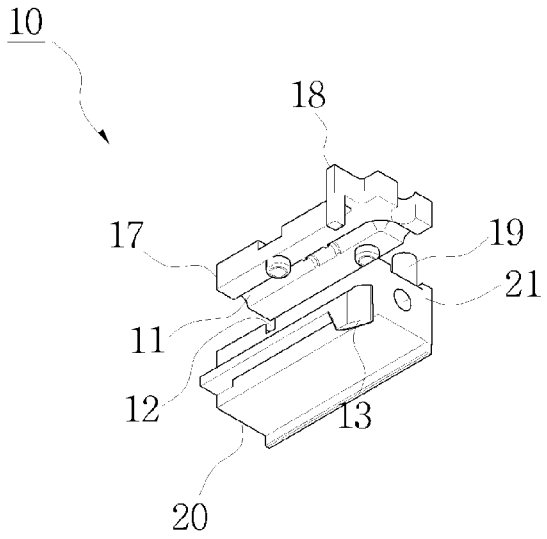
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도면1



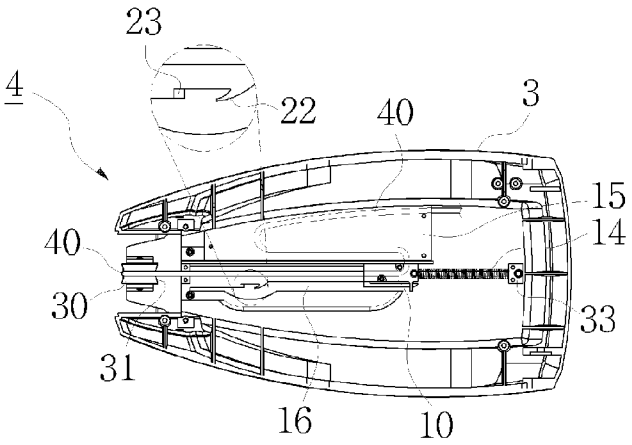
도면2



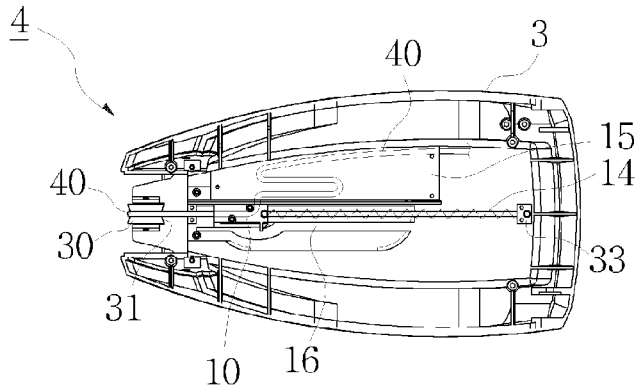
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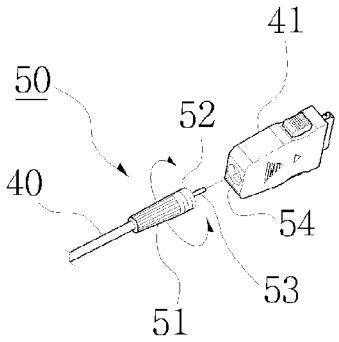
도면3a



도면3b

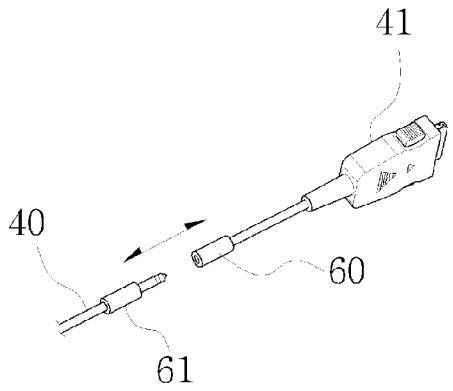


도면4a

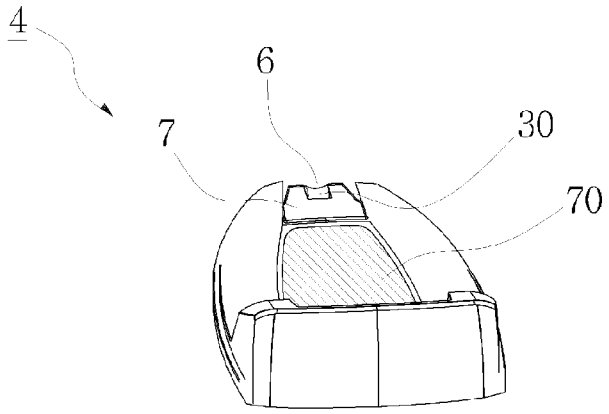


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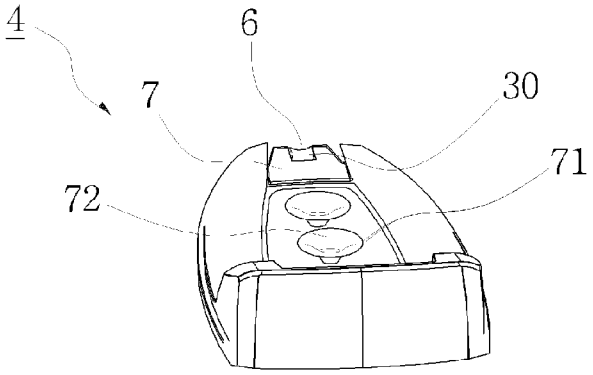
도면4b



도면5a



도면5b



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Espacenet

KR100956373B1 WALL EMBEDDING TYPE TERMINAL CHARGER

Applicants: INSUNG CO LTD [KR]

Inventors: KIM DUCK JIN [KR],KIM HEE JUNG [KR]

Classifications:
IPC ***A61L2/10; H02G3/12; H02J7/00;***

CPC **A61L2/10 (KR); H02G3/121 (KR); H02J7/0042 (KR); H04M1/17 (KR);**

Priorities: KR20090094530A 2009-10-06

Application: KR20090094530A 2009-10-06

Publication: KR100956373B1 2010-05-07

Published as: KR100956373B1

WALL EMBEDDING TYPE TERMINAL CHARGER

Abstract

PURPOSE: A charger built in a wall is provided to improve space availability by installing an embedded box in a wall indoors. CONSTITUTION: An embedded box(20) is installed in a wall. A charge connection unit is arranged in a receiving space part of the embedded box. The charge connection unit includes a cord and a gender. The cord is connected to a main power supply unit. The gender is connected to the terminal. A door is rotatably combined in the embedded box. A sterilization lamp is mounted inside the embedded box or the inner surface of the door and is electrically connected to the main power supply unit. A fixing frame(30) is formed around the front circumference of the embedded box.

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KOREAN PATENT ABSTRACTS XML 1(1-1)

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(73) Proprietor:
- **INSUNG CO., LTD.**

(72) Inventor:
- **KIM, DUCK JIN**
- **KIM, HEE JUNG**

(51) Int. Cl: **H02J 7/00 (2006.01)**
A61L 2/10 (2006.01)
H02G 3/12 (2006.01)

(54) **CHARGER BUILT IN A WALL, CAPABLE OF CHARGING AND STERILIZING A TERMINAL AT THE SAME TIME**

(57) Abstract:

PURPOSE: A charger built in a wall is provided to improve space availability by installing an embedded box in a wall indoors.

CONSTITUTION: An embedded box(20) is installed in a wall. A charge connection unit is arranged in a receiving space part of the embedded box. The charge connection unit includes a cord and a gender. The cord is connected to a main power supply unit. The gender is connected to the terminal. A door is rotatably combined in the embedded box. A sterilization lamp is mounted inside the embedded box or the inner surface of the door and is electrically connected to the main power supply unit. A fixing frame(30) is formed around the front circumference of the embedded box.

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For more registration information

Legal Status

No.	Receipt/Delivery No.	Receipt/Delivery Date	Document Title (KOR.)	Status (KOR.)
1	1-1-2009-0610723-02	2009.10.06	[Patent Application] Patent Application ([특허출원]특허출원서)	Acceptance (수리)
2	1-1-2009-0660480-18	2009.10.28	([우선심사신청]심사청구(우선심사신청)서)	Acceptance (수리)
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4	1-1-2010-0132873-76	2010.03.02	[Amendment to Description, etc.] Amendment ([명세서등 보정]보정서)	Regarded as an acceptance of amendment (보정승인간주)
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(74) 대리인
최중일

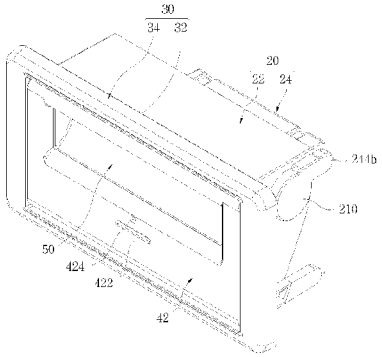
진체 청구항 수 : 총 5 항 심사관 : 구영회

(54) 살균 기능을 구비한 벽체 매입형 충전기

(57) 요 약

본 발명은 살균 기능을 구비한 벽체 매입형 충전기를 제공하는 것을 목적으로 하는 것으로, 본 발명의 구성은 내부에 전방으로 개구된 수납 공간부가 형성된 함체 형상으로 이루어져 벽체(4)에 내장 설치되는 매입박스(20)와, 상기 매입박스(20)의 상기 수납 공간부에 내장 설치되어 단말기(1)에 접속되는 충전 접속유닛과, 상기 매입박스(20)에 힌지부를 중심으로 회동 개폐식으로 결합된 도어(40)와, 상기 도어(40)의 내측면이나 상기 매입박스(20)의 내부에 장착되며 전원 공급부에 전기적으로 연결된 살균램프(60)를 포함하는 것을 특징으로 하며, 본 발명의 주요 효과는 건물의 실내 벽체(4)에 매립되는 방식으로 설치되어, 휴대폰의 배터리 충전을 위해서는 휴대폰 사용자가 일일이 충전기를 따로 마련할 필요가 없으므로, 여러모로 편리하고 유용하며, 휴대폰 충전기 사용시 따로 거치 장소를 확보할 필요가 없어서 충전기가 걸리적 거리는 등의 공간 활용도가 저하되는 경우도 없으며, 기타 건물 실내에서 휴대폰 충전기를 사용하는 경우 지저분해지는 일이 없어서 실내 환경적으로도 매우 바람직하다는 것이다.

대 표 도 - 도7



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특허청구의 범위

청구항 1

내부에 진방으로 개구된 수납 공간부가 형성된 함체 형상으로 이루어져 벽체(4)에 내장 설치되는 매입박스(20)와, 상기 매입박스(20)의 상기 수납 공간부에 내장 설치되어 단말기(1)에 접속되는 리일잭(100)과, 상기 매입박스(20)에 힌지부를 중심으로 회동 개폐식으로 결합된 도어(40)와, 상기 도어(40)의 내측면이나 상기 매입박스(20)의 내부에 장착되며 전원 공급부에 전기적으로 연결된 살균램프(60)를 포함하고,

상기 리일잭(100)은 주전원 공급부에 연결된 코드(502)와, 상기 코드(502)에 구비되어 상기 단말기(1)에 접속되는 젠더(500)를 포함하여 구성되며,

상기 젠더(500)는 내부에 클립 결합턱(516a,526a)을 구비하고 양측벽에는 버튼 수용홈(517,527)을 구비하며 후단부에는 상기 코드(502)가 결합되는 케이싱과, 중간 탄성편(542)의 양단부에 나란하게 연장된 한 쌍의 탄성 클립편(544)이 일체로 구비되고 상기 탄성 클립편(544)에는 푸시버튼(550)이 결합되며 상기 탄성 클립편(544)의 전단부에는 후크(546)가 구비되어 상기 중간 탄성편(542)이 상기 케이싱 내부의 상기 클립 결합턱(516a,526a)에 결합되고 상기 푸시버튼(550)은 상기 버튼 수용홈(517,527)에 안착된 상태로 상기 케이싱에 내장 설치된 클립(540)과, 상기 클립(540)의 한 쌍의 탄성 클립편(544)에 결합된 접속 지지편(530)을 포함하여 구성된 것을 특징으로 하는 살균 기능을 구비한 벽체 매입형 충전기.

청구항 2

제 1 항에 있어서, 상기 매입박스(20)는 전단 둘레부에 고정 프레임(30)이 구비되며, 상기 고정 프레임(30)이 고정수단을 매개로 벽체(4)에 형성된 매입홀(4a)의 둘레벽에 고정되어, 상기 매입박스(20)가 상기 벽체(4)의 매입홀(4a)에 수납 장착되도록 구성된 것을 특징으로 하는 살균 기능을 구비한 벽체 매입형 충전기.

청구항 3

제 2 항에 있어서, 상기 매입박스(20)는 벽체(4)에 매입되는 부분에 다른 부분보다 상대적으로 더 오목하게 형성된 전선 수용홈이 구비된 형상으로 구성된 것을 특징으로 하는 살균 기능을 구비한 벽체 매입형 충전기.

청구항 4

제 1 항에 있어서, 상기 매입박스(20)는 좌우 양측벽부(208)와, 상기 양측벽부(208)의 상단부에 일체화된 상측벽부(204)와, 상기 양측벽부(208)의 후단부에 일체화된 거치벽부(202)를 갖도록 구성되며, 상기 거치벽부(202)는 후방에서 전방으로 하향 경사지도록 구성된 것을 특징으로 하는 살균 기능을 구비한 벽체 매입형 충전기.

청구항 5

제 4 항에 있어서, 상기 매입박스(20)는 상기 좌우 양측벽부(208)와 상측벽부(244) 및 거치벽부(202)를 갖는 사각 함체 형상의 인박스(22)와, 상기 인박스(22)의 상기 거치벽부(202) 후방 외측에 결합된 리어박스(24)를 포함하여 구성된 것을 특징으로 하는 살균 기능을 구비한 벽체 매입형 충전기.

청구항 6

삭제

명 세 서

발명의 상세한 설명

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기 술 분 야

[0001] 본 발명은 살균 기능을 구비한 벽체 매입형 충전기에 관한 것으로, 더욱 상세하게는 기본적으로 살균 기능을 구비하면서도 건물의 벽체에 매입 설치할 수 있어서 별도의 휴대폰 충전기를 일일이 구비할 필요가 없고 공간 활용도를 높이며 실내 환경적으로도 바람직한 벽체 매입형 충전기에 관한 것이다.

배 경 기 술

[0002] 일반적으로, 휴대폰은 현대인들에게 없어서는 안되는 필수품으로서 사용량도 급속도로 증가되고 있는 실정이다. 이러한 휴대폰은 항시 휴대하고 이동하는 것일 보통이므로, 휴대폰 배터리의 주기적인 충전이 필수적으로 요구된다.

[0003] 이러한 휴대폰 충전을 위해 제공되는 충전기는 휴대폰과 배터리가 안착되며 안착부위에는 충전단자가 형성된 충전기 본체와, 이 충전기 본체의 내부에 형성된 회로기판과, 충전기 본체와 연결되어 끝단에 전원과 연결되도록 플러그가 형성된 트랜스를 갖는 구성을 이루고 있으며, 배터리 단자를 충전단자에 접속시킨 상태에서 충전기 본체에 배터리나 휴대폰 자체를 거치시켜 충전을 하게 된다. 한편, 관공서와 같은 기타 공공장소에는 박스형의 부스 내부에 복수개의 충전기를 구비하여, 부스 내부에 휴대폰을 수납한 상태에서 배터리 충전이 가능하도록 한 경우도 있다.

[0004] 그런데, 종래에는 휴대폰의 배터리 충전을 위해서는 휴대폰 사용자가 일일이충전기를 따로 마련해야 하므로, 불편한 단점이 있으며, 휴대폰 충전기 사용시 따로 거치 장소를 확보해야 하므로, 충전기가 걸리적 거려서 공간 활용도가 저하되는 경우가 많으며, 아파트나 기타 건물 실내에서 휴대폰 충전기를 사용하는 경우 지저분해져서 실내 환경적으로도 바람직하지 못하다. 특히, 관공서 등에 설치된 부스형 휴대폰 충전기는 사이즈가 큰 것을 그대로 거치대 등에 올려놓고 배치하여야 하기 때문에, 공간 활용도 등의 여러 측면에서 바람직하지 못하여 역시 실내 환경적으로도 바람직하지 못하다.

발명의 내용

해결 하고자하는 과제

[0005] 본 발명은 상기와 같은 문제점을 해소하기 위한 것으로, 본 발명의 목적은 건물의 벽체에 매입 설치할 수 있어서 별도의 휴대폰 충전기를 일일이 구비하여야 하는 불편을 해소하고, 공간 활용도를 높이며 실내 환경적으로도 바람직하며, 아울러, 살균 기능을 겸비하도록 설계된 새로운 벽체 매입형 충전기를 제공하고자 하는 것이다.

과제 해결수단

[0006] 상기와 같은 과제를 해결하기 위한 본 발명에 의하면, 내부에 전방으로 개구된 수납 공간부가 형성된 함체 형상으로 이루어져 벽체(4)에 내장 설치되는 매입박스(20)와, 상기 매입박스(20)의 상기 수납 공간부에 내장 설치되어 단말기(1)에 접속되는 충전 접속유닛과, 상기 매입박스(20)에 힌지부를 중심으로 회동 개폐식으로 결합된 도어(40)와, 상기 도어(40)의 내측면이나 상기 매입박스(20)의 내부에 장착되며 전원 공급부에 전기적으로 연결된 살균램프(60)를 포함하여 구성된 것을 특징으로 하는 살균 기능을 구비한 벽체 매입형 충전기가 제공된다.

효 과

[0007] 본 발명은 단말기를 수납하는 주요부인 매입박스 부분이 벽체에 매입 설치되는 방식의 제품으로서, 도어를 열어서 매입박스에 내장된 충전 접속유닛(예를 들어, 리일잭)의 젠더를 단말기에 구비된 충전 접속부에 연결하고, 도어를 다시 닫아주면, 도어에 구비된 살균램프가 켜지므로, 기본적으로 단말기를 자체 살균하면서 동시에 단말기에 충전을 할 수 있게 된다.

[0008] 따라서, 본 발명은 종래와 달리 가정집 등의 실내 벽체에 매립되는 방식으로 설치되어, 휴대폰의 배터리 충전을 위해서는 휴대폰 사용자가 일일이 충전기를 따로 마련할 필요가 없으므로, 여러모로 편리하고 유용하며, 휴대폰 충전기 사용시 따로 거치 장소 확보가 필요하여 충전기가 걸리적 거리면서 공간 활용도가 저하되는 경우도 없으

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며, 아파트나 기타 건물 실내에서 휴대폰 충전기를 사용하는 경우 지저분해지는 일이 없어서 실내 환경적으로도 매우 바람직한 효과를 갖는다.

[0009] 또한, 본 발명은 살균 기능을 하는 것도 하나의 특징이라 할 수 있는데, 수차례 휴대폰으로 통화하다보면 휴대폰에 침이 튀어 위생상 불리하고, 각종 인플루엔자 바이러스가 휴대폰 자체에 묻어 있는 상태에서 그대로 통화하다 보면, 감기가 쉽게 걸리거나 하는 등의 불합리한 점이 있을 수 있는데, 본 발명에서는 주요부인 매입박스에 휴대폰을 수납하여 기본적으로 휴대폰을 살균하므로, 각종 유해 세균이나 각종 인플루엔자 바이러스에 사용자가 노출되는 것을 방지하는 효과가 있으며, 이로 인해, 본 발명은 이른바 바람직한 바이오(Bio) 기능, 생체학적 기능 측면에서 바람직한 제품이라 할 수 있다.

[0010] 또한, 본 발명은 주요부인 매입박스 내부의 거치벽부는 전방 하측으로 경사지게 형성되고, 이러한 거치벽부의 배면에 트랜스와 같은 충전 제어부품을 내장하는 리어박스가 결합된 구조를 가지므로, 벽체에 매입되는 매입박스의 전후방 사이즈를 최소화할 수 있으므로, 벽체 매입 공사시에 보다 편리하고 경제적이며, 최대한 콤팩트한 구조로 충전 제어부품(트랜스 등)을 내장할 수 있으므로, 부품 수용 효율성 등의 측면에서 매우 바람직한 효과를 얻을 수 있다.

[0011] 또한, 본 발명에서 매입박스는 벽체에 매입되는 부분에 다른 부분보다 상대적으로 더 오목하게 형성된 전선 수용홈이 구비된 형상으로 구성되어 있어서, 벽체의 매입홀로 연장되어 나온 여분의 전선(예를 들어, 주전원 공급용 전선 등)을 말거나 접어서 매입박스의 오목한 전선 수용홈에 수용할 수 있으므로, 본 발명을 벽체에 매입 설치시 작업상의 편리성과 원활성을 기할 수 있게 된다.

[0012] 본 발명에서 매입박스에 리일잭 결합홀을 형성하고, 이러한 리일잭 결합홀에 끼워진 리일잭은 매입박스에 구비된 리일캡에 의해 커버하며, 리일잭 결합홀의 인접된 부분에는 한 쌍의 상하 지지편이 일체로 구비되어 있어서, 이러한 상하 지지편에 리일잭의 코드 케이스 둘레부 일측으로 들출된 연결 지지부 부분이 끼워져 지지되도록 함으로써 리일잭의 코드와 젠더를 당겨서 빼줄 때에 리일잭 자체가 헛돌아가는 것을 방지하는 효과를 가지면, 코드를 당겨 빼줄 때에 리일잭의 공회전으로 인한 사용상의 불편함도 해소한다.

[0013] 또한, 본 발명의 경우, 코드 길이를 길게 늘일 수 있는 리일잭을 주요부인 매입박스에 내장한 구조를 가지고 있어서, 단말기를 매입박스에 내장하지 않고 도어를 열어놓은 상태에서 리일잭의 코드와 젠더를 길게 빼서 실내 바닥에 놓고 단말기를 충전할 수 있으므로, 사용이 보다 편리하다.

[0014] 그리고, 피엠피와 같이 휴대폰보다 사이즈가 큰 단말기의 경우에는 매입박스에 들어가지 못할 수도 있는데, 본 발명에서는 도어를 수평으로 열어놓은 상태에서 리일잭의 젠더를 단말기에 꽂아서 단말기를 도어 위에 올려놓고 충전할 수도 있다.

[0015] 아울러, 본 발명의 다른 실시예의 경우, 매입박스의 내부에 직립 방향으로 지지대를 설치하고, 매입박스의 거치벽부에는 별도의 반사판을 설치하여, 지지대에 단말기의 하측부를 끼워서 수직 방향으로 세워서 살균을 하는 관계로 단말기의 모든 면이 고르게 살균되고, 이에 더하여 반사판에 의해 자외선 살균램프의 살균 광원이 반사되어 더욱더 원활하게 단말기의 전체면에 조사되므로, 살균 효율을 배가시킬 수 있게 된다.

[0016] 또한, 본 발명은 젠더의 주요부인 클립을 중간 탄성편의 양단부에 나란하게 연장된 한 쌍의 탄성 클립편이 일체로 구비된 디근자 형상으로 만들어, 클립 자체의 전후 사이즈를 최대한 콤팩트하게 구성하므로, 종래에 비하여 젠더 자체의 사이즈를 매우 줄인 효과가 있으며, 종래에 비하여 대략 17㎜ 정도로 젠더의 사이즈를 매우 콤팩트하게 줄임으로써, 특히, 내부에 휴대폰 등의 단말기를 수납하여 충전을 하도록 된 박스형 충전기에도 용이하게 채용할 수 있다. 다시 말해, 본 발명에서 채용되는 젠더는 주요부인 클립을 중간 탄성편의 양단부에 나란하게 연장된 한 쌍의 탄성 클립편이 일체로 구비된 디근자 형상으로 만들어, 클립 자체의 전후 사이즈를 최대한 콤팩트하게 구성함으로써, 젠더 자체의 사이즈를 종래에 비하여 많이 줄였기 때문에, 종래에 비하여 보다 큰 사이즈의 단말기도 충전기 박스 내부에 쉽게 수납하여 충전을 할 수 있게 된다. 이를테면, 젠더의 사이즈를 대폭 줄인 특수한 구조를 가짐으로 인하여, 충전 대상인 단말기 사이즈가 커서 매입박스 내부에 단말기 자체를 수납하지 못하는 경우가 없게 되는 것이다.

발명의 실시를 위한 구체적인 내용

[0017] 이하, 첨부된 도면에 의거하여 본 발명의 바람직한 실시예에 대하여 상세하게 설명한다. 도 1은 본 발명을 구성하는 인박스의 전면 부분을 보여주는 사시도, 도 2는 도 1에 도시된 인박스의 배면 부분을 보여주는 저면 사시

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도, 도 3은 본 발명을 구성하는 리어박스의 내부를 보여주는 사시도, 도 4는 본 발명의 주요부인 고정 프레임을 구성하는 프론트 프레임의 배면을 보여주는 사시도, 도 5는 본 발명의 고정 프레임을 구성하는 리어 프레임의 전면을 보여주는 사시도, 도 6은 도 5의 배면을 보여주는 사시도, 도 7은 본 발명의 조립된 상태를 보여주는 사시도, 도 8은 도 7의 배면 부분을 보여주는 사시도, 도 9는 본 발명의 도어를 열어 놓은 상태를 보여주는 사시도, 도 10은 도 9에 도시된 매입박스에 단말기를 수납한 상태를 보여주는 사시도, 도 11은 본 발명을 벽체에 매입한 상태를 보여주는 일측단면도, 도 12는 본 발명을 벽체에 매입한 상태를 보여주는 타측단면도, 도 13은 본 발명을 벽체에 매입한 상태를 일측면에서 보여주는 도면, 도 14는 본 발명을 벽체에 매입한 상태를 타측면에서 보여주는 도면, 도 15와 도 16은 본 발명의 다른 실시예를 보여주는 도면이다. 이를 참조하면, 본 발명은 내부에 전방으로 개구된 수납 공간부가 형성된 함체 형상으로 이루어져 벽체(4)에 내장 설치되는 매입박스(20)와, 이 매입박스(20) 수납 공간부에 내장 설치되어 단말기(1)에 접속되는 충진 접속유닛과, 매입박스(20)에 힌지부를 중심으로 회동 개폐식으로 결합된 도어(40)와, 이 도어(40)의 내측면에 장착되며 전원 공급부에 전기적으로 연결된 살균램프(60)로 이루어진 살균 기능을 구비한 벽체 매입형 충전기이다.

[0018] 상기 매입박스(20)는 내부에 전방으로 개구된 단말기(1) 수납 공간부를 갖는 대략 사각 박스형상으로 구성된다. 이때, 매입박스(20)는 인박스(22)와 리어박스(24)가 결합된 구조를 갖는다.

[0019] 상기 인박스(22)는 좌우 양측벽부(208)와, 이 양측벽부(208)의 상단부에 일체화된 상측벽부(204)와, 양측벽부(208)의 하단부에 일체화된 바닥부(206)와, 양측벽부(208)의 후단부에 일체화된 거치벽부(202)에 의해 내부에 단말기(1) 수납 공간부를 갖는 대략 사각 함체 형상으로 구성된다. 이때, 거치벽부(202)에는 휴대폰 등의 단말기(1) 후면이 접촉되어 거치되는 것으로서, 이러한 거치벽부(202)는 후방에서 전방으로 하향 경사지도록 구성된다. 구체적으로, 후방 상측에서 전방 하측으로 하향 경사진 형태로 구성된다. 바람직하게, 거치벽부(202)는 단면 원호형으로 곡면 형상을 갖도록 구성된다.

[0020] 또한, 인박스(22)의 거치벽부(202) 하측에는 스위치 결합홀(202a)이 형성되어 있고, 거치벽부(202)의 좌우 양측벽부(208) 중에서 적어도 하나의 측벽부(208)(도 1을 기준으로 우측벽부)에는 내외부로 연통된 리일잭 결합홀(212)(도 12와 도 13 참조)이 형성되고, 이러한 리일잭 결합홀(212) 부분에는 리일캡(210)이 구비된다. 한편, 리일캡(210)은 측벽부(244)의 외표면에 일체로 구비되어, 리일캡(210)의 내부에 리일잭(100)이 수납된다.

[0021] 이때, 리일잭(100)은 본 발명의 충전 접속유닛이라 할 수 있는데, 이러한 리일잭(100)은 코드 케이스와, 이 코드 케이스의 내부 중앙부에 회전 가능하게 설치되어 둘레부에 코드(502)가 감겨지는 와인딩 드럼과, 이 와인딩 드럼에 감겨지거나 풀어지면서 코드 케이스에서 인출되거나 코드 케이스 내부로 감겨져 수납되는 코드(502)와, 이 코드(502)에 구비된 젠더(500)와, 코드(502)와 젠더(500)에 전기적으로 연결되어 코드 케이스의 둘레부 일측에 구비된 연결 지지부(103)를 통과하는 전원 접속코드를 갖는 구조이다. 이러한 전원접속 코드에는 주전원 공급부에 전기적 접속을 위한 별도의 커넥터가 구비될 수 있다.

[0022] 상기 리일잭(100)은 코드 케이스 부분이 인박스(22)의 측벽부(244)에 구비된 리일잭 결합홀(212)을 통과하여 리일캡(210)에 내장되며, 코드 케이스의 리일캡(210)과 마주하는 부분에는 양면테이프가 구비되어, 양면테이프를 매개로 리일잭(100)의 코드 케이스 부분이 리일캡(210)에 고정되도록 할 수 있다. 바람직하게, 리일잭(100)의 코드 케이스 중앙부에 별도의 피스와 같은 체결구를 결합하고, 인박스(22)의 리일캡(210)에는 체결 보스부(미도시)를 구비하여, 체결구를 리일캡(210)의 체결 보스부에 견고하게 체결함으로써 리일잭(100)을 보다 안정적으로 고정하도록 한다. 이때, 리일캡(210)의 후단 부분에는 개구부가 형성되어, 리일캡(210)의 후단 개구부를 통하여 리일잭(100)의 전원접속 코드와 커넥터를 인박스(22)의 후방으로 빼낼 수 있다. 리일잭(100)의 전원접속 코드와 커넥터는 리일캡(210)의 개구부에서 후술할 리어박스(24)의 연장캡부(244b)로 수용되어 인박스(22)의 거치벽부(202) 배면과 리어박스(24)의 내부 수납부 사이에 수용된다.

[0023] 또한, 매입박스(20)를 구성하는 인박스(22)는 리일잭 결합홀(212)의 인접된 부분에 한 쌍의 상하 지지편(210a)(도 13 참조)이 일체로 구비되어 있어서, 이러한 상하 지지편(210a)에 리일잭(100)의 코드 케이스 둘레부 일측으로 돌출된 연결 지지부(103) 부분이 끼워져 지지된다. 이러한 리일잭(100)의 연결 지지부(103)가 매입박스(20)에 구비된 한 쌍의 지지편(210a)에 끼워져 지지됨으로 인하여 리일잭(100)의 코드(502)와 젠더(500)를 당겨서 빼줄 때에 리일잭(100) 자체가 헛돌아가는 것을 방지하게 된다.

[0024] 인박스(22)의 상측벽부(204) 전단부와 바닥부(206)의 전단부에는 직각 방향(벽체(4)의 표면과 나란한 방향)으로 좌우 한 쌍의 체결구 결합편(204a)이 일체형으로 구비되고, 각 체결구 결합편(204a)에는 체결홀(204a)이 구비된다.

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[0025] 또한, 인박스(22)의 좌우 양측벽부(208) 전단부에는 직각 방향(벽체(4)의 표면과 나란한 방향)으로 각각 고정 프레임 결합부가 구비되고, 고정 프레임 결합부의 상하 방향 중앙부에는 체결구 결합편(208a)이 구비되고, 체결구 결합편(208a)에는 체결홀(208b)이 구비된다. 이러한 체결구 결합편(208a)의 체결홀(208b)을 관통하는 체결구를 고정 프레임(30)을 구성하는 리어 프레임(32)의 체결 보스부(327)(도 5와 도 6에 도시됨)에 체결함으로써 인박스(22)의 전단부에 리어 프레임(32)을 고정할 수 있게 되며, 이러한 리어 프레임(32)은 프론트 프레임(34)과 함께 벽체(4)의 표면에 걸려져 지지되는 부분이다.

[0026] 인박스(22)의 좌우 양측벽부(208)에 구비된 좌우 고정 프레임 결합부의 체결구 결합편(208a)의 하측 위치에는 후술할 도어(40) 하단부의 단면 원형 힌지축의 일부를 수용하는 원호형 축결합홈(도 1 참조)이 각각 형성되어 있다.

[0027] 도 2에 도시된 바와 같이, 인박스(22)의 좌우 양측벽부(208) 전단부에 구비된 좌우 고정 프레임 결합부 중에서 한쪽의 고정 프레임 결합부에는 별도의 램프 스위치 결합홀이 구비되고, 램프 스위치 결합홀이 형성된 부분의 배면 상하부에는 체결 보스부가 구비되어 있다. 그리고, 램프 스위치 결합홀과 인접된 하측 위치에는 고정 프레임 결합부의 배면과 한쪽 측벽부(208)의 외표면에 일체화된 한 쌍의 상부 리브형 지지편(212)과 하부 리브형 지지편(214)이 일체로 구비되며, 각 리브형 지지편(212,214)에는 면취된 형태의 오목홈부(212a,214a)가 구비되어 있다. 이러한 오목홈부(212a,214a)는 전선이 벽체(4)의 수납홈(4a)에 접히지 않고 리어박스(22)의 내부로 연장 수납되도록 하는 기능을 갖는다.

[0028] 상기 램프 스위치를 고정 프레임 결합부에 형성된 램프 스위치 결합홀에 끼우고, 램프 스위치의 상하부에 구비된 고정편의 구멍을 관통하는 체결구를 램프 스위치 결합홀의 배면 상하측에 구비된 상하 체결 보스부에 체결함으로써, 램프 스위치를 인박스(22)의 전방 하측 위치에 설치할 수 있게 된다. 이러한 램프 스위치의 스위칭 버튼은 메인박스(20)의 전방 개구부에 하단부가 힌지부를 매개로 회동 개폐되도록 결합된 도어(40)의 내측면과 마주하도록 배치된다.

[0029] 또한, 도 2에 도시된 바와 같이, 인박스(22)의 배면에는 상하 좌우 방향으로 복수개의 체결 보스부(202b)가 일체로 구비된다. 본 발명에서는 네 개의 체결 보스부(202b)가 인박스(22)의 배면에 상하 좌우 방향에 일체로 구비되어 있다. 이때, 네 개의 체결 보스부(202b) 중에서 하나의 체결 보스부(202b)는 스위치 결합홀(202a)의 배면 상측에 일체로 구비되어 있다. 그리고, 인박스(22)의 거치벽부(202)의 배면 하측에는 수평 방향으로 연장된 상하부 지지편(202c)이 일체로 구비되어 있다. 이 상하부 지지편(202c) 사이로 전선이 지지되어 충전기 자체의 전기적 접속 상태를 보다 확실하게 유지할 수 있게 된다.

[0030] 상기 리어박스(24)는 바닥부(246)의 좌우단에 측벽부(244)가 일체로 구비되고, 측벽부(244)의 상단부에는 상측벽부(244)가 일체화되며, 바닥부(246)의 후단부와 좌우측 측벽부(244)의 후단부에 일체화된 후방 막음벽부(242)를 갖는 구조이다. 리어박스(24)의 후방 막음벽부(242)의 배면에는 상부 위치에 두 개의 체결홀(242a)과 하부 일측 위치에 체결홀(242a)이 구비된 구조를 갖는다.

[0031] 또한, 리어박스(24)의 좌우 측벽부(244) 중에서 하나의 측벽부(244) 하측에는 옆으로 연장된 측방 연장부(246a)가 구비되고, 측방 연장부(246a)에는 인박스(22)의 스위치 결합홀(202a)에 인접 배치된 체결 보스부(202b)에 체결되기 위한 체결구가 관통되는 체결홀(246b)이 구비된다. 이때, 인박스(22)의 스위치 결합홀(202a)에 결합되는 스위치는 주전원을 온오프되도록 작동시키는 기능을 한다. 한편, 리어박스(24)의 측방 연장부(246a)에 전선이 수용되어 충전기 자체의 전기적 접속 상태를 보다 안정적으로 유지할 수 있게 된다.

[0032] 상기 리어박스(24)의 측방 연장부(246a)의 체결홀(246b)과 상기 후방 막음벽부(242) 배면의 세 개의 체결홀(242a)은 인박스(22)의 거치벽부(202) 배면에 구비된 체결 보스부(202b)와 마주하게 된다. 또한, 리어박스(24)의 측방 연장부(246a)가 구비된 한쪽의 측벽부(244)에는 주전원 공급부에 전선을 매개로 연결되는 충전 제어부품(트랜스 등) 등을 삽입하기 위한 대략 사각구멍 형상의 관통홀(244a)이 형성되어 있으며, 관통홀(244a)의 상하측에는 체결홀(244b)이 형성되어 있다. 이러한 두 개의 체결홀(244b)을 관통하는 두 개의 체결구를 충전 제어부품에 구비된 고정편에 체결함으로써 트랜스 등의 충전 제어부품이 리어박스(24)의 내부에 안정적으로 설치될 수 있게 된다.

[0033] 또한, 리어박스(24)의 다른 측벽부(244)는 상측 외표면에 인박스(22)의 리일캡(210) 후방 개구부와 이어지는 연장캡(244b)이 일체로 구비되고, 다른 측벽부(244)의 하측에는 인박스(22)의 상하부 지지편(202c)과 이어지는 하부 연장캡(248)이 일체로 구비되어 있다. 하부 연장캡(248)으로 램프 스위치에 연결된 전선이 수납되어 리어박스(24)의 내부로 연장 수납된다. 그리고, 리어박스(24)는 인박스(22) 배면의 체결 보스부(202b)를 수용하기 위

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하여 체결홀(242a) 부분의 전방 위치에 보스 수용홈이 형성되어 있다.

[0034] 상기 구조의 인박스(22) 배면에 리어박스(24)를 대고, 리어박스(24)의 네 개의 체결홀(242a)(246b)을 관통하는 체결구(피스나 볼트 등)를 리어박스(24) 배면에 구비된 체결 보스부(202b)에 체결함으로써 인박스(22)와 리어박스(24)가 결합된 구조의 매입박스(20)를 형성할 수 있게 된다.

[0035] 이때, 매입박스(20)는 전단 둘레부에 구비된 고정 프레임(30) 부분이 고정수단을 매개로 벽체(4)에 형성된 매입홀(4a)의 둘레벽에 고정됨으로써, 벽체(4)의 매입홀(4a)에 수납 장착될 수 있게 된다.

[0036] 상기 고정 프레임(30)은 매입박스(20)의 전단부에 결합되는 프론트 프레임(34)과 리어 프레임(32)을 갖는 구조이다.

[0037] 상기 프론트 프레임(34)은 내측에 도어(40) 결합용 개구부를 갖는 대략 사각틀 형상의 틀부(344)에 직각 방향으로 상하 좌우 테두리벽(346)을 갖는 형상으로 이루어진다. 프론트 프레임(34)의 상측 테두리벽(344)에는 두 개의 걸림돌기(344a)가 구비되고, 하측 테두리벽(344)에는 두 개의 체결홀(344b)이 형성되어 있다. 체결홀(344b) 부분에는 두께가 상대적으로 더 두꺼운 블록부가 더 구비되어 있다.

[0038] 상기 리어 프레임(32)은 대략 사각형 틀부(322)의 내측에 도어 수용 개구부가 형성되고, 도어(40) 수용 개구부에는 전단으로 연장된 상하 좌우 테두리벽(326)을 갖는 형상으로 구성된다. 또한, 리어 프레임(32)의 사각형 틀부(322) 좌우 위치에는 상하 두 개의 장공 형상의 벽체 고정용 체결공(324)이 형성되어 있고, 사각형 틀부(322)의 상하 위치에는 매입박스(20)의 인박스(22) 전단부에 구비된 상하 좌우 체결구 결합편(208a)과 마주하는 체결 보스부(329)가 형성되어 있으며, 리어 프레임(32)의 테두리벽(326) 중에서 하측 테두리벽(326) 저면에는 프론트 프레임(34)의 하측 테두리벽(346)에 형성된 체결홀(344b)과 마주하는 체결 보스부(331)가 구비되어 있다.

[0039] 또한, 리어 프레임(32)의 하측 테두리벽(326)의 상면에는 좌우 체결 보스부(327) 사이에 위치되도록 도어 하단 지지편(326a)이 일체로 구비되어 있다. 도어(40)의 하단부는 반원형의 곡면부로 구성되는데, 이러한 도어 하단 지지편(326a)이 도어(40)의 곡면형 하단부와 하측 전면부를 지지하게 된다. 또한, 리어 프레임(32)의 사각형 틀부(322)의 전면에는 강도 보강을 위한 보강리브가 장공 형상의 벽체 고정용 체결공(324)과 이어지도록 구비되어 있다. 그리고, 리어 프레임(32)의 좌우측 테두리벽(326)은 하측 위치에 대략 반원형의 힌지축 지지홈이 구비되어 있고, 이러한 리어 프레임(32)의 힌지축 지지홈은 매입박스(20)의 인박스(22)의 좌우 양측벽부(244)에 구비된 좌우 고정 프레임 결합부의 원호형 축결합홈과 마주하여 원형의 힌지축 결합공을 형성하게 되며, 이러한 리어 프레임(32)과 인박스(22) 사이에 형성된 원형의 힌지축 결합공이 도어(40)의 양측단 하부에 형성된 원형의 힌지축이 결합되어 도어(40)가 매입박스(20)에 하단의 힌지부를 중심으로 상하방향으로 회동 개폐될 수 있다.

[0040] 상기 프론트 프레임(34)과 리어 프레임(32)을 상호 조립하기 위해서는 프론트 프레임(34)의 상측 테두리벽(344)에 형성된 두 개의 걸림돌기(344a)를 리어 프레임(32)의 상단부에 형성된 돌기홈에 끼우고, 프론트 프레임(34)의 하측 테두리벽(344)에 형성된 체결홀(344b)을 관통하는 체결구를 리어 프레임(32)의 하단에 형성된 두 개의 체결 보스부(331)에 체결하면 된다. 이렇게 함으로써 매입박스(20)에 구비되는 고정 프레임(30)을 상호 조립할 수 있게 된다.

[0041] 상기 도어(40)는 매입박스(20)의 전방 개구부를 개폐하기 위한 것으로, 아웃 도어판과 이너 도어판이 결합된 구조를 갖는다.

[0042] 상기 아웃 도어판은 상측 위치에 글라스(50)가 배치되는 투시창이 형성되고, 이러한 투시창의 하측 중앙 위치에는 충전 표시등 수용홀(424)이 형성되며, 충전 표시등 수용홀(424)의 하측 위치에는 옆으로 긴 장공 형태의 보조 스위치 결합홀(422)이 형성되어 있다. 또한 아웃 도어판의 내측면에는 상하 좌우로 체결 보스부가 일체로 구비되며, 아웃 도어판의 양단부 하측에는 반원형의 힌지축 형성편이 일체로 구비되어 있다. 보조 스위치 결합홀(422)에는 보조 스위치가 결합되고, 이 보조 스위치는 자외선 살균램프(60)에 전기적으로 연결되어, 사용자가 충전 완료후 도어을 열기전에 보조 스위치를 눌러서 살균램프(60)를 소등시킬 수 있도록 할 수 있다.

[0043] 상기 이너 도어판은 아웃 도어판의 투시창과 마주하는 글라스 결합부가 구비되고, 글라스(50) 결합의 하측 위치에는 옆으로 나란한 복수개의 살균램프(60) 안착부가 구비되며, 상하 좌우 모서리 부분에는 아웃 도어판의 상하 좌우 체결 보스부와 마주하는 체결홀이 형성되어 있다. 또한, 이너 도어판의 양단부 하측에는 아웃 도어판의 반원형 힌지축 형성판과 만나서 원형의 힌지축을 형성하는 반원형의 힌지축 형성편이 구비되어 있다.

[0044] 따라서, 이너 도어판의 상하 좌우 네 개의 체결홀을 아웃 도어판의 네 개의 체결 보스부와 만나도록 이너 도어판과 아웃 도어판을 결합하고, 이너 도어판의 체결홀을 관통하는 체결구를 아웃 도어판의 체결 보스부에 체결함

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으로써, 이너 도어판과 아웃 도어판이 결합된 도어(40)를 형성할 수 있다. 물론, 이너 도어판의 양단 하측부의 반원형 힌지축 형성부와 아웃 도어판의 양단 하측부의 반원형 힌지축 형성부가 서로 만나서 도어(40)의 하측 양단부에 힌지축을 형성하며, 이러한 도어(40) 하측 양단부의 힌지축이 상기 고정 프레임(30)을 구성하는 리어 프레임(32)의 힌지측 지지홈과 매입박스(20)를 구성하는 인박스(22)의 좌우 양측벽부(208)에 구비된 좌우 고정 프레임 결합부의 원호형 축결합홈에 의해 형성된 힌지축 결합공에 끼워져서 도어(40)가 매입박스(20)에 하단의 힌지부를 중심으로 상하향으로 회동 개폐될 수 있게 되는 것이다.

[0045] 또한, 상기 도어(40)의 글라스 결합부에 장착되는 글라스(50)는 단면 원호형의 메인 글라스면과, 이 글라스면의 전단부 양측에 일체화된 측방 글라스면을 갖는 구조이다. 또한, 메인 글라스면과 전단부와 양측방 글라스면의 전단부에는 직각 방향(벽체(4)의 표면과 나란한 방향)으로 연장된 결합턱부가 구비되어, 이러한 결합턱부가 도어(40)의 이너 도어판의 글라스 결합부에 형성된 결합슬릿에 끼워짐으로써, 도어(40)의 글라스 결합부에 반투명의 글라스(50)가 장착될 수 있게 된다. 이때, 글라스(50)의 상단부는 도어(40)의 글라스 결합부와 이격된 스페이스를 확보하도록 구성함으로써, 본 발명의 매입형 충전기의 매입박스(20)에 휴대폰을 내장하여 충전하는 동안 전화가 오면 벨소리나 소리 신호를 보다 확실하게 사용자가 들을 수 있도록 한다.

[0046] 상기한 각 부분을 조립되어 형성된 본 발명의 벽체 매입형 충전기에서 주요부인 매입박스(20)를 벽체(4)에 형성된 매입홀(4a)에 수용한 다음, 고정 프레임(30)을 구성하는 리어 프레임(32)의 장공형 벽체 고정용 체결홀(324) 부분에 체결구(피스나 볼트 등)를 끼워서 벽체(4)에 앵커링하면 본 발명을 벽체(4)에 매입형으로 내장 설치할 수 있게 된다.

[0047] 이어서, 고정 프레임(30)의 주요부인 프론트 프레임(34)의 상측에 형성된 두 개의 걸림돌기(344a)를 리어 프레임(32)의 상측에 형성된 두 개의 돌기홈에 끼우고, 프론트 프레임(34)의 하측 데두리벽(344)에 형성된 체결홀(344b)을 관통하는 체결구를 리어 프레임(32)의 하단에 형성된 두 개의 체결 보스부(331)에 체결하면 본 발명을 벽체(4)에 매설 고정한 체결구가 외부로 노출되지 않고 깔끔하게 마무리되도록 할 수 있다.

[0048] 이와 같이 벽체(4)에 매입 설치된 본 발명을 이용하여 휴대폰과 같은 단말기(1)를 충전하고자 하는 경우, 도어(40)를 먼저 열어준다. 그러면, 도어(40)가 열리면서 램프 스위치의 스위칭 버튼의 누름 상태가 해제되고, 램프 스위치의 누름 상태가 해제됨에 따라 도어(40)의 내측면으로 노출 실치된 살균램프(60)(본 발명에서는 자외선 램프를 채용함)로 인가되는 전원이 차단되므로, 자외선 살균램프(60)가 꺼지게 된다. 이때, 글라스(50)는 도어(40)의 안으로 움푹 들어간 구조를 이루므로, 도어(40)의 전방에서 글라스(50) 방향으로 손을 집어넣어 걸림부에 손을 걸쳐서 도어(40)를 손쉽게 열어줄 수 있다.

[0049] 도어(40)를 열어준 다음에는 매입박스(20)에 내장된 리일잭(100)의 젠더(500)를 단말기(1)에 구비된 충전 접속부에 연결하고, 도어(40)를 다시 닫아주면, 도어(40)에 의해 램프 스위치의 스위칭 버튼이 누름 상태로 절환되면서 살균램프(60)에 전원 공급부의 전원이 인가되면서 살균램프(60)가 켜지므로, 단말기(1)에 충전을 하면서 동시에 단말기(1)를 살균 처리할 수 있게 된다. 이때, 살균램프(60)는 플렉시블 피씨비와 같은 공지의 전기적 연결수단을 매개로 주전원 공급부에 전기적으로 연결될 수 있으며, 이러한 살균램프(60)와 주전원 공급부 사이에 상기 매입박스(20)에 장착된 램프 스위치를 회로적으로 연결함으로써, 도어(40)를 닫으면 램프 스위치가 온(on) 상태로 되고 도어(40)를 열면 램프 스위치가 오프(off) 상태로 절환되도록 구성할 수 있다.

[0050] 따라서, 본 발명은 기본적으로 살균 기능을 구비하면서도 종래와 달리 가정집 등의 실내 벽체(4)에 매립되는 방식으로 설치되어, 휴대폰의 배터리 충전을 위해서는 휴대폰 사용자가 일일이 충전기를 따로 마련할 필요가 없으므로, 여러모로 편리하고 유용하며, 휴대폰 충전기 사용시 따로 거치 장소를 확보해야 하므로, 충전기가 걸리적거려서 공간 활용도가 저하되는 경우도 없으며, 아파트나 기타 건물 실내에서 휴대폰 충전기를 사용하는 경우 지저분해지는 일이 없어서 실내 환경적으로도 매우 바람직한 효과를 기대할 수 있다.

[0051] 또한, 본 발명에서 주요부인 인박스(22)의 거치벽부(202)는 전방 하측으로 경사지게 형성되고, 이러한 인박스(22)의 거치벽부(202)의 배면에 트랜스와 같은 충전 제어부품을 내장하는 리어박스(24)가 결합된 구조를 가지므로, 벽체(4)에 매입되는 매입박스(20)의 전후방 사이즈를 최소화할 수 있으므로, 벽체(4) 매설 공사시에 보다 편리하고 경제적이며, 특히, 최대한 콤팩트한 구조로 충전 제어부품을 내장할 수 있으므로, 부품 수용 효율성 등의 측면에서 매우 바람직하다. 즉, 벽체(4) 매설 공사시에 보다 편리하고 경제적이면서도 충전기의 각종 부품 조립 작업 효율성 등도 최적화할 수 있는 것이다.

[0052] 또한, 본 발명에서 매입박스(20)는 벽체(4)에 매입되는 부분에 다른 부분보다 상대적으로 더 오목하게 형성된 전선 수용홈이 구비된 형상으로 구성된다. 본 발명에서는 인박스(22)의 경사진 거치벽부(202)의 일측 바깥면과

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리어박스(24)의 일측벽부(244) 바깥면에 의해 오목한 전선 수용홈이 형성되어 있다.

[0053] 따라서, 벽체(4)의 매입홀(4a)로 연장되어 나온 주전원 공급용 전선을 말거나 접어서 매입박스(20)의 오목한 전선 수용홈에 수용할 수 있으므로, 본 발명을 벽체(4)에 매입 설치하는 공사 수행시 작업상의 편리성과 원활성을 기할 수 있게 된다.

[0054] 또한, 본 발명에서 매입박스(20)에 리일잭 결합홀(212)을 형성하고, 이러한 리일잭 결합홀(212)에 끼워진 리일잭(100)은 리일캡(210)에 의해 커버하며, 리일잭 결합홀(212)의 인접된 부분에는 한 쌍의 상하 지지편(210a)이 일체로 구비되어 있어서, 이러한 상하 지지편(210a)에 리일잭(100)의 코드 케이스 둘레부 일측으로 연장되어 나온 코드(502)를 끼워지도록 설치하여 리어박스(24) 결합시 물리는 경우(이른바, 코드(502)가 찝히는 현상)을 방지하는 효과를 얻을 수 있게 된다.

[0055] 또한, 본 발명의 경우, 코드 길이를 길게 늘일 수 있는 리일잭(100)을 주요부인 매입박스(20)에 내장한 구조를 가지고 있어서, 단말기(1)를 매입박스(20)에 내장하지 않고 도어(40)를 열어놓은 상태에서 리일잭(100)의 코드와 젠더(500)를 길게 빼서 실내 바닥에 놓고 단말기(1)를 충전할 수 있으므로, 사용이 보다 편리하게 된다.

[0056] 또한, 리일잭 결합홀(212)은 중심부를 기준으로 방사 방향으로 복수개의 보조 걸림홈이 형성되고, 이러한 보조 걸림홈에 리일잭(100) 둘레부의 돌기가 끼워지도록 함으로써, 리일잭(100)에서 코드(502)를 당겨 빼낼 때에 리일잭(100)이 헛돌아가지 않도록 하므로, 사용이 보다 편리하다.

[0057] 그리고, 코드(502)에는 별도의 스톱퍼가 접합수단이가 기타 일체 몰딩 방식으로 더 구비되어, 이러한 스톱퍼가 리일잭(100)의 코드 케이스 둘레부의 개구홀에 걸려져서 평상시 코드(502)의 일부가 리일잭(100)의 둘레부에서 적당한 길이로 인출된 상태가 되므로, 리일잭(100)의 코드(502)를 빼내서 사용하기가 보다 편리한 효과가 있다.

[0058] 아울러, 피엠피와 같이 휴대폰보다 사이즈가 큰 단말기(1)의 경우에는 매입박스(20)에 들어가지 못할 수도 있는데, 본 발명에서는 도어(40)를 수평으로 열어놓은 상태에서 리일잭(100)의 젠더(500)를 단말기(1)에 꽂아서 단말기(1)를 도어(40) 위에 올려놓고 충전할 수도 있다. 이때, 살균램프(60)는 램프 스위치에 의해 꺼진 상태이다. 한편, 도어(40)를 수평으로 열어 놓으면 볼록한 형상의 글라스(50)가 걸림부분 기능을 하므로, 단말기(1)를 글라스(50)에 걸쳐지도록 지지할 수 있다.

[0059] 한편, 도 15와 도 16은 본 발명의 다른 실시예를 보여주는데, 매입박스(20)의 내부에 직립 방향으로 지지대(210)를 설치하고, 매입박스(20)의 거치벽부(202)에는 별도의 반사판(220)을 설치하여, 지지대(210)에 단말기(1)의 하측부를 끼워서 수직 방향으로 세워서 살균을 하게 되는데, 단말기(1)가 눕혀지지 않고 세워진 상태가 되면서 단말기(1)의 모든 면이 고르게 살균되므로, 상기 실시예에 비하여 살균 효율성을 더욱 높일 수 있게 된다. 본 발명에서 지지대(210)는 탄성 와이어를 대략 U자형으로 절곡한 구조로 이루어지는데, 이밖에 단말기(1)를 수직으로 세워줄 수 있는 것은 모두 지지대(210)로 채용할 수 있다.

[0060] 또한, 도 16에 도시된 바와 같이, 반사판(220)이 더 설치되어, 자외선 살균램프(60)의 살균 광원이 반사되면서 더욱더 원할하게 단말기(1)의 전체면에 조사되므로, 살균 효율을 배가시킬 수 있게 된다.

[0061] 한편, 본 발명에서는 주요부인 도어(40)에 충전 표시등이 장착되고, 보조 스위치가 장착되어, 단말기(1)의 충전중에는 충전 표시등이 빨간색으로 점등되고, 충전 완료시에는 충전 표시등이 초록색으로 점등되므로, 사용자가 단말기(1) 충전 여부를 쉽게 인지할 수 있으며, 필요시 보조 스위치를 눌러서 추가 시간 동안 단말기(1)의 충전 작업을 할 수 있도록 구성할 수 있다. 이때, 충전 표시등과 보조 스위치는 회로기판 등에 의해 주전원 공급부에 회로적으로 연결되는 것은 물론이다.

[0062] 한편, 도 17은 본 발명을 구성하는 젠더의 분해 사시도, 도 18은 도 17에 도시된 어퍼 케이싱의 외측면을 보여주는 사시도, 도 19는 도 18의 내측면을 보여주는 사시도, 도 20은 도 17의 주요부인 클립의 사시도, 도 21은 도 20의 클립을 언더 케이싱의 내부에 결합한 상태를 보여주는 도면, 도 22는 도 17에 도시된 젠더의 외관 사시도, 도 23은 도 22의 일측면도이다. 이를 참조하면, 상기 젠더(500)는 내부에 클립 결합턱(516a,526a)을 구비하고 양측벽에는 버튼 수용홈(517,527)을 구비하며 후단부에는 코드(502)이 결합되는 케이싱과, 중간 탄성편(542)의 양단부에 나란하게 연장된 한 쌍의 탄성 클립편(544)이 일체로 구비되고 탄성 클립편(544)에는 푸시버튼(550)이 결합되며 탄성 클립편(544)의 전단부에는 후크(546)가 구비되어 케이싱에 내장 설치된 클립(540)과, 이 클립(540)의 각 탄성 클립편(544)에 결합된 접속 지지편(530)을 포함하여 구성된다.

[0063] 상기 케이싱은 언더 케이싱(520)과 어퍼 케이싱(510)이 볼트와 같은 고정수단에 의해 서로 맞결합되어 클립(540)을 수용하게 된다.

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[0064] 상기 언더 케이싱(520)은 대략 사각판 형상의 커버편과, 이 커버편의 양측단에 일체화된 양측벽과, 커버편의 후단부에 일체화된 후단벽과, 이 후단벽에 일체화되어 커버판에 대해 직교하는 방향으로 연장된 몰드 지지편(526)과, 이 몰드 지지편(526)의 끝단에 일체화되며 상대적으로 좌우 너비가 더 작은 엣지돌부를 갖는 형상으로 이루어진다. 또한, 언더 케이싱(520)의 양측벽에는 반절홈 형상의 버튼 수용홈(527)이 형성된다. 부호 522는 돌편 결합홈이고, 부호 522a는 돌편 결합홈(522)에 형성된 걸림돌기이다. 이러한 언더 케이싱(520)의 커버편에는 두 개의 체결구 삽입홀(526)이 형성되고, 체결구 삽입홀(526)의 내측면 둘레에는 우물형의 환형링부가 구비된다. 또한, 언더 케이싱(520)의 내부에는 커버편의 내측면에 일체화된 클립 지지턱(526a)이 구비되는데, 이 클립 지지턱(526a)과 후단벽 사이에 후술할 클립(540)의 중간 탄성편(542)이 끼워지는 결합홈이 형성된다. 또한, 클립 지지턱(526a)의 내측단에는 커버편의 내측면에 일체화된 보조 지지턱이 연결되어 있다. 그리고, 언더 케이싱(520)의 커버편 내측면에는 전후 길이 방향으로 나란한 한 쌍의 세로 보강리브와 가로 방향으로 나란한 한 쌍의 전후 가로 보강리브가 더 구비되어 있다.

[0065] 상기 어퍼 케이싱(510)은 대략 사각판 형상의 커버편과, 이 커버편의 양측단에 일체화된 양측벽과, 커버편의 후단부에 일체화되어 그 사이에 몰드 결합부를 형성하기 위한 공간이 확보된 후단벽(516)과, 이 후단벽(516)의 하측 위치에서 커버편의 내측면에 일체화된 하방 지지턱과, 상기 후단벽(516)의 서로 마주하는 면에 일체화되어 그 사이에 몰드(550)의 결합을 위한 개구부가 확보된 좌우 한 쌍의 몰드 결합 지지턱(514)을 갖는다. 또한, 어퍼 케이싱(510)의 내부에는 커버편의 내측면에 일체화된 좌우 한 쌍의 클립 지지턱(526a)이 구비된다. 이 클립 지지턱(526a)과 후단벽(516) 사이에 클립(540)의 중간 탄성편(542)을 끼우기 위한 결합홈이 형성된다. 그리고, 클립 지지턱(516a)의 내측단에는 커버편의 내측면에 일체화된 보조 지지턱이 연결되어 있다. 부호 512는 결합돌편이고, 부호 512a는 결합돌편(512)에 형성된 결합슬릿이다. 그리고, 어퍼 케이싱(510)의 커버편의 내측면에는 전후 방향으로 나란한 한 쌍의 좌우 세로 보강리브와 좌우 방향으로 나란한 가로 보강리브가 더 구비되어 있다. 또한, 어퍼 케이싱(510)의 몰드 결합부는 좌우 후단벽(516)과 하방 지지턱 및 좌우 몰드 결합 지지턱(514)에 의해 형성된다. 이때, 좌우 후단벽(516)과 하방 지지턱 및 좌우 몰드 결합 지지턱(514)의 서로 마주하는 안쪽면은 평탄면으로 형성되어, 상기 몰드 결합부가 사각홈 형상으로 구성된다. 아울러, 어퍼 케이싱(510)의 커버편 내측면에는 언더 케이싱(520)의 체결구 결합홀과 대응되는 한 쌍의 체결 보스부(515)가 돌출 형성되어 있다.

[0066] 상기 클립(540)은 본 발명에서 주요 특징부를 이루는 구성 요소라 할 수 있는데, 이러한 클립(540)은 중간 탄성편(542)의 양단부에 나란하게 연장된 한 쌍의 탄성 클립편(544)이 일체로 구비되고, 탄성 클립편(544)에는 푸시버튼(550)이 결합되며, 탄성 클립편(544)의 전단부에는 후크(546)가 구비되어 중간 탄성편(542)이 케이싱 내부의 클립 결합턱(516a,526a)에 끼워지고 푸시버튼(550)은 버튼 수용홈(517,527)에 안착된 상태로 케이싱에 내장 설치된다.

[0067] 구체적으로, 클립(540)의 중간 탄성편(542)은 단면 일자형의 탄성을 갖는 띠부재 형상으로 구성되고, 탄성 클립편(544)은 중간 탄성편(542)에 이어지는 단면 일자형의 탄성을 갖는 띠부재 형상의 제1탄성 클립편(544)과, 제1탄성 클립편(544)에 이어지는 단면 일자형의 탄성을 갖는 띠부재 형상으로 이루어지며 전단부에는 후크(546)가 구비된 제2탄성 클립편(544)으로 구성된다.

[0068] 상기 클립(540)의 좌우 탄성 클립편(544)에는 좌우 한 쌍의 푸시버튼(550)이 결합된다. 이때, 푸시버튼(550)은 전후단으로 연통된 단면 일자형의 결합슬롯이 내부에 구비되어, 이러한 내부의 결합슬롯이 클립(540)의 좌우 탄성 클립편(544)을 이루는 제1탄성 클립편(544)에 끼워진다.

[0069] 이러한 푸시버튼(550)의 결합슬롯은 단면 일자홀 형상으로 구성되어 클립(540)의 제2탄성 클립편(544)의 전단부로부터 끼워져서 제1탄성 클립편(544)에 결합 고정되며, 푸시버튼(550)이 제1탄성 클립편(544)에 끼워진 다음에는 제2탄성 클립편(544)의 전단 부분의 일부를 절곡하여 후크(546)를 형성하는 것이 바람직하다. 이때, 상기 클립(540)의 제1탄성 클립편(544)의 너비는 제2탄성 클립편(544)의 너비보다 상대적으로 크게 구성되는데, 푸시버튼(550)의 결합슬롯의 너비가 제1탄성 클립편(544)의 너비에 비하여 상대적으로 작게 구성되어, 푸시버튼(550)이 클립(540)의 제1탄성 클립편(544)에 억지 끼움식으로 견고하게 결합된다. 그리고, 상기 클립(540)의 제1탄성편에는 버튼 지지턱이 더 구비되어, 제1탄성편에 끼워진 푸시버튼(550)의 일단부가 버튼 지지턱에 걸려져, 조립시에 푸시버튼(550)의 위치를 정확하게 잡아줄 수 있게 된다.

[0070] 상기 케이싱의 후단부에는 내부로 코드(502)가 통과되는 몰드(550)가 끼워진다. 참고로, 몰드(550)의 내부로 통과된 코드(502)는 케이싱에 내장되는 회로기판에 연결되고, 이 회로기판에는 상기 클립(540)이 전기적으로 연결된다. 즉, 몰드(550)가 코드(502)를 지지하는 기능을 한다.

[0071] 본 발명에서 채용되는 몰드(550)는 후단부에 결합 블록부(552)가 구비된다. 이러한 결합 블록부(552)는 상하면

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과 양측면이 평탄면을 이루도록 구성되어, 몰드(550)의 결합 블록부(552)가 대략 사각 블록 형상으로 구성된다. 이러한 몰드(550)의 결합 블록부(552)의 양측 평탄면은 어퍼 케이싱(510)의 후단부에 형성된 좌우 후단벽(516)의 서로 마주하는 평탄면에 맞접촉되고, 결합 블록부(552)의 하측 평탄면은 어퍼 케이싱(510)의 하부 지지턱의 평탄면에 맞접촉되며, 결합 블록부(552)의 상측 평탄면은 언더 케이싱(520)의 후단벽에 일체화된 몰드 지지편(526)에 맞접촉되므로, 코드(502)을 지지하는 몰드(550)가 케이싱의 후단부에 견고하게 결합될 수 있게 된다. 즉, 케이싱 후단부의 사각홈 형상의 몰드 결합부에 몰드(550) 후단부의 사각 블록 형상의 결합 블록부(552)가 맞아 들어가는 형태로 결합되므로, 조립후에 몰드(550) 자체가 케이싱에 대해 헛돌아가지 않고 견고하게 안정화된 상태를 유지할 수 있게 된다.

[0072] 상기 클립(540)의 좌우 탄성 클립편(544) 사이에는 접속 지지편(530)이 결합된다. 즉, 접속 지지편(530)의 양측면에 형성된 오목 결합홈(532)에 클립(540)의 좌우 탄성 클립편(544)이 끼워짐으로써, 클립(540)의 좌우 탄성 클립편(544) 사이에 접속 지지편(530)이 결합된 상태로 될 수 있으며, 이러한 접속 지지편(530)의 후단 부분은 케이싱의 전단부에 끼워져서 클립(540)의 좌우 탄성 클립편(544)을 지지하게 된다.

[0073] 상기한 젠더(500)의 주요부를 조립하는 과정을 정리하면, 먼저, 클립(540)의 좌우 탄성 클립편(544)에 각각 푸시버튼(550)과 접속 지지편(530)이 결합된 상태에서 클립(540)의 중간 탄성편(542) 일부를 언더 케이싱(520)의 후단벽과 클립 결합턱(526a) 사이에 확보된 결합홈에 끼운다. 그러면, 클립(540)의 좌우 탄성 클립편(544)에 결합되어 있는 좌우 푸시버튼(550)의 일부가 언더 케이싱(520)의 양측벽의 반홈 형상의 버튼 수용홈(527)에 안치되는 한편, 접속 지지편(530)의 후단부 일부가 언더 케이싱(520)의 전단부에 수용된다.

[0074] 다음, 어퍼 케이싱(510) 후단부의 사각홈 형상의 몰드 결합부에 몰드(550) 후단부의 결합 블록부(552)를 끼운다. 물론, 몰드(550)에는 코드(502)이 통과되어 있는 상태이다.

[0075] 이어서, 어퍼 케이싱(510) 내측면의 클립 결합턱(516a)과 좌우 후단벽(516)을 언더 케이싱(520)의 클립 결합턱(526a)과 후단벽에 맞추어 가결합하면, 어퍼 케이싱(510)과 언더 케이싱(520)의 서로 만난 클립 결합턱(516a,526a)과 후단벽(516) 사이에 클립(540)의 중간 탄성편(542)이 끼워진 상태가 됨과 동시에 언더 케이싱(520)의 몰드 지지편(526)에 의해 몰드(550)의 결합 블록부(552) 상면이 지지된다. 즉, 몰드(550) 후단부의 사각 블록 형상의 결합 블록부(552)가 케이싱 후단부의 사각홈 형상의 몰드 결합부에 딱 맞아 결합됨으로써, 본 발명의 젠더가 측면에서 볼 때 기역자 형상으로 구성되며, 이처럼 본 발명의 젠더가 기역자 형상으로 구성되도록 함으로써 종래에 비하여 전후 길이를 상당히 줄일 수 있게 된다.

[0076] 마지막으로, 언더 케이싱(520)의 체결구 결합홀(526)을 관통하는 체결구 등의 고정수단을 어퍼 케이싱(510) 내부의 체결 보스부(515)에 체결함으로써 견고하게 본 발명의 젠더를 조립 완료할 수 있게 된다. 한편, 어퍼 케이싱(510)의 버튼 수용홈(517)과 언더 케이싱(520)의 버튼 수용홈(527)에는 클립(540)의 좌우 탄성 클립편(544)에 결합된 푸시버튼(550)이 대략 반씩 안치되어 본 발명의 젠더 양측으로 두 개의 푸시버튼(550)이 노출된 구조를 갖게 된다.

[0077] 따라서, 본 발명은 젠더(500)의 주요부인 클립(540)을 중간 탄성편(542)의 양단부에 나란하게 연장된 한 쌍의 탄성 클립편(544)이 일체로 구비된 디근자 형상으로 만들어, 클립(540) 자체의 전후 사이즈를 최대한 콤팩트하게 구성하므로, 종래에 비하여 젠더(500) 자체의 사이즈를 매우 줄인 효과가 있다. 또한, 본 발명에서 젠더(500)의 주요부인 케이싱에 코드(502)을 지지하는 몰드(550)를 기역자 형태로 연결할 수 있는 특수 구조를 구비함으로써, 전체적으로 본 발명의 젠더를 측면에서 볼 때 기역자 형상으로 구성하였으며, 이처럼 젠더(500) 자체를 기역자 형상으로 함으로써 종래에 비하여 자체의 사이즈를 많이 줄인 것이다.

[0078] 구체적으로, 종래에는 대략 40㎜ 정도의 젠더를 사용하였으나, 본 발명의 젠더(500)는 대략 17㎜ 정도로 사이즈를 매우 콤팩트하게 줄인 효과가 있으며, 이처럼 젠더(500)의 사이즈를 매우 줄임으로 인하여 모든 규격의 충전기에 광범위하게 채용할 수 있으며, 특히, 내부에 휴대폰 등의 단말기를 수납하여 충전을 하도록 된 박스형 충전기에도 용이하게 채용할 수 있다. 다시 말해, 내부에 휴대폰 등의 단말기를 수납하여 충전하도록 된 박스형 충전기에는 단말기에 접속하기 위한 충전기 전용 젠더가 구비되어, 충전기의 박스 내부에 단말기를 수납하고, 단말기의 충전 접속부에 젠더를 접속하기 위해서는 단말기 자체의 사이즈와 젠더 자체의 사이즈도 박스 내부에 확보해야 하는데, 충전 대상인 단말기 자체의 사이즈가 큰 경우에는 젠더 자체의 사이즈로 인하여 충전기 박스 내부로 단말기 자체를 수납할 수 없게 되는 경우가 있으며, 이러한 경우 충전 작업 자체가 곤란해진다.

[0079] 그런데, 본 발명에서 채용되는 젠더(500)는 상기와 같은 주요부인 클립(540)을 주요부인 클립(540)을 중간 탄성편(542)의 양단부에 나란하게 연장된 한 쌍의 탄성 클립편(544)이 일체로 구비된 디근자 형상으로 만들어, 클립

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(540) 자체의 전후 사이즈를 최대한 콤팩트하게 구성함으로써, 젠더(500) 자체의 사이즈를 종래에 비하여 많이 줄였기 때문에, 종래에 비하여 보다 큰 사이즈의 단말기도 충전기 박스 내부에 쉽게 수납하여 충전을 할 수 있는 효과를 갖게 된다.

[0080] 이상에서 설명한 본 발명은 전술한 실시예 및 첨부된 도면에 의해 한정되는 것은 아니고, 본 발명의 기술적 사상을 벗어나지 않는 범위 내에서 여러 가지 치환, 변형 및 변경이 가능하다는 점이 이 분야의 통상의 지식을 가진 자에게 명백할 것이다.

도면의 간단한 설명

[0081] 도 1은 본 발명을 구성하는 인박스의 전면 부분을 보여주는 사시도

[0082] 도 2는 도 1에 도시된 인박스의 배면 부분을 보여주는 저면 사시도

[0083] 도 3은 본 발명을 구성하는 리어박스의 내부를 보여주는 사시도

[0084] 도 4는 본 발명의 주요부인 고정 프레임을 구성하는 프론트 프레임의 배면을 보여주는 사시도

[0085] 도 5는 본 발명의 고정 프레임을 구성하는 리어 프레임의 전면을 보여주는 사시도

[0086] 도 6은 도 5의 배면을 보여주는 사시도

[0087] 도 7은 본 발명의 조립된 상태를 보여주는 사시도

[0088] 도 8은 도 7의 배면 부분을 보여주는 사시도

[0089] 도 9는 본 발명의 도어를 열어 놓은 상태를 보여주는 사시도

[0090] 도 10은 도 9의 매입박스에 단말기를 수납한 상태를 보여주는 사시도

[0091] 도 11은 본 발명을 벽체에 매입한 상태를 보여주는 일측단면도

[0092] 도 12는 본 발명을 벽체에 매입한 상태를 보여주는 타측단면도

[0093] 도 13은 본 발명을 벽체에 매입한 상태를 일측면에서 보여주는 도면

[0094] 도 14는 본 발명을 벽체에 매입한 상태를 타측면에서 보여주는 도면

[0095] 도 15와 도 16은 본 발명의 다른 실시예를 보여주는 도면

[0096] 도 17은 본 발명을 구성하는 젠더의 분해 사시도

[0097] 도 18은 도 17에 도시된 어퍼 케이싱의 외측면을 보여주는 사시도

[0098] 도 19는 도 18의 내측면을 보여주는 사시도

[0099] 도 20은 도 17의 주요부인 클립의 사시도

[0100] 도 21은 도 20의 클립을 언더 케이싱의 내부에 결합한 상태를 보여주는 개념적으로 보여주는 도면

[0101] 도 22는 도 17에 도시된 젠더의 외관 사시도

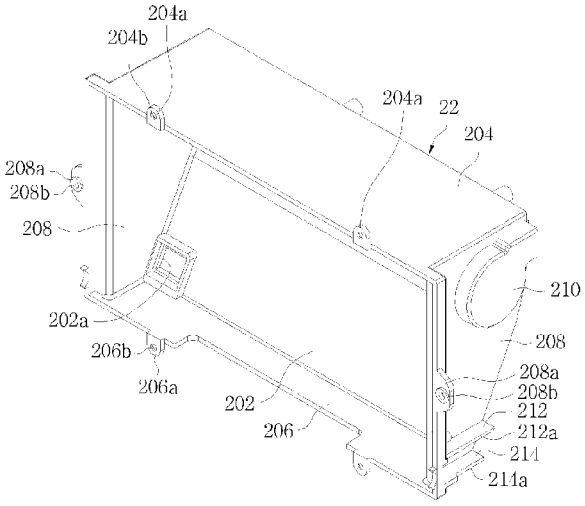
[0102] 도 23은 도 22의 일측면도

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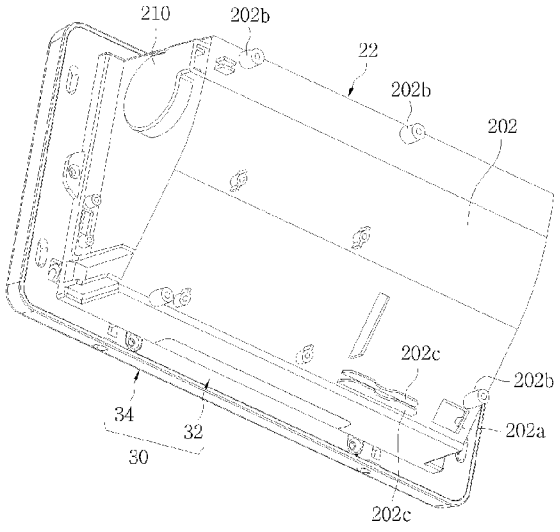
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도면

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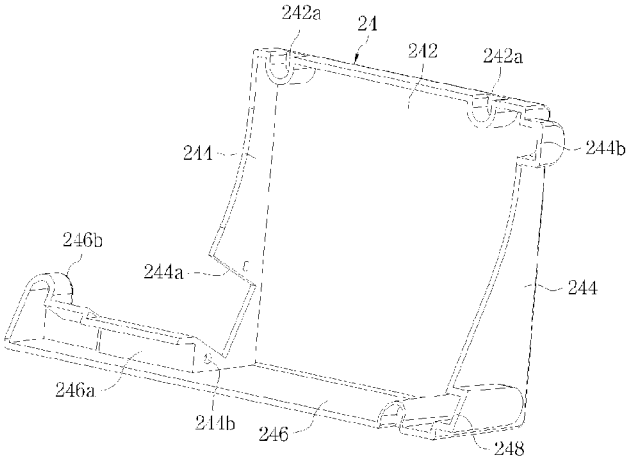


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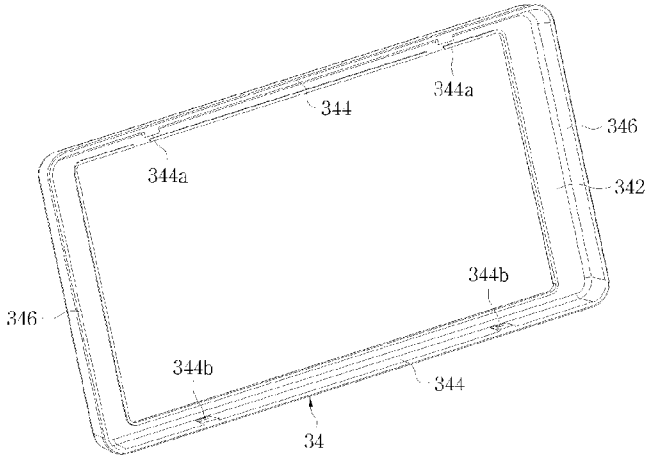


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도면3



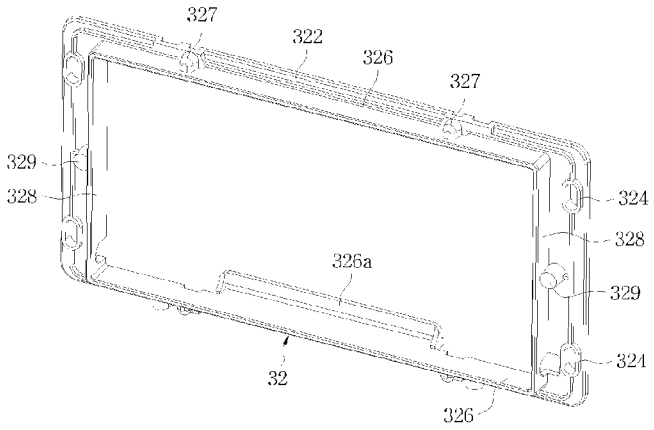
도면4



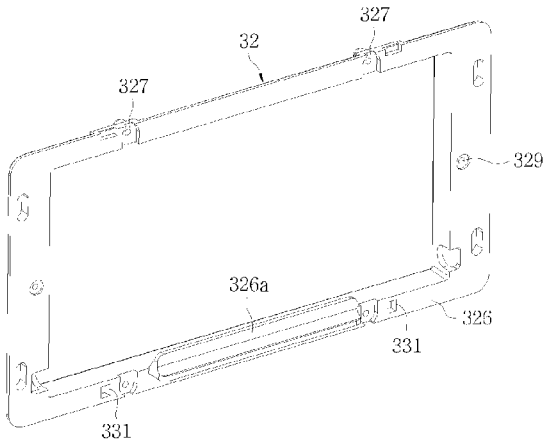
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도면5

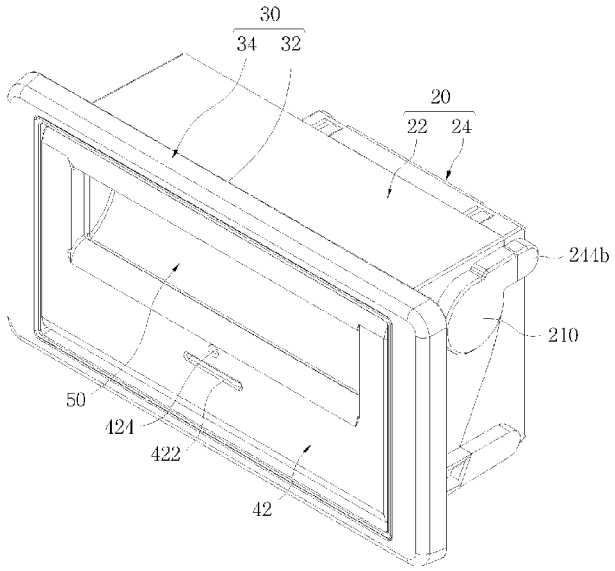


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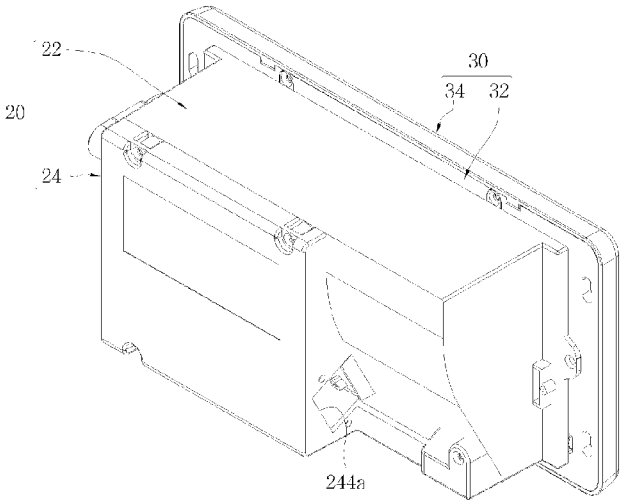


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도면7



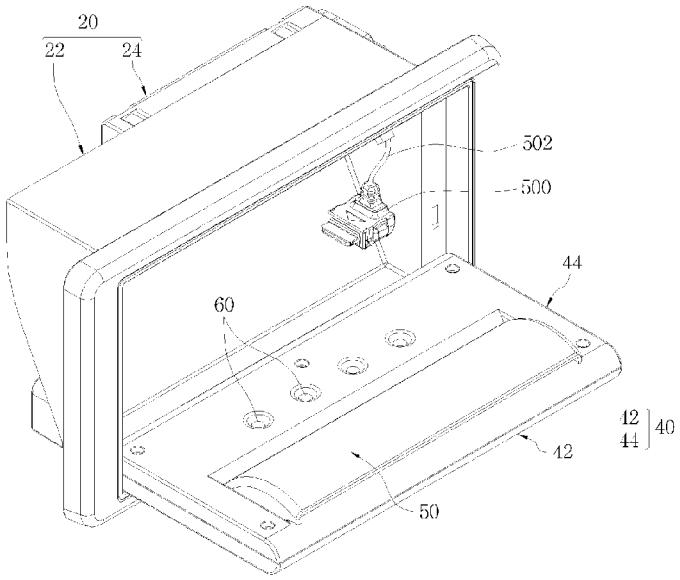
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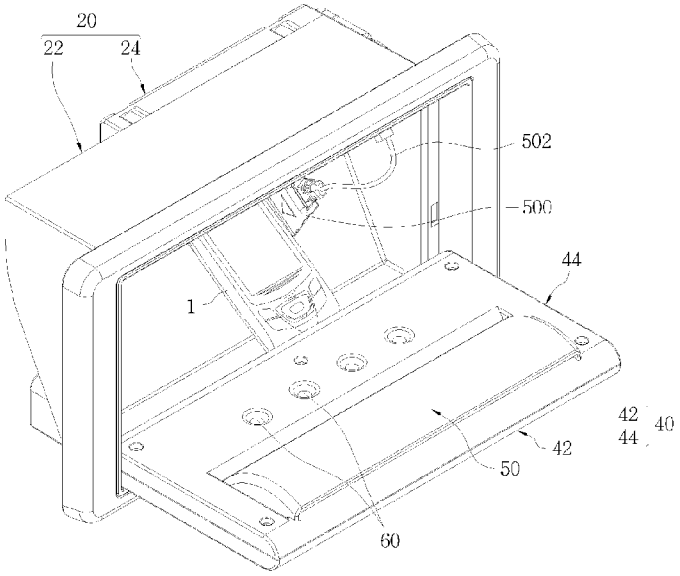
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도면9



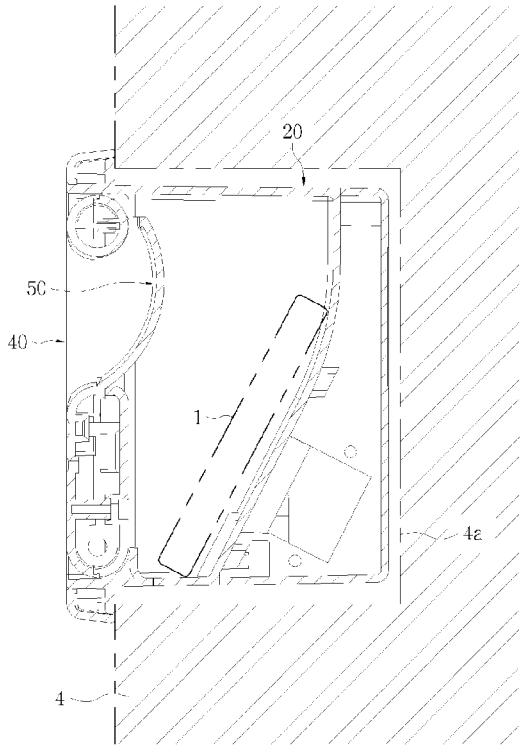
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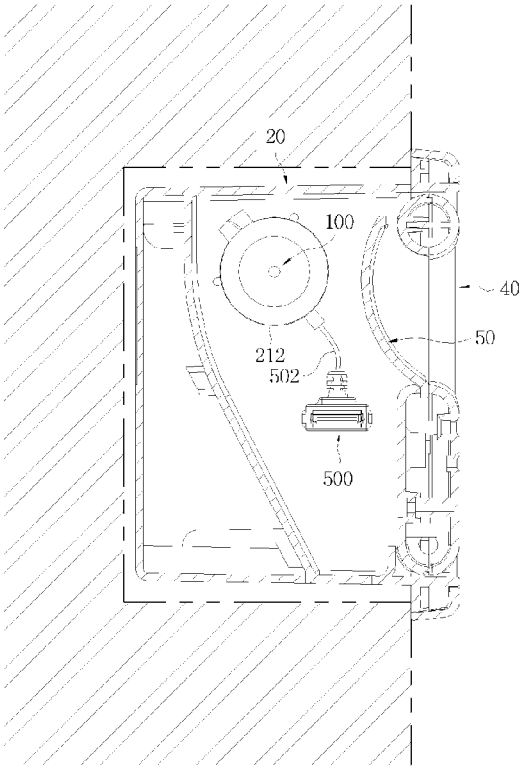
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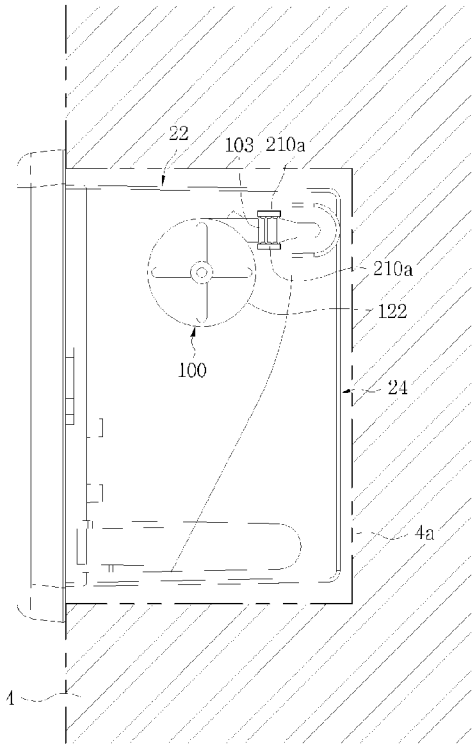
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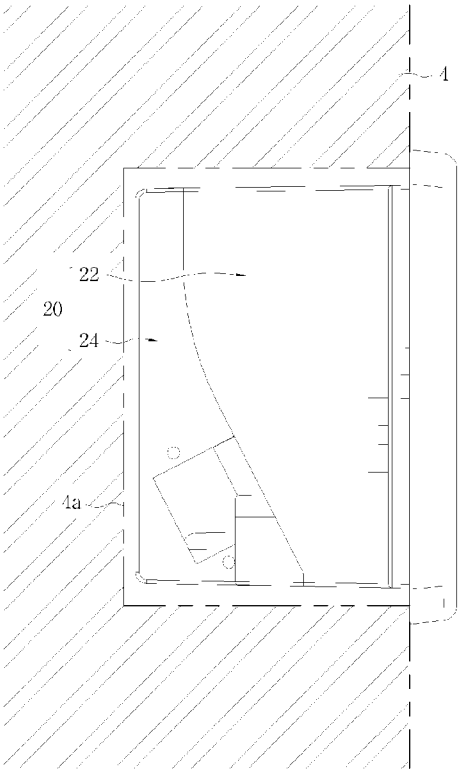
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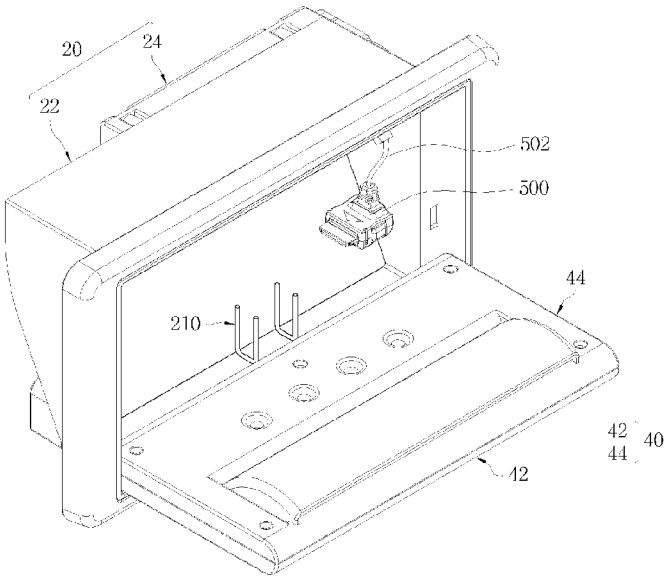
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도면14



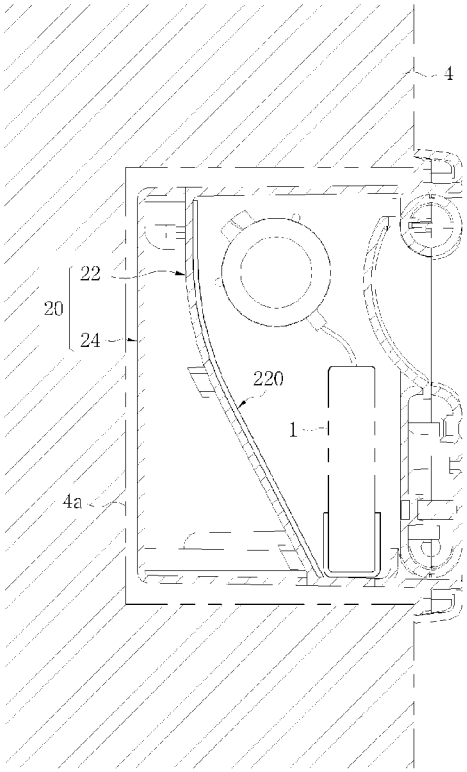
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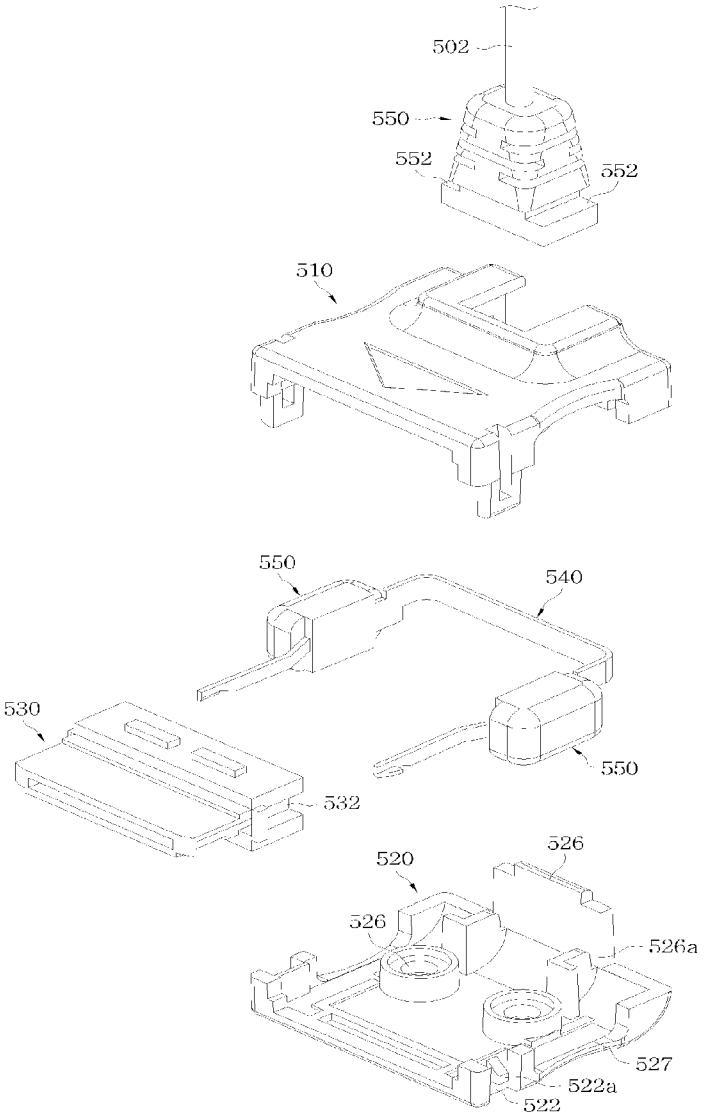
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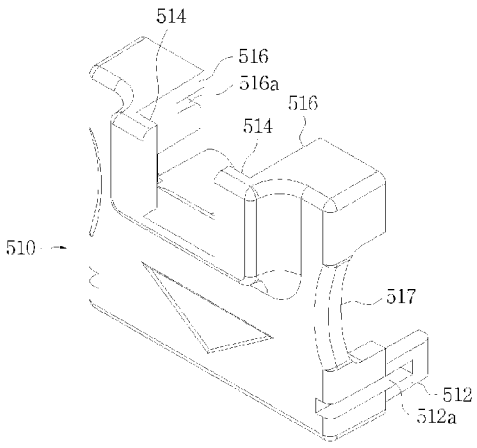
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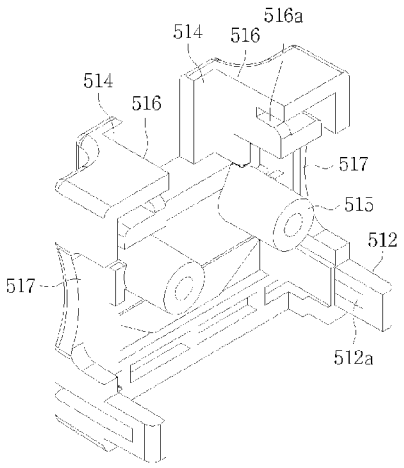
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도면18



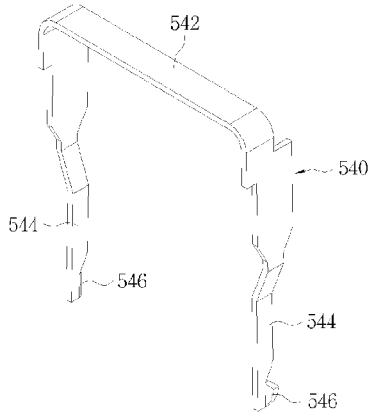
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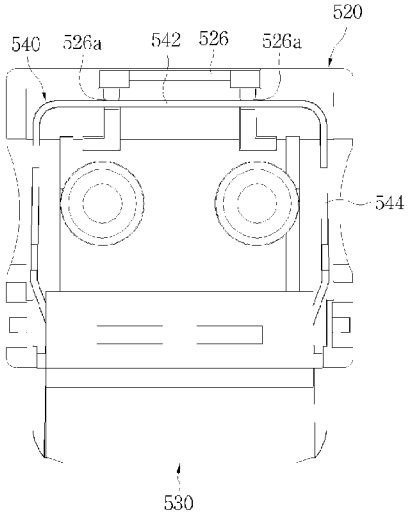
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도면20



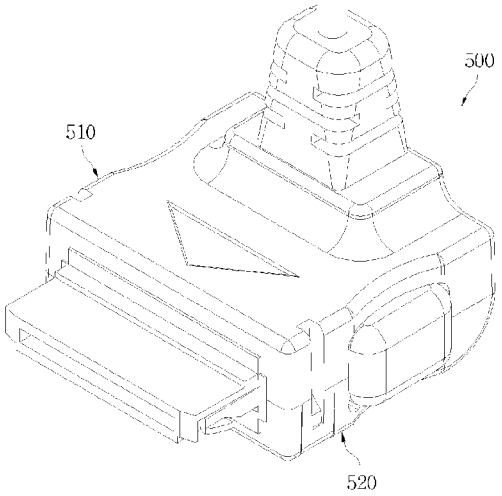
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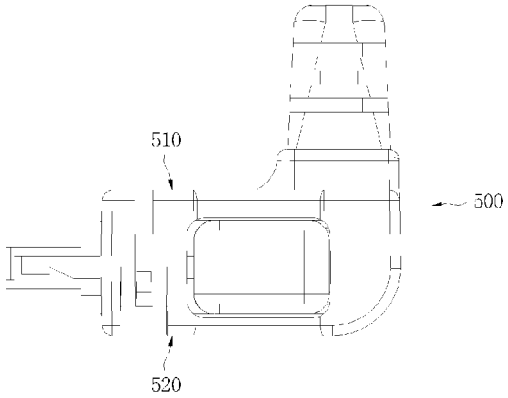
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도면23



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Bibliographic data: KR20060012144 (A) — 2006-02-07

CELLULAR PHONE CHARGER WITH ULTRAVIOLET STERILIZER

Page bookmark	KR20060012144 (A) - CELLULAR PHONE CHARGER WITH ULTRAVIOLET STERILIZER
Inventor(s):	PARK JONG ON [KR]; KOOK KWAN OK [KR] ±
Applicant(s):	PARK JONG ON [KR]; KOOK KWAN OK [KR] ±
Classification:	**- international:** ***H02J7/00; H02J7/02*** **- European:**
Application number:	KR20040060886 20040802
Priority number(s):	KR20040060886 20040802

Abstract:

A cellular phone charger provided with an ultraviolet sterilizer is provided to allow a user to use a clean cellular phone by removing and cleaning bacteria inhabited at the cellular phone. CONSTITUTION: A cellular phone charger provided with an ultra violet sterilizer includes a body (10), a cover (30), a cellular phone supporting table (30), and an ultraviolet lamp (50). The body (10) has a clean room (18), a power supplying unit, a charging circuit unit (22), a lamp driving circuit unit (40), and a controller (14). The cover (30) is rotatably installed on the body (10) to open and close the clean room (18). The cellular phone supporting table (30) is separably installed on the clean room (18) of the body (10), electrically connected to the charging circuit unit (22), and has a connection terminal to be connected to the supported cellular phone. And, the ultraviolet lamp (50) is installed on the clean room (18) to be operated by the lamp driving circuit unit (40) and generates ozone with emitting the ultraviolet ray to the cellular phone at the same time.

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(12) 공개특허공보(A)

(51) 。Int. Cl.[8]
H02J 7/00 (2006.01)
H02J 7/02 (2006.01)

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(22) 출원일자 2004년08월02일

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심사청구 : 있음

(54) 자외선 살균기능을 갖춘 휴대폰 충전기

요약

본 발명은 자외선 살균기능을 갖춘 휴대폰 충전기에 관한 것이다. 본 발명의 휴대폰 충전기는, 세정실을 가지며, 전원공급부와, 충전회로부와, 램프 구동회로부 및 각 회로부를 제어하는 콘드롤러가 내장되어 있는 본체와, 세정실을 개폐할 수 있도록 본체에 회전가능하게 설치되는 커버와, 본체의 세정실에 분리가능하게 장착되어 있되, 충전회로부와 전기적으로 접속되고, 거치된 휴대폰과 접속되는 접속단자를 갖는 휴대폰 거치대와, 램프구동회로부에 의해 작동되도록 세정실에 설치되며, 휴대폰 거치대에 거치된 휴대폰에 자외선을 조사하는 자외선 램프를 구비한다. 이러한 본 발명에 의하면, 자외선 및 오존을 이용하여 휴대폰에 서식하고 있는 각종 균류를 살균처리 함으로써 휴대폰에 서식하는 갖가지 질병의 원인 균들을 제거 및 청소함은 물론 탈취효과도 얻을 수 있다. 특히, 갖가지 질병의 원인 균들을 제거 및 청소함은 물론 탈취효과도 얻음으로써 사용자에게 위생적이고 청결한 휴대폰을 사용할 수 있게 한다. 또한, 충전과 동시에 살균처리하게 구성함으로써 사용의 편리성을 최대한 부여하였다.

대표도

도 1

명세서

도면의 간단한 설명

도 1은 본 발명에 따른 자외선 살균기능을 갖춘 휴대폰 충전기의 구성을 나타내는 측단면도,

도 2는 본 발명에 따른 자외선 살균기능을 갖춘 휴대폰 충전기의 회로 구성을 나타내는 블록도,

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도 3은 본 발명에 따른 자외선 살균기능을 갖춘 휴대폰 충전기의 제어방법을 나타내는 플로우차트이다.

♣도면의 주요 부분에 대한 부호의 설명♣

10: 본체 14: 콘트롤러

14a: 전원공급부 14b: 구동회로부

18: 세정실 20: 휴대폰 거치대

22: 충전단자 30: 커버

32: 힌지 34: 스프링

36: 램프 소켓 40: 펌프 구동회로부

50: 자외선 램프 60: 입력버튼

62: 디스플레이부 70: 감지수단

80: 정보수단 82: 진화벨 소리 출력 구멍

발명의 상세한 설명

발명의 목적

발명이 속하는 기술 및 그 분야의 종래기술

본 발명은 자외선 살균기능을 갖춘 휴대폰 충전기에 관한 것으로, 보다 상세하게는 휴대폰 충전 기능과 휴대폰에 서식하고 있는 세균, 바이러스, 곰팡이 등 각종 병원균을 살균 및 제거할 수 있는 자외선 살균기능을 함께 갖춘 휴대폰 충전기에 관한 것이다.

휴대폰에는 많은 세균, 바이러스, 곰팡이가 서식한다. 이러한 세균, 바이러스, 곰팡이 등은 악취를 유발하고, 여러 가지 질병을 일으키는 원인이 된다. 특히, 휴대폰의 송신부 및 버튼부는 사용자의 입에 매우 근접하기 때문에 사용시 사용자로부터 발생되는 침이나 호흡시 포함된 수분 등이 공기 중에 떠돌아다니는 먼지 및 각종 균들과 결합하여 부착됨으로써 오염되기 쉽고, 특히 이곳에 서식하는 세균, 바이러스, 곰팡이 등은 사용자의 호흡기를 통해 인체 내로 쉽게 유입 될 수 있다. 한 의학회 논문에 의하면, 호흡기 질환 및 각종 질병의 원인이 되는 진드기의 경우, 700만 마리 이상이 휴대폰에서 검출되었다고 발표되고 있다.

이상에서 살펴본 바와 같이, 휴대폰에는 각종 세균, 바이러스, 곰팡이(이하, "병원균"이라고 통칭함) 등이 서식하고 있으나, 이들 병원균들을 제거하기 위한 적당한 방법이나 장치가 없는 실정이다.

한편, 알코올이나 화학약품을 사용하여 휴대폰 본체를 닦아 세정하는 방법도 있으나, 이 같은 경우, 알코올에 포함된 수분이 그대로 남아 효과가 저하될 뿐만 아니라 휴대폰 표면이 벗겨져 손상되는 문제도 있다.

또한, 알코올이나 화학약품을 사용하여 휴대폰 본체를 닦을 경우, 병원균이 가장 많이 서식하는 휴대폰의 각종 틈새와 구멍, 예를 들어 버튼과 본체 사이의 틈새, 또는 송신부, 수신부의 구멍 등을 쉽게 청소할 수 없는 문제도 있다.

발명이 이루고자 하는 기술적 과제

따라서, 본 발명은 상기한 바와 같은 종래의 여러 가지 문제점을 해결하기 위하여 안출된 것으로서, 그 목적은 자외선 살균기능을 이용함으로써 휴대폰에 서식하고 있는 각종 병원균을 간편하게 살균 및 제거 할 수 있는 자외선 살균기능을 갖춘 휴대폰 충전기를 제공하는 데 있다.

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본 발명의 다른 목적은, 자외선 살균기능을 휴대폰 충전기에 일체로 설치함으로써 휴대폰 충전 기능과 휴대폰에 서식하고 있는 각종 병원균을 간편하게 살균 및 제거 할 수 있는 자외선 살균기능을 함께 갖춘 휴대폰 충전기를 제공하는 데 있다.

발명의 구성 및 작용

이러한 목적을 달성하기 위한 본 발명의 특징은, 세정실을 가지며, 전원공급부와, 충전회로부와, 램프 구동회로부 및 상기 각 회로부를 제어하는 콘트롤러가 내장되어 있는 본체와 상기 세정실을 개폐할 수 있도록 상기 본체에 회전가능하게 설치되는 커버와 상기 본체의 세정실에 분리가능하게 장착되어 있되, 상기 충전회로부와 전기적으로 접속되고, 거치된 휴대폰과 접속되는 접속단자를 갖는 휴대폰 거치대와 상기 램프구동회로부에 의해 작동되도록 상기 세정실에 설치되며, 상기 휴대폰 거치대에 거치된 휴대폰에 자외선을 조사하는 자외선 램프를 포함하는 것을 특징으로 한다.

이하, 본 발명에 따른 자외선 살균기능을 갖춘 휴대폰 충전기에 대한 바람직한 실시 예를 첨부된 도면에 의거하여 상세히 설명한다.

먼저, 도 1을 참조하면, 본 발명의 휴대폰 충전기는, 본체(10)를 구비한다. 본체(10)에는 휴대폰(C)을 거치시키기 위한 휴대폰 거치대(20)가 설치되어 있으며, 이 휴대폰 거치대(20)에는 휴대폰(C)의 충전을 위한 접속단자(22)가 설치되어 있다. 여기서, 본체(10)에는 외부의 전원을 도입할 수 있는 플러그(12)와, 전원공급부(도시하지 않음)와, 휴대폰(C)의 충전을 위한 충전회로부(도시하지 않음)등이 내장되어 있음은 물론이다. 전원공급부와 충전회로부는 하나의 콘트롤러(14)에 의해 제어되도록 구성된다.

아울러 휴대폰 거치대(20)는 본체(10)로부터 분리가능하게 구성되어 휴대폰(C)의 종류에 따라 교체할 수 있게 구성된다. 여기서, 휴대폰 거치대(20)가 본체(10)로부터 분리가능함에 따라 휴대폰 거치대(20)와 본체(10)에는 서로에 대해 전기적으로 연결하는 커넥터장치(16)가 설치되어 있음은 물론이다.

한편, 본체(10)의 상면에는 휴대폰 거치대(20)를 덮어 세정실(18)을 형성할 수 있도록 커버(30)가 설치되어 있다. 커버(30)는 힌지(32)에 의해 상부와 하부로 회전운동하면서 세정실(18)을 개폐하도록 구성된다.

여기서, 커버(30)는 힌지(32)에 설치된 스프링(34)에 의해 세정실(18)을 개방하는 방향으로 탄지된다. 아울러 커버(30)는 단부에 설치된 록커(35)에 의해 본체(10)에 록킹되며, 따라서 세정실(18)을 폐쇄한 상태에서 위치 고정된다.

한편, 커버(30)의 내면에는 램프 소켓(36)이 설치되어 있다. 램프 소켓(36)은 고정대(36a)에 고정적으로 설치되며, 본체(10)에 내장된 램프 구동회로부(40)와 전기적으로 연결되어 있다.

그리고 램프 소켓(36)에는 자외선 램프(50)가 장착된다. 자외선 램프(50)는 램프 구동회로부(40)에 의해 작동되어 자외선 및 오존을 발생하는 것으로, 휴대폰 거치대(20)의 상부에 위치하도록 구성된다. 여기서, 커버(30)의 내면에는 자외선 램프(50)의 중간부를 지지할 수 있는 홀더(38)가 설치되어 있다.

이러한 자외선 램프(50)는 램프 구동회로부(40)로부터 전기를 공급받아 자외선을 방사하도록 구성되며, 이에 따라 휴대폰 거치대(20)에 거치된 휴대폰(C)에 자외선을 조사하는 역할을 한다. 특히, 휴대폰(C)에 자외선을 조사함으로써 휴대폰(C)에 서식하는 세균, 바이러스, 곰팡이 등의 병원균을 살균, 청소 및 제거하는 역할을 한다. 여기서, 자외선 램프(50)를 대신하여 오존을 생성하는 오존 램프를 사용하는 것도 가능하다.

한편, 커버(30)의 내측면에는 자외선 램프(50)에서 방사된 자외선을 휴대폰(C)으로 반사시키기 위한 반사수단(39), 예를 들면 반사판 또는 반사막이 설치된다. 반사판은 알루미늄 재질로서, 별도로 구성되어 커버(30)에 부착된다. 그리고 반사막은 알루미늄 재질로서, 커버(30)에 코팅되도록 구성된다.

다시, 도 1을 참조하면, 커버(30)의 외면에는 자외선 램프(50) 및 휴대폰(C) 충전 등을 조작할 수 있는 다수의 입력버튼(60) 및 자외선 램프(50)의 작동상태 및 휴대폰 충전 상태를 표시하는 디스플레이부(62)가 설치되어 있다. 디스플레이부(62)에는 다수의 LED램프(도시하지 않음)가 설치되어 있다.

또한, 본체(10)에는 커버(30)의 개폐를 감지하는 감지수단(70)과, 감지수단(70)에 감지된 신호에 따라 커버(30)가 개방되었음을 경보해주는 경보수단(80) 및 커버를 닫고 사용 중 전화 벨 소리를 외부로 출력해주기 위한 전화벨 소리 출력 구멍(82)을 구비한다.

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감지수단(70)은, 예를 들어 감지센서 또는 감지 스위치로 구성되는 것으로서, 커버(30)가 개방되었을 경우, 신호를 출력하도록 구성되며, 출력한 신호를 콘트롤러(14)에 입력하도록 구성된다. 경보수단(80)은 감지수단(70)으로부터 입력된 신호를 제어하는 상기 콘트롤러(14)와, 콘트롤러(14)의 제어에 의해 경보음을 발생하는 경고부저 또는 경고표시 LED 램프(62) 등으로 구성된다.

이러한 감지수단(70)과 경보수단(80)은 커버(30)가 개방되었음을 사용자에게 알려주기 위한 것이며, 커버(30)가 개방되었을 때, 자외선 램프(50)가 작동되는 것을 방지한다.

그리고 도 1을 참조하면, 본 발명의 휴대폰 충전기는, 본체(10)의 내부에서 발생되는 열 및 자외선 램프(50)에서 발생된 열을 외부로 배출시키는 열배출수단(90)을 구비한다.

열 배출수단(90)은 본체(10)에 형성된 통기구멍(92)으로 구성된다. 통기구멍(92)은 본체(10)에 내장된 콘트롤러(14)와 각종 회로부 및 세정실(18)의 자외선 램프(50)에서 발생된 열을 외부로 방출시킴으로써, 본체(10) 및 자외선 램프(50)를 냉각시키는 역할을 한다.

다음으로, 이러한 구성을 갖는 본 발명의 작동을 도 1 내지 도 3을 참조하여 살펴보면 다음과 같다. 먼저, 도 1에서와 같이, 사용자는 록커(35)를 이용하여 커버(30)를 개방시킨 다음, 휴대폰(C)을 휴대폰 거치대(20)에 장착하면 본체(10)내의 충전회로부(14b)가 동작하여 휴대폰(C)에 부착된 배터리에 충전이 시작된다. 이때, 디스플레이부(62)에는 충전 표시의 LED램프가 켜진다. 여기서, 휴대폰(C)이 폴더식일 경우, 양쪽 몸체를 열어서 개방시켜 놓아야 한다. 이는 송,수신부 및 키튼부가 자외선 램프(50)를 향해 노출될 수 있게 하기 위함이다.

한편, 이와 같은 상태에서, 사용자는 커버(30)를 닫고 커버(30)의 외면에 있는 살균동작 입력버튼(60)을 누르면 램프 구동회로부(40)는 자외선램프(50)를 동작 시킨다. 그러면, 자외선램프(50)가 작동되면서, 휴대폰(C)의 살균이 시작된다. 이때, 커버(30)의 디스플레이부(62)에는 살균 표시의 LED램프가 켜진다.

여기서, 살균시간은 사용자가 입력버튼(60)을 이용하여 설정할 수 있으며, 설정된 살균시간이 되면, 자외선 램프(50)는 자동으로 꺼지게 되며, 디스플레이부(62)의 살균 표시 LED램프도 꺼지게 된다. 또한 자외선 램프(50)가 작동 중에라도 뚜껑을 열거나, 살균중지 입력버튼(60)을 누르면 살균동작은 중지 되며, 살균표시 LED램프도 꺼지게 된다.

한편, 자외선 램프(50)의 살균기능은 휴대폰(C)의 배터리 충전여부와 관계없이 이루어지며, 휴대폰(C)의 배터리 충전기능 역시도 살균기능과 관계없이 이루어지게 되어있다. 또한, 커버(30)가 완전하게 닫혀있지 않으면, 살균기능의 입력버튼(60)을 눌러도 자외선 램프구동회로부(40)가 구동되지 않도록 되어있으며, 사용자에게 이를 알려주기 위해 살균표시 LED램프를 점멸 동작시키며,사용 중 경보음이 울릴 경우, 경보음은 외부로 전달되게 구성되고, 충전이 완료되면 충전완료 LED램프가 점등되고, 사용자가 휴대폰(C)을 거치대로부터 인출하면 충전 완료 LED램프는 소등 상태가 된다.

다음으로, 도 2는 본 발명을 달성하기 위한 회로부 구성 블록도로써 전원공급부(14a)는 상용 전원을 입력받아 콘트롤러(14), 충전회로부(14b), 램프 구동회로부(40)(전자식 안정기회로), 감지센서(70) 및 디스플레이부(62)에 적합한 전원을 생성하여 공급한다.

콘트롤러(14)는 입력버튼(60)로부터 입력 신호를 받아들여 관련 회로부들을 제어하며, 동시에 디스플레이부(62)를 제어하여 해당 LED램프를 온,오프 제어한다. 램프 구동회로부(40)는 자외선 램프(50)를 안정되게 구동하기 위한 전자식 안정기 회로부로써, 공지의 기술로 구현이 가능하며, 충전회로부(14b)는 휴대폰(C)에 장착되어 있는 리튬 이온 배터리나 리튬 폴리머 배터리 등을 충전 시켜주는 배터리 충전 회로부로써 이 또한 공지의 기술로 용이하게 구현이 가능하다.

디스플레이부(62)는 살균 중 ,살균완료, 충전 중, 충전완료 ,중지 상태 및 커버의 개폐 상태 등을 LED램프를 온,오프 하여 사용자에게 알려주기 위한 것이며, 입력버튼(60)은 사용자가 필요한 기능(살균, 살균중지 등)을 수행시키기 위해 명령을 입력하는 곳이며 감지센서(70)는 커버(30)의 개폐를 감지하여 콘트롤러(14)에 신호를 제공함으로써 커버(30)가 닫혀있지 않는 상태에서 자외선 램프(50)가 동작하는 것을 방지함으로써 인체에 미치는 영향을 막기 위한 것이다.

록커(35)를 누르면 커버(30)의 록킹상태가 해제되며, 따라서 커버(30)는 힌지(32)를 중심으로 스프링(34) 장력에 의해 위쪽으로 열리게 되며, 커버(30)가 열려 개방됨에 따라 감지센서(70)가 이를 감지하여 신호를 출력하고, 출력된 신호는 콘트

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롤러(14)에 입력된다. 결국, 콘트롤러(14)는 입력된 신호에 따라 램프 구동회로부(40)를 오프상태로 만들므로 자외선 램프(50)는 꺼지게 된다. 그러나 이미 램프 구동회로부(40)가 오프 상태이면 (자외선 램프(50)가 꺼진 상태면), 상기 서술된 동작을 하지 않고 단순히 커버(30)만 열려있는 상태가 된다.

살균 및 충전을 하기 위해 사용자가 휴대폰(C)을 휴대폰 거치대(20)에 장착하면(S101) 충전회로부(14b)에 있는 전류센서(도시하지 않음)가 이를 감지하여 콘트롤러(14)에 신호를 보내고 콘트롤러(14)는 이에 따라 충전 개시 신호를 충전회로부(14b)에 송출하여 충전이 개시되고(S103), 디스플레이부(62)에 신호를 보내 충전 LED램프가 켜지게 된다(S105).

충전 목표치까지 충전이 되면 콘트롤러(14)는 이를 감지하여 충전회로부(14b)에 신호를 보내 충전을 중지시키고(S107) 디스플레이부(62)에 신호를 보내 충전 LED램프를 오프 시키고 충전 완료 LED램프를 온 시킨다(S109). 또한 충전회로부(14b)에 상기의 제어기능을 갖고 있는 경우 콘트롤러(14)에 상관없이 자체적으로 상기의 제어기능을 수행할 수도 있다.

살균기능은 폴더형 휴대폰의 경우, 폴더를 연 상태로 휴대폰 거치대(20)에 장착되며, 이때 휴대폰(C)의 버튼부 및 송,수신부는 자외선 살균램프를 향한 상태가 된다. 입력버튼(60)의 살균버튼을 누르면(S111), 이 신호는 콘트롤러(14)에 입력되며 콘트롤러(14)는 커버(30)를 감지하는 감지센서(70)가 온(on) 상태(커버가 닫힌 상태) 인가를 확인한다(S113).

이때, 온 상태이면 램프 구동회로부(40)에 신호를 보내 구동회로부를 동작하게 하며, 자외선 램프(50)는 켜지게 되고(S115) 강력한 살균 파장인 253.7nm 파장의 자외선을 발생시키며 동시에 오존을 생성하는 파장인 184.9nm 파장을 발생시켜 오존이 생성되게 한다.

이러한 두 가지 종류의 파장을 발생시키는 램프를 오존 램프라 하고있으며,253.7nm의 파장만 발생시키는 것을 자외선 램프라 하고 있다. 253.7nm 파장의 자외선과 오존은 피살체의 표면에 물리적 또는 화학적 변화나 영향을 주지 않으면서도 강력한 살균 효과 및 탈취 효과가 있다는 것은 공지의 사실이다.

살균시간은 콘트롤러(14)에 내장되어있는 타이머(도시하지 않음)에 의해 관리되며 본 고안의 실시 예에서는 입력버튼(60)을 1회 누르면 10분이 설정되고, 일정 시간 내에 3회 연속해서 누르면 30분이 설정되도록 하였다.

콘트롤러(14)는 일정시간 내에 입력버튼(60)이 눌려지는 회수에 따라 내부 타이머에 시간을 설정한 후 살균 동작을 수행하며(S117) 설정된 시간이 되면 자동으로 램프 구동회로부(40)를 오프 시켜 살균동작을 중지 하게하며, 디스플레이부(62)에 신호를 보내 살균 LED램프를 오프하고(S119) 살균완료 LED램프를 온 시킨다(S121).

또한 살균 도중, 즉 자외선 램프(50)가 작동 도중에 커버(30)가 개방될 경우 감지센서(70)로부터 입력되는 신호를 받아 즉시 램프 구동회로부(40)에 신호를 보내 자외선 램프(50)를 꺼지게 하며 디스플레이부(62)에도 신호를 보내 살균 LED램프(50)가 꺼지게 한다.

사용자가 커버(30)가 완전하게 닫혀있지 않은 상태에서 입력버튼(60) 즉, 살균버튼을 누르면 콘트롤러(14)는 이를 판단해서 살균 동작을 수행하지 않고 디스플레이부(62)의 살균 LED램프에 점멸신호(S123)를 보내 사용자에게 상황을 인지시킨다.

또한 살균 중 살균 중지 버튼이 입력되면, 콘트롤러(14)는 이를 감지하여 램프 구동회로부(40)에 신호를 보내 자외선 램프(50)가 꺼지게 하며, 디스플레이부(62)에도 신호를 보내 살균 LED램프가 꺼지게 한다.

정상적으로 충전 및 살균이 완료되면 콘트롤러(14)는 이를 감지하여 충전회로부(14b) 및 램프 구동회로부(40)에 신호를 보내 이들을 오프 상태로 만들며 디스플레이부(62)에도 신호를 보내 충전 완료 LED램프 및 살균 완료 LED램프가 점등 되게 한다.

사용자가 커버(30)를 열고 휴대폰(C)을 꺼내면(S125) 콘트롤러(14)는 이를 감지하여 디스플레이부(62)에 신호를 보내 상기 두 종류의 LED램프를 모두 오프시킨다(S127).

이상에서 설명한 실시예는 본 발명의 하나의 실시예를 설명한 것에 불과하고, 본 발명의 권리범위는 상술한 실시예에 한정되는 것은 아니며 특허청구범위내에서 적절하게 변경가능한 것이다. 예를 들어 본 발명의 실시예에 구체적으로 나타난 각 구성 요소의 형상 및 구조는 변형하여 실시할 수 있는 것이다.

발명의 효과

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이상에서 설명한 바와 같이, 본 발명의 자외선 살균기능을 갖춘 휴대폰 충전기에 의하면, 자외선 및 오존을 이용하여 휴대폰에 서식하고 있는 각종 균류를 살균처리 함으로써 휴대폰에 서식하는 갖가지 질병의 원인 균들을 제거 및 청소함은 물론 탈취효과도 얻을 수 있다. 특히, 갖가지 질병의 원인 균들을 제거 및 청소함은 물론 탈취효과도 얻음으로써 사용자에게 위생적이고 청결한 휴대폰을 사용할 수 있게 한다. 또한, 충전 기능과 살균처리기능을 일체화하였고, 각각 독립적으로도 사용이 가능하게 구성함으로써 사용의 편리성을 최대한 부여하였다.

(57) 청구의 범위

청구항 1.

세정실을 가지며, 전원공급부와, 충전회로부와, 램프 구동회로부 및 상기 각 회로부를 제어하는 콘트롤러가 내장되어 있는 본체와;

상기 세정실을 개폐할 수 있도록 상기 본체에 회전가능하게 설치되는 커버와;

상기 본체의 세정실에 분리가능하게 장착되어 있되, 상기 충전회로부와 전기적으로 접속되고, 거치된 휴대폰과 접속되는 접속단자를 갖는 휴대폰 거치대와;

상기 램프구동회로부에 의해 작동되도록 상기 세정실에 설치되며, 상기 휴대폰 거치대에 거치된 휴대폰에 자외선을 조사하면서 동시에 오존을 생성하는 자외선 램프를 포함하는 것을 특징으로 하는 자외선 살균기능을 갖춘 휴대폰 충전기.

청구항 2.

제 1항에 있어서,

상기 자외선 램프는, 상기 휴대폰 거치대에 거치된 휴대폰의 송, 수신부 및 버튼부에 자외선을 조사하도록 설치되는 것을 특징으로 하는 자외선 살균기능을 갖춘 휴대폰 충전기.

청구항 3.

제 1항 또는 제 2항에 있어서,

상기 자외선 램프에서 방사된 자외선을 상기 휴대폰으로 반사시키기 위한 반사수단을 더 구비하는 것을 특징으로 하는 자외선 살균기능을 갖춘 휴대폰 충전기.

청구항 4.

제 3항에 있어서,

상기 반사수단은, 상기 커버의 내측면에 부착되는 반사판인 것을 특징으로 하는 자외선 살균기능을 갖춘 휴대폰 충전기.

청구항 5.

제 3항에 있어서,

상기 반사수단은, 상기 커버의 내측면에 코팅되는 반사막인 것을 특징으로 하는 자외선 살균기능을 갖춘 휴대폰 충전기.

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청구항 6.

제 1항에 있어서,

상기 콘트롤러는, 휴대폰의 충전과, 휴대폰의 자외선 조사가 동시에 이루어지도록 상기 충전회로부와 램프 구동회로부를 제어하는 것을 특징으로 하는 자외선 살균기능을 갖춘 휴대폰 충전기.

청구항 7.

제 1항에 있어서,

상기 콘트롤러는, 휴대폰의 충전과, 휴대폰의 자외선 조사가 각각 독립적으로 이루어지도록 상기 충전회로부와 램프 구동회로부를 제어하는 것을 특징으로 하는 자외선 살균기능을 갖춘 휴대폰 충전기.

청구항 8.

제 1항에 있어서,

상기 세정실이 개방되는 것을 감지하는 감지수단을 더 구비하며, 상기 콘트롤러는 상기 감지수단의 신호에 따라 상기 자외선 램프를 오프시키는 것을 특징으로 하는 자외선 살균기능을 갖춘 휴대폰 충전기.

청구항 9.

제 8항에 있어서,

상기 감지수단의 신호에 따라 상기 세정실에 개방되었음을 경보해주는 경보수단을 더 구비하는 것을 특징으로 하는 자외선 살균기능을 갖춘 휴대폰 충전기.

청구항 10.

세정실을 가지며, 전원공급부와, 충전회로부와, 램프 구동회로부 및 상기 각 회로부를 제어하는 콘트롤러가 내장되어 있는 본체와;

상기 세정실을 개폐할 수 있도록 상기 본체에 회전가능하게 설치되는 커버와;

상기 본체의 세정실에 분리가능하게 장착되어 있되, 상기 충전회로부와 전기적으로 접속되고, 거치된 휴대폰과 접속되는 접속단자를 갖는 휴대폰 거치대와;

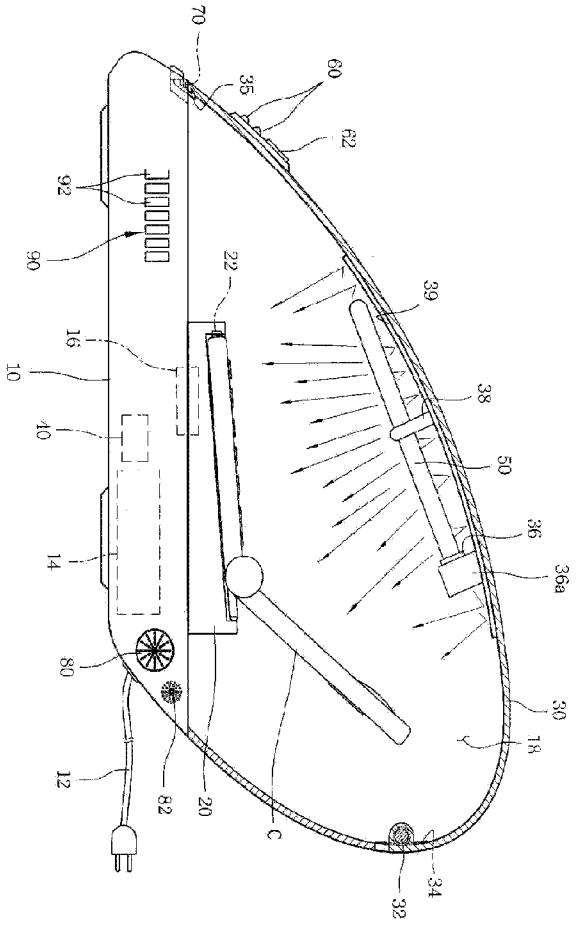
상기 램프구동회로부에 의해 작동되도록 상기 세정실에 설치되며, 상기 휴대폰 거치대에 거치된 휴대폰을 살균하도록 오존을 생성하는 오존 램프를 포함하는 것을 특징으로 하는 자외선 살균기능을 갖춘 휴대폰 충전기.

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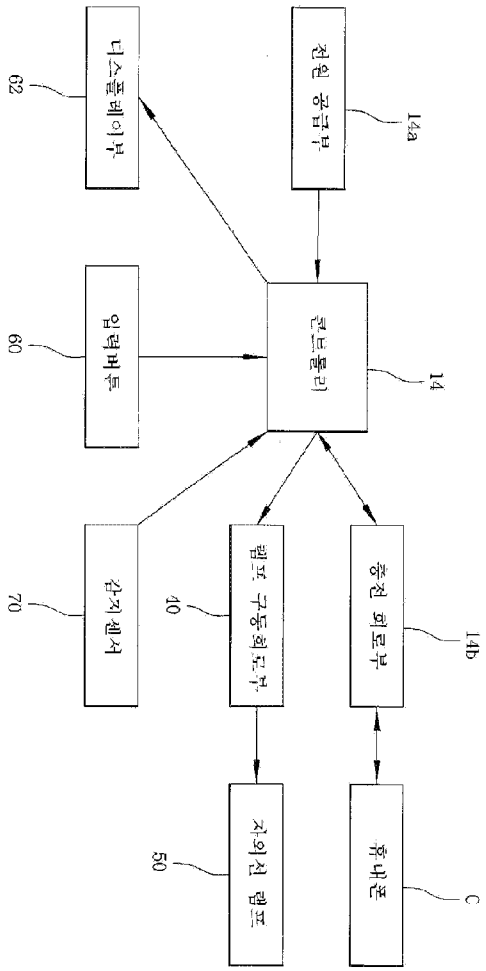
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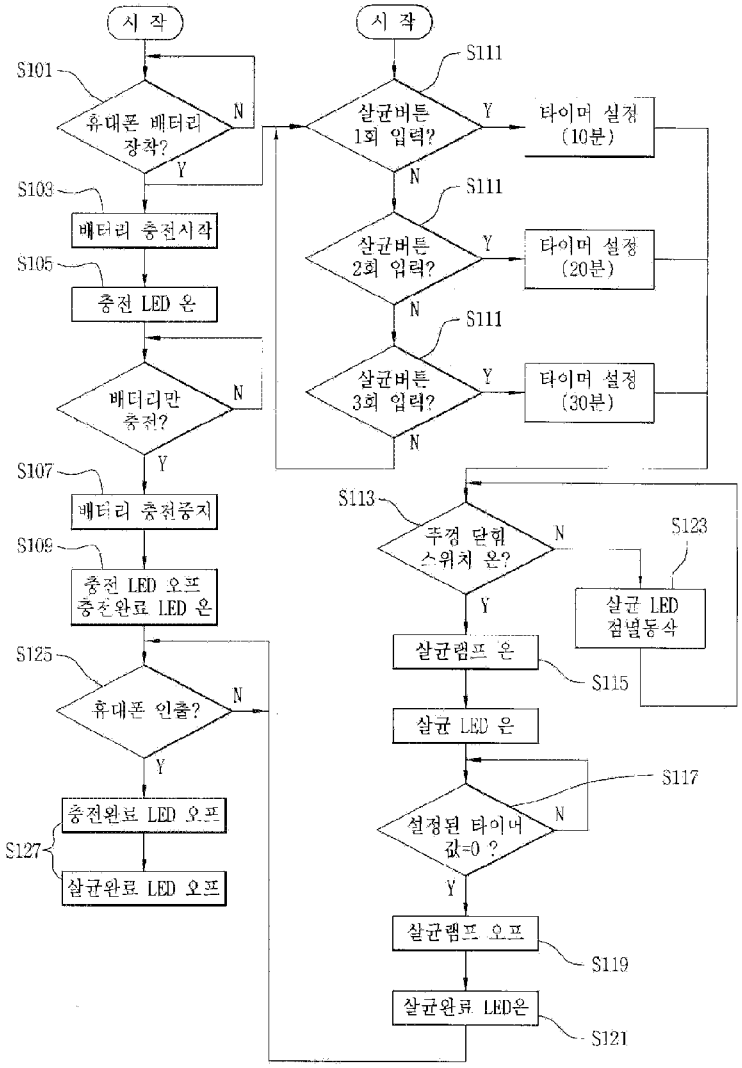
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Bibliographic data: WO2008040316 (A1) — 2008-04-10

METHOD AND APPLIANCE FOR DISINFECTING HOUSEHOLD ITEMS BY MEANS OF ULTRAVIOLET RAYS

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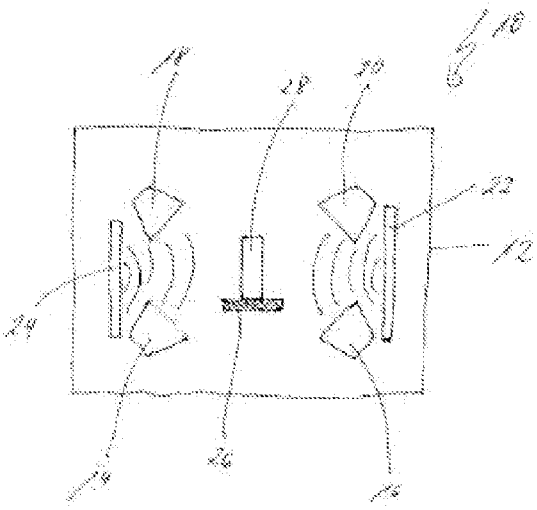
Classification: - international: A47L15/42; A61L2/10; A61L2/12; D06F35/00; F24C14/00; F25D17/04
- cooperative: A47L15/4242 (EP); A61L2/10 (EP); A61L2/12 (EP); F25D17/042 (EP); F25D2317/0417 (EP)

Application number: WO2007DE01735 20070926 Global Dossier

Priority number(s): DE20061045770 20060926 ; DE20071007572 20070215

Abstract of WO2008040316 (A1)

The object of effective degermination or parasite control for the promotion of health or for prophylactic application is intended to be achieved by the use of UV radiation and/or microwaves for disinfecting items in the areas of household, dentistry and hairstyling. Devices in which items are intended to be disinfected, have sources emitting ultraviolet radiation and/or microwaves. These sources can be arranged in a closed device such that they can move. Kits for those devices in households, doctors' surgeries and hairstyling salons which are already present are likewise described according to the invention.



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DESCRIPTION WO2008040316A1

METHOD AND APPARATUS FOR DISINFECTING HOUSEHOLD ITEMS USING ULTRAVIOLET RAYS

The invention relates to a method and a device and its use in the household for disinfecting objects. Furthermore, the invention is directed to a method to be practiced and an apparatus for the use thereof in dental practices, with which dental impressions and instruments used in dental practices can be disinfected. The invention is also directed to the hygiene and disinfection in hairdressing shops and animal care facilities and animal practices, a method and a device to be provided which enable the disinfection of tools and objects used in these areas. In private households there are bacteria, fungi, viruses and, last but not least, parasites that can harm people. Impeccable hygienic conditions are a basic requirement for our health.

Furthermore, there are objects that have an increased germ or

Are exposed to parasites. Examples are: animal care products, such as

Brushes, linen, etc.

Utensils that are used to nourish babies are particularly important, as babies are particularly at risk due to their weak immune system.

The house dust mite allergy caused by the excretion products of the

Mites, of which around 500 different species are known, are often the cause of asthma. In private households, these parasites are primarily found in carpets, clothing and, above all, in bed. There are people who, due to a congenital immune system weakness, acquired immune system weakness (e. B. HiV), a chronic disease (e.g. B. allergy), an acute illness (e. B. flu, gastrointestinal infection), cancer, transplantation, treatment with immunosuppressants, advanced age, etc. suffer from a weak immune system / suppressed immune system and therefore have to attach more importance to hygiene. It is known from medical / dental practices to create hygienic conditions even with great effort, with disinfection devices in private households being the exception.

The disinfecting effect of UV radiation and microwave rays is described in various publications. UV disinfection is used, for example, in the Leica cryostat, in operating rooms, water disinfection systems, room air disinfection systems, etc. commercially or industrially.

Closed disinfection devices for private households that work with UV, microwave rays and / or a combination of these two types of radiation are not known.

The use of disinfectant solutions is one possible type of disinfection. However, this is not without its problems: the increasing number of allergies is due to the excessive use of disinfectant solutions. The formaldehyde, which is a problem for health, plays an important role here due to the formation of resistance, contact allergies, environmental pollution and high operating costs.

No simple, practicable solution has been found as to how parasites such as lice, fleas and ticks can be sensibly removed from clothing, brushes, etc. As far as the problem of house dust mite allergy is concerned, there are various recommendations: In addition to removing the carpets, frequent washing of bed linen and clothes is recommended. Signs of wear and tear, shorter "service life", residues of detergents, high personnel expenditure and the associated costs are major disadvantages of these methods.

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Bacteria, viruses (bird flu), fungi and parasites can also be transmitted from animals to humans through animal care. Examples are ticks, fleas, feather lice, hair lice, lice, etc. These parasites are often hosts of dangerous diseases that can also be life-threatening for humans, e.g. B. TBE infection by ticks. Mites are particularly important in private households: These are parasites that can be found in laundry, bed linen and carpets, etc. House dust mites are a subspecies, the excretion products of which cause allergies and consequently asthma. A third of the population suffers from allergic reactions. Another source of danger in private households are baby food utensils, such as bottles made of plastic or glass, teats made of silicone or latex or rubber, pacifiers made of plastic and / or silicone, rubber and latex. The existing solution is uncontrolled boiling in a water pot or temperature-controlled boiling in a disinfection device (e.g.

B. Nuk). This method changes the material properties, which can be seen in color changes: harmful material components could be absorbed by the baby. There is also another problem: harmful germs that cannot be killed with this method, e.g. B.: Hepatitis C viruses only die at 136 degrees. Further tasks result from the fact that it makes perfect sense to disinfect contaminated bathroom, toilet and kitchen appliances: For example, the wooden board on which poultry was stored (risk of salmonella), cleaning rags, dishcloths, etc. The need arises particularly in households in which people live who have a weakened immune system: Examples are transplant patients, HIV-infected people, old people, people who have a congenital immune deficiency, people who have had a serious illness , but also people who are allergic to disinfectants. People who go through an acute infectious disease also have an increased need for hygiene.

B. flu viruses, mumps, etc., it can be very helpful to disinfect bed linen, towels, handkerchiefs, clothing, etc. But also people who suffer from a chronic infectious disease: z. B. Hepatitis.

The object of the invention is to provide a method and a device for disinfecting objects in households, dental practices and for firers, which can be used easily and inexpensively and which is stress-free for its operator by using the method with one device.

The object is achieved according to the invention in that a household appliance having a closable housing uses at least one quantity which emits ultraviolet rays to disinfect objects inside the housing.

This has the advantage that disinfecting solvents, with which objects are usually disinfected, can be dispensed with. A plurality of radiation sources can preferably be used in a housing to disinfect the objects, so that it is ensured that each object to be disinfected in the housing is fully exposed to the disinfecting radiation. In addition, it is possible to use at least one source that emits microwave rays to disinfect the objects. This has the advantage that these waves, in addition to the ultraviolet radiation treatment, further disinfect an object to be disinfected and, depending on the material of the object to be disinfected, the degree of disinfection can be increased and the irradiation time shortened.

The method to be used according to the invention for disinfection in household areas provides a source in a lockable housing which emits ultraviolet rays and wherein the rays are directed onto the object or objects to be disinfected by scattering or reflecting the radiation and / or moving the source in the Housing encircles the object or objects to be disinfected. Such a method ensures, on the one hand, that the objects intended for disinfection are also completely exposed to the radiation source and, on the other hand, this method ensures that the groups of people using the method are not exposed to any stress. In addition, the method is inexpensive and easy to use, so that operating errors in the disinfection process of an object are excluded.

The method according to the invention can be used even more effectively and effectively if the objects intended for disinfection are additionally irradiated by means of microwaves. In contrast to ultraviolet rays, microwaves can penetrate objects to be disinfected to a greater extent and can support or accelerate the disinfecting effect emanating from ultraviolet rays.

The method according to the invention can then be used in an improved manner if ultraviolet rays with different wavelengths that are matched to the object to be disinfected are used for disinfecting the objects. It can be advantageous if the disinfection with ultraviolet rays and microwaves takes place with a time delay or at the same time, depending on the use and selection of the objects to be disinfected.

In order to accelerate the disinfection of an object in a closed housing, it can be advantageous that the radiation source is moved in the housing during the irradiation and can thus irradiate different surface contours at different angular positions.

For safety reasons, it is advantageous and, according to the invention, imperative to carry out the irradiation exclusively with the housing closed, so that outside the housing the sources used for the irradiation cannot be detected or can only be detected in a harmless area. According to the invention, the irradiation times should be kept very short and are advantageously matched to the objects to be disinfected as a function of the selected wavelengths. It is possible to choose different irradiation times for an object to be disinfected under ultraviolet irradiation and under microwave irradiation.

In a household disinfection device produced according to the invention, at least one radiation source emitting ultraviolet rays is provided in a closable housing, which irradiates one or more objects inside the housing. The housing of the household disinfection device is designed in such a way that rays that are used to disinfect objects can not escape, regardless of their

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wavelength. The inner surfaces of the housing can have coatings that support the disinfection of objects to be disinfected in the devices. The UV radiation source can be provided in an oven, refrigerator, freezer, washing machine or linen cupboard, and this radiation source can be activated if necessary. Depending on requirements, several radiation sources can be provided in the household disinfection device, which ensure the safe disinfection of an object. The radiation source or the radiation sources are arranged or aligned in the household disinfection device in such a way that they completely irradiate the object or objects to be disinfected.

The radiation source or Radiation sources can be movably arranged in the housing. In particular, they can be moved by means of a motor drive.

In addition to the radiation source (s) that emit ultraviolet radiation, further radiation sources can also be provided in the household disinfection device that emit microwaves simultaneously or at different times. Device designs are also conceivable in which one can choose between microwave irradiation or UV irradiation or a combined irradiation of an object to be disinfected can choose. It can also be advantageous if the objects to be irradiated are movably held and / or supported in the housing, with the object or objects being able to be moved or rotated by means of a motor drive.

According to the invention, kits of ultraviolet rays and / or microwaves emitting radiation sources for installation in existing household appliances, such as ovens, refrigerators, freezers, washing machines, tumble dryers, laundry cupboards, are provided so that devices available in households can be easily and effectively retrofitted according to the invention.

One figure of the drawing shows a housing according to the invention with all functional features, which can be operated with the method according to the invention, in a highly schematic manner. The device shown in the figure is to be understood as an example and does not restrict the claimed inventive concept to a specific embodiment of a device. The figure shows at 10 a household disinfection device according to the invention which has a closed housing 12. To equip the housing 12 with objects to be disinfected, the housing has to be opened and it can and must be closed before a disinfection treatment.

Four sources 14, 16, 18, 20 emitting ultraviolet rays are provided in the interior of the housing, and a microwave resonator 22, 24 is also provided in the household disinfection device 10. An object 28 to be disinfected is arranged on a grating 26 and is exposed to the radiation sources 14, 16, 18, 20 and, if required, the microwave resonator 22, 24.

The grating 26 is designed to be rotatable if required, so that the object 28 placed on the grating can be set in a rotary movement. If necessary, the sources 14, 16, 18, 20 can also be arranged movably in the housing 12. The microwave resonator 12, 24 can be operated together with the sources 14, 16, 18, 20 or separately from these sources 14, 16, 18, 20, as required. The housing 12 can have a coating on the inner surfaces that on the one hand supports a disinfecting effect for the objects to be disinfected in the household disinfection device and on the other hand the walls of the housing 12 can be designed so that they are designed to be noise-insulating and radiation-absorbing.

The device shown in the figure can also be used in the manner shown or in a modified manner in dental practices and / or in hairdressing shops.

The device described (2. Appendix) is also suitable for the use of microwaves and the combined use of microwaves and UV rays to kill parasites, to reduce germs (bacteria, viruses, fungi, spores) on equipment and materials and to dry them. The device can be used to kill parasites and to reduce germs on tools and materials used by the hairdresser, animal care facility and / or veterinarian. Parasitic diseases such as infestation with head lice, mites, hair lice, feathers, ticks, etc. are very common. Combating these parasites is extremely difficult. Considerable side effects are to be expected with drug treatment, and resistance is becoming more and more common. Lice are permanent guests in kindergartens, schools, holiday camps, etc.

At the hairdresser and in animal care facilities, the main focus will be on the parasites; at the veterinarian, it is important to disinfect contaminated instruments at the same time. However, one can also imagine a situation in which infected brushes, combs, curlers, etc. can transmit serious diseases. Bacteria, viruses and fungi can be transmitted to the next customer via wounds on the scalp, pimples, infected hair roots, etc. It appears essential that it is to be expected that these disease carriers are primarily to be found at the ends of the bristles of the brushes and combs and the hair curlers.

Most hairdressers try to solve these problems with disinfecting spray solutions: However, these solutions and their use have serious disadvantages. It is hard to imagine that they will achieve the required effect. The aerosols formed during spraying can trigger allergies (as with all disinfectant solutions). They pollute the environment. They are expensive: purchase, disposal, storage, administration, proper processing, etc. If handled improperly, they are dangerous (eye injuries, chemical burns, etc.).

For these reasons, the hygiene requirements, for example at the hairdresser's, at the veterinarian's and in animal care facilities, are perceived as inadequate, also with regard to the self-protection for the practitioner.

When disinfecting with UV radiation, it is possible that the effect is optimized by drying the object to be disinfected. This can be done by microwave irradiation. An example of this is when special emphasis is placed on the disinfecting effect of UV radiation,

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as is the case in medical and / or dental practices.

The aim and effect must be: sufficient killing effect on parasites such as lice, ticks, mites, lice, feathers, etc., germ reduction in bacteria, viruses and fungi, whereby the risk of infection is reduced, use of environmentally friendly technologies, personal protection of the user and Drying effect.

According to the invention, the solution is achieved by using microwaves to kill parasites and to reduce germs, use a combination of microwaves and UV radiation to reduce germs, devices that use these technologies and with which the objectives can be implemented, additional techniques and facilities on the devices, which cause an optimization of the effect, safety is increased by special devices on the devices.

The combined use of microwave and UV disinfection offers major advantages. The microwave can also successfully kill parasites if they are in areas that are difficult to access, as is the case, for example, on the bristle mount. Due to the disinfecting effect of the UV rays, the number of germs can be reduced considerably, and the risk of infection is reduced. In addition, microwaves can reduce the number of germs.

Another advantage can be seen in the fact that microwaves can achieve a faster drying effect and this drying effect contributes to improving the effectiveness of the UV rays with regard to the disinfecting effect and reducing the risk of infection. In addition, microwaves can also reduce the number of certain germs.

For this reason, it can be advantageous for the UV irradiation to be longer than the microwave irradiation.

It is due to the way in which the microwave works that spraying the surface with water can optimize its effectiveness, as UV rays can pass through clear water, so their germicidal effect is not impaired. The effect of UV rays can be optimized through H2O2.

Protein coagulates at 56 degrees Celsius and parasites die when they are heated with microwaves to a temperature of 60 degrees Celsius. Since the effect of the microwave on water is particularly intense, the method described recommends that the instruments and objects be sprayed with water before irradiation. UV rays can pass through clear water, so their germicidal effect is not affected.

Investigations in connection with the invention show that protein coagulates in a commercially available kitchen microwave device at 600 watts after just 9 seconds, at 360 degrees after 11 seconds and at 90 watts after one minute. All information is approximate.

If necessary, as you can imagine at the vet, but also at the hairdresser, the disinfecting effect of UV rays should be used. This is ideally done through the combined use of UV radiation sources and a microwave device. The irradiation times can differ. Simple handling is ensured by default settings.

However, as soon as the object to be treated is made of metal or metal components are irradiated with a microwave, care must be taken that there are no sparks. This will also avoid damaging the device.

There are various ways of doing this:

1.

The metallic object is partially placed in a solution that ensures that there are no sparks. Water is also suitable for this.

2.

The device uses a "metal detector" to recognize that metallic components should be irradiated. A signal then passes this information on in a suitable manner.

3.

The object to be treated is completely placed in a liquid, preferably water; this liquid is then brought to the required temperature. You can also imagine a solution, such as an H2O2 solution or a nanosilver / silver water solution. A special coating of the inserts in which the objects are treated can increase the killing or germ-reducing effect.

4.

Lightning rod

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The advantages achieved are: Safe parasite killing; reduced risk of infection through germ reduction; environmentally friendly process; Cost reduction: purchasing, administration, billing, warehousing, proper use, disposal; Personal protection of the user, no allergies; Drying effect.

The device according to the invention is characterized by simple handling through effect-optimized presettings; elegant design is possible; Effect optimization through the combined use of microwave and UV radiation; by optical or acoustic indicators after the irradiation has taken place; Safety shutdown and / or safety signal; Temperature display; Safety optimization by the fact that the irradiation only takes place in a closed device.

A microwave device according to the invention is used to kill parasites such as lice, ticks, mites, lice, feathers, deer lice, etc. and to reduce germs in bacteria, viruses and fungi, and this device is preferably used in hairdressers, animal care facilities and in veterinary practices. The device has presets that set the irradiation time and temperature, etc. Optimize the performance of the device, taking into account the killing of parasites, the germicidal effect and the protection of the irradiated objects. The device has a safety shutdown. The device has a device that acts like a metal detector, and this metal detector triggers a safety shutdown or a signal. This is to prevent damage to the device. Special inserts can be placed in this device, or this device has special inserts which ensure performance-optimized and safe handling and which are suitable for absorbing liquids.

Special inserts can be placed in this device, or this device has special inserts which ensure performance-optimized and safe handling and which are made of a material that allows UV rays to pass through (e.g. quartz glass). This device has devices that ensure that the objects to be sterilized and / or the objects on which the parasites are to be killed are brought up to the microwaves and / or UV radiation source (s) in a defined manner, whereby the radiation is at the maximum Efficiency. Guide rails, slide-in shafts, locks, stiffeners, pivoting devices, etc. are listed as examples. The device has a device that has a similar effect as a lightning rod. This is to prevent damage from sparking and overvoltage damage in the device. The device displays an optical and / or an acoustic signal when the irradiation process has been successfully completed.

The device indicates with an acoustic and / or an optical signal when a fault occurs. The device has a temperature display or a temperature control. The irradiation process is started using switches, buttons, push buttons, etc. Different preset irradiation programs are operated using different control buttons, switches or the like. The device has a facility that ensures that it can only be operated when it is closed. This prevents radiation from escaping. The device has a device with which one can visualize the killing-disinfection process, for example this could be through a transparent pane. The device has a device that enables the objects to be irradiated to be sprayed. For example with water or a H2O2 solution; this optimizes the effect. The device has one or more UV radiation sources. The device has one or more UV light sources and, in addition, a device that enables a rotary and / or pivoting movement over one or more axes.

The aim is to achieve optimal illumination of the objects that are being irradiated. The device has one or more UV light sources and also mirrors, lenses, grids, which optimize the effect in terms of focusing, amplification, deflection, refraction, etc. of the UV rays. The device has one or more UV light sources and the duration of exposure can be regulated by a timer. The device has one or more UV light sources and the irradiation duration is linked to the irradiation duration of the microwave irradiation via presets. The device has a special coating that helps kill parasites and reduce germs. Examples of this are coatings made of nanosilver, Teflon, etc. Microwave-suitable materials and UV-resistant materials are used. The microwaves are used to kill parasites such as lice, fleas, ticks, mites, lice, feathers, deer lice, etc. and to reduce the germs of bacteria, viruses and fungi and work equipment and materials can be dried.

This method is preferably used in hairdressers, animal care facilities, doctors' practices, dental practices, dental laboratories, orthodontic practices, veterinary practices or other facilities in which there is an increased hygiene awareness or in which there are special hygiene requirements. The microwaves are used to kill parasites such as lice, fleas, ticks, mites, lice, feathers, deer lice, etc. and to reduce the germs of bacteria, viruses and fungi, and tools and materials can be dried. The method is preferably used in hairdressers, animal care facilities, medical practices, dental practices, dental laboratories, orthodontic practices, veterinary practices or other facilities in which there is an increased awareness of hygiene, or in which there are special hygiene requirements and in addition to microwave radiation, irradiation with UV rays takes place, combined application of both methods.

The microwaves are used to kill parasites such as lice, fleas, ticks, mites, lice, feathers, deer lice, etc., and to reduce the germs of bacteria, viruses and fungi, and work equipment and materials can be dried. The method is preferably used in hairdressers, animal care facilities, medical practices, dental practices, dental laboratories, orthodontic practices, veterinary practices or other facilities in which there is an increased awareness of hygiene or in which there are special hygiene requirements, and in addition the objects to be irradiated with liquid sprayed. The microwaves are used to kill parasites such as lice, fleas, ticks, mites, lice, feathers, deer lice, etc. and to reduce the germs of bacteria, viruses and fungi, and work equipment and materials can be dried. The method is preferably used in hairdressers, animal care facilities, medical practices, dental practices, dental laboratories, orthodontic practices, veterinary practices or other facilities in which there is an increased hygiene awareness or in which there are special hygiene requirements and, in addition, chemical and / or physical methods are used Effect optimization achieved.

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Brushes, combs, hair curlers and other items that are used in the hairdresser's, in the animal care facility or at the veterinarian's are made from microwave-safe and UV-resistant materials.

This registration (3. Appendix) relates to indication areas in which a gentle, inexpensive disinfection is important. Disinfection by means of ultraviolet radiation is known from various scientific papers. It is used particularly successfully for the disinfection of drinking water. But UV sterilization also takes place in operating theaters in hospitals. Furthermore, materials are sterilized with UV light, which changes their material properties through conventional types of sterilization such as hard rays, heat, pressure, steam or chemicals.

The effectiveness of UV irradiation on bacteria should be based on those wavelengths of light that are absorbed by the nucleic acids. The radiation changes the nucleic acids so that they can no longer multiply. In this case, UV lamps are preferably used, which generate strong radiation in order to keep the irradiation time as short as possible.

In medicine and in dentistry there are special hygiene requirements. At the beginning of 2006, hygiene guidelines (RKI guidelines) were set for dental practices in the EU in order to achieve generally applicable hygiene standards. Part of these regulations states that work processes that are repeated must be defined in writing for each practice "individually" and that these processes must comply with the RKI guidelines. In addition, a documentation requirement was set. The German Dental Association (BZÄK) and the German Working Group for Hygiene in Dental Practice (DAHZ) have drawn up a hygiene plan with operating instructions describing the ways, devices and materials that can be used to comply with the RKI guidelines.

In the dental work there are work processes in which materials or devices are used that are not optimally solved by the recommendations of the BZÄK and DAHZ (see above).

Excerpts from the hygiene plan:

"Excerpt from the hygiene plan / operating instructions for the dental practice: Suitable disinfection methods must be bactericidal, fungicidal and also to a limited extent virucidal (including HBV, HCV, HIV). "

"After each completed reprocessing (disinfection or sterilization) of medical devices, they must be released for reuse. The approval must be carried out by employees with approval authorization and must be documented. "

The hygiene plan under "impressions, dental workpieces" states: How: Either: Spray disinfection in a closed system

(Cleaning and disinfection device) or: immersion disinfection. When: - Immediately after removal from the mouth

- Impression taking after rinsing

- Dental workpieces before dispatch to the dental laboratory

- Dental workpieces after receipt from the dental laboratory Who: Employees in the examination, treatment or maintenance area, employees in the dental laboratory / practice laboratory

Example 1: Taking an impression:

After the impression has been taken, the hygiene plan recommends disinfection

Spray solution or immersion bath: The disinfectant solution used has serious disadvantages:

1. A chemical change in the surface cannot be ruled out. This can lead to surface changes that can affect the accuracy of the work.

2. The use of these chemicals, including ordering, storage, and purchase price is expensive. The use of chemicals is associated with a high financial and personnel expense almost every working day. a. Administrative expenses for purchasing, warehousing, accounting, control, if necessary Claim; b. Effort in preparing the solution, control, documentation of the correct use of chemicals, training of the staff; c. Disposal of these environmentally harmful chemicals and the associated personnel costs; d. additional financial expense for protective clothing: ex. Protective gloves.

3. The use of these chemicals leads to sensitization and allergic reactions, and damage to the health of the dentist, his staff and the patient, triggered by aerosols in the air or skin contact, cannot be ruled out.

4. Attention is drawn to the problem of hospital germs.

5.

Environmental pollution from the disinfectants.

6.

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Increased hazard potential in practice: These agents usually have caustic properties, which can harm people.

Example 2:

The prosthesis comes from the laboratory.

In order to guarantee a complete hygiene chain, the work would have to be carried out before

Disinfected insertion.

A disinfection with spray solution can be used

Patients generate contact allergies on the mucous membrane that is well supplied with blood.

There are no indications as to how the spray solution can be removed from the disinfected dental work in such a way that the patient's health is not harmed.

Example 3

Prosthesis repair:

The problem is comparable to the problem with taking prints.

Example 4 consumables:

Examples are: swabs, Kerr bars for taking bites and occlusion foils.

Gutta-percha pens and plastic pens are bought in packs of 10: When a pen is removed, contamination often occurs. The remaining pens cannot be satisfactorily disinfected using the types of disinfection described above.

The object of the invention is to provide a disinfection method and a disinfection device that simplifies the sterilization of devices, impressions, dental work, instruments, etc. used in dental operations and minimizes costs

Disinfection with UV rays is a method in which the following disadvantages can be significantly improved:

1. UV disinfection is comparatively inexpensive

2. No disadvantages from chemicals: contact allergies, chemical burns, etc.

3. No environmental pollution

4. UV light does not cause any inaccuracies or surface changes that affect the accuracy of fit.

5. No major personnel expenditure to provide a prescribed disinfection process for dental practices and dental laboratories.

Example 5 Rubber Polishers

Rubber polishers are used in the dental practice e.g. B. used for polishing fillings and prosthetic work. The disinfection of these rubber polishers is difficult: Drills and other immersion baths attack the surface, an air bubble can form in rubber cups, which affects the disinfection; if rubber cups germinate in the sterilizer, the material properties change and the polishers are no longer as durable.

Device, method / procedure for disinfecting impressions in the dental practice and dental technical work, for disinfecting devices and instruments and for disinfecting consumables that are more difficult or more expensive to disinfect under heat, pressure, moisture or chemicals. This disinfection is carried out using short-wave or ultra-short-wave light: UV radiation.

Disinfection takes place in a device that ensures optimal illumination of the impressions to be disinfected, dental work, instruments, devices and materials. This is done through the use of one, two or more UV lamps or tubes, which may be fitted in a defined position so that all surfaces of a body to be disinfected are fully illuminated or irradiated. These UV lamps can - if necessary - also be of various types, i. H. they can also generate UV rays with different wavelengths.

Disinfection takes place in a device that ensures optimal illumination of the impressions to be disinfected, dental work, instruments, devices and materials. This is done through the use of tools for focusing, scattering, bundling, refraction, transmission, reflection, diffraction, absorption, deflection, amplification or attenuation of the rays from UV lamps or tubes. These aids can be: e.g. light guides, lenses, glasses, light amplifiers, mirrors, grids, screens, etc. Parabolic mirrors appear particularly advantageous.

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Disinfection takes place in a device that ensures optimal illumination of the impressions to be disinfected, dental work, instruments, devices and materials. This is done through the use of inserts that guarantee a reproducible position of the objects to be disinfected (e.g. B.: predetermined contact surfaces that are modeled on the contour of the objects to be disinfected in such a way that all surface parts of the objects can be irradiated with sufficient intensity and time). Another example are special drill stands that can be inserted into the device with a precise fit, thereby achieving optimal illumination / disinfection.

Disinfection takes place in a device that ensures optimal illumination of the impressions to be disinfected, dental work, instruments, devices and materials. This is done by using one or more light sources that rotate around the object to be disinfected. The speed depends on the required lighting duration.

Disinfection takes place in a device that ensures optimal illumination of the impressions to be disinfected, dental work, instruments, devices and materials. This is done by using a device / device that causes the objects to be disinfected to rotate. All objects can - if necessary - be automatically rotated, shifted and / or swiveled in the device so that the contact surface of the objects changes during the disinfection in the device.

Disinfection takes place in a device that ensures optimal illumination of the impressions to be disinfected, dental work, instruments, devices and materials. This is done through the use of mirrors, grilles and screens to prevent shadows from being formed and the desired wavelength of the "UV light" being changed.

Disinfection takes place in a device that ensures optimal illumination of the impressions to be disinfected, dental work, instruments, devices and materials. This is done through the use of mirrors and bezels that are at a certain angle to each other. This is to avoid the formation of shadows, elevations, and reductions in the wavelength.

Disinfection takes place in a device that ensures optimal illumination of the impressions to be disinfected, dental work, instruments, devices and materials. This is done by using an air conditioner in the sense of a dehumidifier or Air humidifier and / or by using a cooling device / heater or a fan, which are regulated by a thermostat or sensor, and ensure that the temperature does not change in an uncontrolled manner.

Disinfection takes place in a device that ensures optimal illumination of the impressions to be disinfected, dental work, instruments, devices and materials. This is done through the use of built-in / built-in devices, in the sense of a timer, possibly coupled with light barriers for switching on / off, where the irradiation duration is fixed or freely selectable. If legal regulations prescribe a minimum irradiation time, this time can be set so that this time is not exceeded.

Disinfection takes place in a device that uses a light barrier or a switch to ensure that the UV lamps or Tubes are only switched on when the device is closed, which means that the operator of the device is not harmed by the UV light.

Disinfection is carried out in a device that works optimally with a preset number of pulses or with a number of pulses that can be varied by the operator. A corresponding device on the device enables this. If legal regulations prescribe a minimum number of pulses, the device can be preset so that this minimum number of pulses cannot be undershot.

Disinfection takes place in a device that has a removable insert that can also be cleaned outside the device. This insert preferably has an ozone collecting container.

Disinfection takes place in a device that has a removable insert that can also be cleaned outside the device. This insert preferably has an ozone collection container. This insert preferably has a device that allows any ozone that may be generated to be extracted safely (e.g. B. in combination with a check valve).

Disinfection takes place in a device that also has a device that uses the ozone generated for disinfection, in addition to disinfection with UV light. Example: fan.

Disinfection takes place in a device that also has a device for documenting the disinfection. Operator, date, etc. can also be entered. If irradiation times or radiation intensities or a duration related to an object to be disinfected are specified in binding guidelines, these parameters cannot be changed in relation to the object to be disinfected.

Disinfection takes place in a device that also has a device that indicates by means of an optical and / or acoustic signal when the disinfection process was too short.

Disinfection takes place in a device that also has a device that uses an optical and / or acoustic signal to indicate when the irradiation process / disinfection process is complete.

The disinfection takes place in a device in which a measuring device is also built in, which indicates by means of an optical and / or acoustic signal when the radiation intensity is insufficient.

The disinfection takes place in a device in which a measuring device is also installed, which indicates by means of an optical and / or acoustic signal when the ozone concentration is excessive.

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Disinfection takes place in a device, in which a device for generating an air flow is also installed. The aim of this device is to blow drops of water, droplets of saliva, blood droplets, etc. This ensures that the required penetration depth for the UV rays is reduced, thus optimizing the disinfection process. This airflow can be combined with the heat generated by the UV lamp or UV tube is generated, or can be preheated by an additional heater in order to additionally achieve drying of the objects to be disinfected. The air flow can be generated by devices such as compressors, blowers, fans, etc.

Disinfection takes place in a device in which a receptacle for holding indicators for checking the effectiveness of the device is built.

Disinfection takes place in a device that has a device that enables successful disinfection even without mains operation, for example using a battery and / or a solar cell, etc. Thus, the device could also be used for transport to or into the laboratory.

In a further embodiment, the UV source (s) is energetically fed by the microwave generator and this can be used in devices that are used in the household, in the hairdressing business or in dental practices.

The use of UV rays and / or microwaves to disinfect objects in the household, dentist and hairdressing sector is intended to achieve effective disinfection or disinfection. Parasite control for health promotion or prophylactic use can be done. Devices in which objects are to be disinfected have sources emitting ultraviolet radiation and / or sources emitting microwaves. These sources can be movably arranged in a closed device. Also according to the invention, kits are described for the devices already available in households, doctors' offices and hairdressing shops.

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CLAIMS WO2008040316A1

Claims

1.

Use of a household appliance having a closable housing with at least one source emitting ultraviolet rays for disinfecting objects inside the housing.

2.

Use according to claim 1, characterized in that several radiation sources arranged in the housing are used.

3.

Use according to Claim 1 or 2, characterized in that at least one source emitting microwave radiation is additionally used to disinfect the objects.

4.

Method for disinfecting objects in the household area with a source provided in a lockable housing, which emits ultraviolet rays and wherein the rays are directed onto the object or objects to be disinfected by scattering or reflecting the radiation and / or the source being movable in the housing circles the object or objects to be disinfected.

5.

Method according to claim 4, characterized in that the object to be disinfected is additionally irradiated by means of microwaves.

6.

Method according to claim 4 or 5, characterized in that the object to be disinfected is irradiated with ultraviolet rays of different wavelengths.

7.

Method according to one of Claims 4 to 6, characterized in that the disinfection with ultraviolet rays and microwaves takes place at different times or at the same time.

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Method according to one of Claims 4 to 7, characterized in that the object to be disinfected is moved in the housing during the irradiation.

9.

Method according to one of Claims 4 to 8, characterized in that the irradiation takes place exclusively with the housing closed.

10.

Method according to one of Claims 6 to 9, characterized in that the irradiation times for the object or objects to be disinfected

Objects can be selected depending on the selected wavelengths.

11.

Method according to one of Claims 6 to 9, characterized in that different irradiation times are selected for the ultraviolet irradiation and the microwave irradiation.

12.

Household disinfection device with at least one radiation source which is provided in a closable housing and which emits ultraviolet rays and which irradiates one or more objects inside the housing

13.

Household disinfection device according to claim 12, characterized in that the radiation source is provided in an oven, refrigerator, freezer, washing machine or linen cupboard.

14.

Household disinfection device according to claim 12 or 13, characterized in that several radiation sources are provided.

15.

Household disinfection device according to one of Claims 12 to 14, characterized in that the radiation source or radiation sources irradiate the object to be disinfected to the full extent.

16.

Household disinfection device according to one of Claims 12 to 15, characterized in that the radiation source (s) are movably arranged in the housing, in particular by means of a motor drive.

17.

Household disinfection device according to one of claims 12 to 16, characterized in that the radiation source (s), in addition to ultraviolet radiation, also have a further radiation source (s) which emit microwaves simultaneously or staggered in time.

18.

Household disinfection device according to one of Claims 12 to 17, characterized in that the object or objects to be irradiated are movably held and / or stored in the housing, in particular by means of a motor drive.

19.

Kit of ultraviolet rays and / or microwave emitting radiation sources for installation in existing household appliances, such as ovens, refrigerators, freezers, washing machines, tumble dryers, linen cupboards.

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Drawing page 9 of WO2008040316 A1

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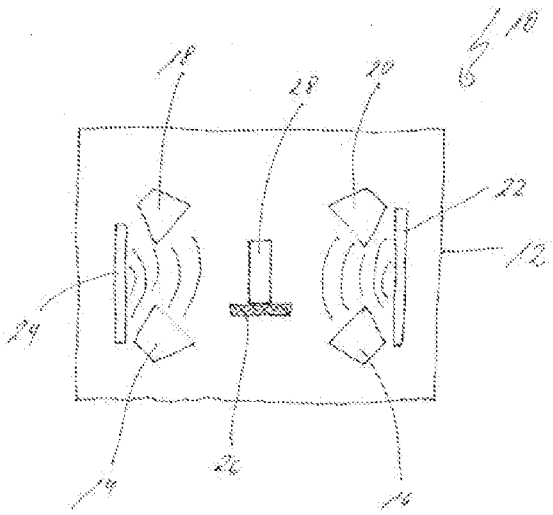
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[Fortsetzung auf der nächsten Seite]

(54) Title: METHOD AND APPLIANCE FOR DISINFECTING HOUSEHOLD ITEMS BY MEANS OF ULTRAVIOLET RAYS

(54) Bezeichnung: VERFAHREN UND GERÄT ZUM DESINFIZIEREN VON HAUSHALTSGEGENSTÄNDEN UNTER VERWENDUNG VON ULTRAVIOLETT-STRAHLEN



(57) Abstract: The object of effective degermination or parasite control for the promotion of health or for prophylactic application is intended to be achieved by the use of UV radiation and/or microwaves for disinfecting items in the areas of household, dentistry and hairstyling. Devices in which items are intended to be disinfected, have sources emitting ultraviolet radiation and/or microwaves. These sources can be arranged in a closed device such that they can move. Kits for these devices in households, doctors' surgeries and hairstyling salons which are already present are likewise described according to the invention.

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MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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— *vor Ablauf der für Änderungen der Ansprüche geltenden Frist; Veröffentlichung wird wiederholt, falls Änderungen eintreffen*

(57) Zusammenfassung: Durch die Verwendung von UV-Strahlen und/oder Mikrowellen zur Desinfektion von Gegenständen im Haushaltsbereich, Zahnarztbereich und im Friseurbereich soll die Aufgabe einer wirksamen Entkeimung bzw. Parasitenbekämpfung zur Gesundheitsförderung bzw. zur prophylaktischen Anwendung erledigt werden. Geräte, in denen die Desinfektion von Gegenständen durchgeführt werden sollen, weisen ultraviolette Strahlung emittierende Quellen und/oder Mikrowellen emittierende Quellen auf. Diese Quellen können beweglich in einem geschlossenen Gerät angeordnet sein. Ebenfalls werden erfindungsgemäß Bausätze für die schon vorhandenen Geräte in Haushalten, Arztpraxen und Friseurgeschäften beschrieben.

VERFAHREN UND GERÄT ZUM DESINFIZIEREN VON HAUSHALTSGEGENSTÄNDEN UNTER VERWENDUNG VON ULTRAVIOLETT-STRAHLEN

Die Erfindung betrifft ein Verfahren und ein Gerät sowie dessen Verwendung im Haushalt zur Desinfektion von Gegenständen. Weiterhin ist die Erfindung auf ein zu praktizierendes Verfahren und ein Gerät für dessen Verwendung in Zahnarztpraxen gerichtet, mit dem zahnärztliche Abdrücke und in Zahnarztpraxen verwendete Instrumente desinfiziert werden können. Ebenfalls ist die Erfindung auf die Hygiene und Desinfektion in Frisörgeschäften und Tierpflegeeinrichtungen und Tierpraxen gerichtet, wobei ein Verfahren und eine Vorrichtung bereitgestellt werden sollen, die die Desinfektion von in diesen Bereichen genutzten Arbeitsgeräten und Gegenständen ermöglicht.
Im privaten Haushalt gibt es Bakterien, Pilze, Viren und nicht zuletzt Parasiten, die dem Menschen Schaden zufügen können. Einwandfreie hygienische Verhältnisse sind Grundvoraussetzung unserer Gesundheit.

Des Weiteren gibt es Gegenstände, die einer erhöhten Keim bzw. Parasitenbelastung ausgesetzt sind. Beispiele hierfür sind: Tierpflegemittel, wie Bürsten, Leinen, usw.
Eine besondere Bedeutung haben Utensilien, die zur Ernährung von Babys benutzt werden, da Babys aufgrund ihrer schwachen Abwehrlage besonders gefährdet sind.
Die Hausstaubmilbenallergie, ausgelöst durch die Ausscheidungsprodukte der Milben, von denen ca. 500 verschiedene Arten bekannt sind, ist häufig Ursache einer Asthmaerkrankung. Diese Parasiten kommen im privaten Haushalt vorzugsweise in Teppichböden, der Kleidung und vor allem im Bett vor.

BESTÄTIGUNGSKOPIE

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Es gibt Menschen, die aufgrund einer angeborenen Abwehrschwäche, erworbenen Abwehrschwäche (z. B. HIV), einer chronischen Erkrankung (z. B. Allergie), einer akuten Erkrankung (z.B. Grippe, Magen-Darm-Infektion), Krebserkrankung, Transplantation, Behandlung mit Immunsuppressiva, fortgeschrittenem Alter, etc. an einer Abwehrschwäche/unterdrückten Abwehrlage leiden und allein deshalb mehr Wert auf Hygiene legen müssen. Aus Arzt-/Zahnarztpraxien ist es bekannt, hygienische Verhältnisse auch mit großem Aufwand zu schaffen, wobei Desinfektionsgeräte in Privathaushalten eher die Ausnahme sind.

Die desinfizierende Wirkung von UV-Strahlung und Mikrowellenstrahlen ist in diversen Veröffentlichungen beschrieben. Die UV-Desinfektion wird beispielsweise im Kryostat der Firma Leica, in OP-Räumen, Wasserentkeimungsanlagen, Raumluftentkeimungsanlagen, usw. gewerblich bzw. industriell eingesetzt.

Geschlossene Desinfektionsgeräte für den privaten Haushalt, die mit UV-, Mikrowellen-Strahlen und/oder einer Kombination dieser beiden Strahlungsarten arbeiten, sind nicht bekannt.
Die Verwendung von Desinfektionslösungen ist eine mögliche Entkeimungsart. Diese ist allerdings nicht unproblematisch: die steigende Zahl an Allergien geht auf den exzessiven Gebrauch von Desinfektionslösungen zurück. Eine wesentliche Rolle spielt dabei das gesundheitsproblematische Formaldehyd wegen Resistenzbildungen, Kontaktallergien, Umweltbelastungen und hoher Betriebskosten.
Es wurde keine einfache, praktikable Lösung gefunden, wie Parasiten, wie Läuse, Flöhe und Zecken, aus Kleidung, Bürsten, usw. sinnvoll entfernt werden können. Was die Problematik der Hausstaubmilbenallergie angeht, gibt es diverse Empfehlungen: Neben dem Entfernen der Teppichböden wird häufiges Waschen der Bettwäsche und Kleidung empfohlen. Abnutzungserscheinungen, geringere "Lebensdauer", Rückstände von Detergentien, hoher personeller Aufwand und die damit verbundenen Kosten sind wesentliche Nachteile dieser Methoden.

Bakterien, Viren (Vogelgrippe), Pilze und Parasiten können von Tieren auch über Tierpflegemittel auf den Menschen übertragen werden. Beispiele hierfür sind

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Zecken, Flöhe, Federlinge, Haarlinge, Läuse, usw. Diese Parasiten sind häufig Wirte von gefährlichen Krankheiten, die auch für den Menschen lebensgefährlich sein können, z. B. Infektion von FSME durch Zecken. Eine besondere Bedeutung im privaten Haushalt haben Milben: Dies sind Parasiten, die in der Wäsche, Bettwäsche und Teppichböden usw. vorkommen können. Eine Unterart sind die Hausstaubmilben, deren Ausscheidungsprodukte Allergien und in der Folge Asthma erzeugen. Ein Drittel der Bevölkerung leidet an allergischen Reaktionen. Eine weitere Gefahrenquelle im privaten Haushalt sind Baby-Nahrungsutensilien, wie Fläschchen aus Kunststoff oder Glas, Sauger aus Silikon oder Latex oder Gummi, Schnuller aus Kunststoff und /oder Silikon, Gummi und Latex. Die bestehende Lösung ist das unkontrollierte Auskochen in einem Wassertopf oder das temperaturkontrollierte Auskochen in einem Desinfektionsgerät (z. B. Nuk). Durch diese Methode verändern sich die Materialeigenschaften, ersichtlich an Farbänderungen: gesundheitsschädliche Materialbestandteile könnten so vom Baby aufgenommen werden. Zusätzlich gibt es ein weiteres Problem: gesundheitsschädliche Keime, die mit dieser Methode nicht abgetötet werden können, z. B.: Hepatitis C-Viren, sterben erst bei 136 Grad ab. Weitere Aufgaben ergeben sich aus der Tatsache, dass es durchaus Sinn macht, belastete Bad-, WC- und Küchengeräte zu desinfizieren: Beispielsweise das Holzbrett, auf dem Geflügel gelagert wurde (Salmonellengefahr), Putzlappen, Spüllappen, usw. Die Notwendigkeit ergibt sich ganz besonders auch in Haushalten, in denen Personen leben, die eine abgeschwächte Abwehrlage haben: Beispiele sind Transplantationspatienten, HIV-infizierte Peronen, alte Menschen, Personen, die eine angeborene Abwehrschwäche haben, Personen, die eine schwere Erkrankung hinter sich haben, aber auch Menschen, die auf Desinfektionsmittel allergisch reagieren. Personen, die eine akute ansteckende Erkrankung durchmachen, haben ebenfalls einen erhöhten Hygienebedarf: bei z.B. Grippeviren, Mumps, usw., kann es durchaus hilfreich sein, Bettwäsche, Handtücher, Taschentücher, Kleidung usw. zu desinfizieren. Aber auch Personen, die unter einer chronischen ansteckenden Erkrankung leiden: z.B. Hepatitis.

Aufgabe der Erfindung ist es, ein Verfahren und ein Gerät zur Desinfektion von Gegenständen in Haushalten, Zahnarztpraxen und für Firseure bereitzustellen, das einfach und kostengünstig zu nutzen ist und durch die Anwendung des

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Verfahrens mit einem Gerät belastungsfrei für seinen Betreiber ist.

Gelöst wird die Aufgabe erfindungsgemäß dadurch, dass ein schließbares Gehäuse aufweisendes Haushaltsgerät mindestens eine Ultraviolett-Strahlen ausstrahlenden Menge zur Desinfektion von Gegenständen im Inneren des Gehäuses verwendet.

Dies hat den Vorteil, dass auf desinfizierende Lösungsmittel verzichtet werden kann, mit denen man üblicherweise Gegenstände desinfiziert. Bevorzugt können mehrere Strahlungsquellen in einem Gehäuse zur Desinfektion der Gegenstände verwendet werden, damit sichergestellt ist, dass jeder zu desinfizierende Gegenstand im Gehäuse vollumfänglich der desinfizierenden Strahlung ausgesetzt ist. Weiterhin ist es möglich zur Desinfektion der Gegenstände zusätzlich mindestens eine Mikrowellen-Strahlen emittierende Quelle zu verwenden. Dies hat den Vorteil, dass diese Wellen ergänzend zur Ultraviolett-Strahlenbehandlung einen zu desinfizierenden Gegenstand weiter fördernd desinfizieren und je nach Material des zu desinfizierenden Gegenstands der Desinfizierungsgrad erhöht und die Bestrahlungszeit verkürzt werden kann.

Das erfindungsgemäß einzusetzende Verfahren zur Desinfektion in Haushaltsbereichen sieht in einem schließbaren Gehäuse eine Quelle vor, die Ultraviolett-Strahlen emittiert und wobei die Strahlen auf den zu desinfizierenden Gegenstand oder Gegenstände gerichtet sind, indem die Strahlung gestreut oder reflektiert wird und/oder die Quelle beweglich im Gehäuse den oder die zu desinfizierenden Gegenstände umkreist. Mit einem derartigen Verfahren wird einerseits sichergestellt, dass die für die Desinfizierung vorgesehenen Gegenstände der Strahlungsquelle auch vollkommen ausgesetzt sind und andererseits ist mit diesem Verfahren gewährleistet, dass die das Verfahren nutzenden Personenkreise keinerlei Belastungen ausgesetzt sind. Zusätzlich ist das Verfahren kostengünstig und einfach anzuwenden, so dass Bedienungsfehler im Desinfektionsablauf eines Gegenstandes ausgeschlossen sind.

Das erfindungsgemäße Verfahren ist noch wirkungsvoller und effektiver dann einzusetzen, wenn die zur Desinfizierung vorgesehenen Gegenstände zusätzlich mittels Mikrowellen bestrahlt werden. Mikrowellen können zu desinfizierende

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Gegenstände im Unterschied zu ultravioletten Strahlen in einem größeren Umfang durchdringen und können die von Ultraviolett-Strahlen ausgehende desinfizierende Wirkung unterstützen bzw. beschleunigen.

Verbessert lässt sich das erfindungsgemäße Verfahren dann einsetzen, wenn man für die Desinfizierung der Gegenstände Ultraviolett-Strahlen mit unterschiedlicher Wellenlänge nutzt, die auf den zu desinfizierenden Gegenstand abgestimmt sind. Dabei kann es von Vorteil sein, wenn die Desinfizierung mit Ultraviolett-Strahlen und Mikrowellen zeitversetzt oder gleichzeitig je nach Einsatz und Auswahl der zu desinfizierenden Gegenstände erfolgt.

Um die Desinfizierung eines Gegenstandes in einem geschlossenen Gehäuse zu beschleunigen, kann es vorteilhaft sein, dass die Strahlungsquelle im Gehäuse während der Bestrahlung bewegt wird und so unterschiedliche Oberflächenkonturen unter unterschiedlichen Winkelstellungen bestrahlen kann.

Aus Sicherheitsgründen ist es vorteilhaft und erfindungsgemäß zwingend, die Bestrahlung ausschließlich bei geschlossenem Gehäuse durchzuführen, so dass außerhalb des Gehäuses die zur Bestrahlung eingesetzten Quellen nicht oder nur in einem Unbedenklichkeitsbereich nachgewiesen werden können. Die Bestrahlungszeiten sollen erfindungsgemäß sehr kurz gehalten werden und werden vorteilhafterweise in Abhängigkeit von den ausgewählten Wellenlängen auf die zu desinfizierenden Gegenstände abgestimmt. Dabei ist es möglich, die Bestrahlungszeiten für einen zu desinfizierenden Gegenstand unter Ultraviolett-Bestrahlung und unter Mikrowellen-Bestrahlung unterschiedlich zu wählen.

In einem erfindungsgemäß hergestellten Haushaltsdesinfektionsgerät sind in einem schließbaren Gehäuse mindestens eine Ultraviolett-Strahlen emittierende Strahlungsquelle vorgesehen, die einen oder mehrere Gegenstände im Inneren des Gehäuses bestrahlt. Das Gehäuse des Haushaltsdesinfektionsgeräts ist so ausgelegt, dass Strahlen möglichst nicht nach außen treten können, die zur Desinfektion von Gegenständen eingesetzt werden, und dies unabhängig von ihrer Wellenlänge. Die Innenflächen des Gehäuses können Beschichtungen aufweisen, die die Desinfektion von in den Geräten zu desinfizierenden Gegenständen unterstützen.

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Die UV-Strahlungsquelle kann in einem Backofen, Kühlschrank, Gefrierschrank, einer Waschmaschine oder einem Wäscheschrank vorgesehen sein und bei Bedarf kann diese Bestrahlungsquelle aktiviert werden. Je nach Bedarf können in dem Haushaltsdesinfektionsgerät mehrere Strahlungsquellen vorgesehen sein, die die sichere Desinfizierung eines Gegenstandes gewährleisten. Die Strahlungsquelle bzw. die Strahlungsquellen sind in dem Haushaltsdesinfektionsgerät derart angeordnet bzw. ausgerichtet, dass sie den zu desinfizierenden Gegenstand bzw. die zu desinfizierenden Gegenstände vollumfänglich bestrahlen. Die Strahlungsquelle bzw. Strahlungsquellen können dabei beweglich im Gehäuse angeordnet sein. Insbesondere sind sie mittels eines motorischen Antriebs bewegbar.

Neben der oder den Strahlungsquellen, die ultraviolette Strahlung emittieren, können auch weitere Strahlungsquellen im Haushaltsdesinfektionsgerät vorgesehen sein, die Mikrowellen gleichzeitig oder zeitlich versetzt emittieren. Geräteausführungen sind auch denkbar, bei denen man zwischen Mikrowellen-Bestrahlung bzw. UV-Bestrahlung oder einer kombinierten Bestrahlung eines zu desinfizierenden Gegenstandes wählen kann. Es kann auch von Vorteil sein, wenn die zu bestrahlenden Gegenstände im Gehäuse beweglich gehalten und/oder gelagert sind, wobei der oder die Gegenstände mittels motorischem Antrieb bewegbar bzw. gedreht werden können.

Erfindungsgemäß sind auch Bausätze von Ultraviolett-Strahlen und/oder Mikrowellen emittierenden Strahlungsquellen zum Einbau in bestehende Haushaltsgeräte, wie Ofen, Kühlschrank, Gefrierschrank, Waschmaschine, Wäschetrockner, Wäscheschrank vorgesehen, damit in Haushalten vorhandene Geräte einfachst und effektiv erfindungsgemäß nachgerüstet werden können.

In einer Figur der Zeichnung ist stark schematisiert ein erfindungsgemäßes Gehäuse mit allen Funktionsmerkmalen dargestellt, das mit dem erfindungsgemäßen Verfahren betrieben werden kann. Das in der Figur dargestellte Gerät ist beispielhaft zu verstehen und schränkt den beanspruchten Erfindungsgedanken nicht auf eine bestimmte Ausführungsform eines Gerätes ein.

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Die Fig. zeigt mit 10 ein erfindungsgemäßes Haushaltsdesinfektionsgerät, das ein geschlossenes Gehäuse 12 aufweist. Zum Bestücken des Gehäuses 12 mit zu desinfizierenden Gegenständen ist das Gehäuse zu öffnen und es kann und muss vor einer Desinfektionsbehandlung geschlossen werden.

Im Inneren des Gehäuses sind vier Ultraviolett-Strahlen emittierende Quellen 14, 16, 18, 20 vorgesehen und es ist im Haushaltsdesinfektionsgerät 10 auch ein Mikrowellen-Resonator 22, 24 vorgesehen. Auf einem Gitterrost 26 ist ein zu desinfizierender Gegenstand 28 angeordnet, der den Bestrahlungsquellen 14, 16, 18, 20 und auf Bedarf dem Mikrowellen-Resonator 22, 24 ausgesetzt ist.

Der Gitterrost 26 ist bei Bedarf drehbar ausgelegt, so dass der auf dem Gitterrost abgelegte Gegenstand 28 in eine Drehbewegung versetzt werden kann. Ebenfalls können bei Bedarf die Quellen 14, 16, 18, 20 bewegbar im Gehäuse 12 angeordnet sein. Der Mikrowellen-Resonator 12, 24 kann je nach Bedarf gemeinsam mit den Quellen 14, 16, 18, 20 oder getrennt von diesen Quellen 14, 16, 18, 20 betrieben werden. Das Gehäuse 12 kann auf den Innenoberflächen eine Beschichtung aufweisen, die einerseits eine desinfizierende Wirkung für die im Haushaltsdesinfektionsgerät zu desinfizierenden Gegenstände unterstützt und andererseits können die Wandungen des Gehäuses 12 so ausgelegt werden, dass sie geräuschdämmend und strahlenabsorbierend ausgelegt sind.

Das in der Figur gezeigte Gerät kann auch in der dargestellten bzw. in modifizierter Weise in Zahnarztpraxen und/oder in Frisörgeschäften eingesetzt werden.

Das beschriebene Gerät (2. Anhang) ist auch zur Verwendung von Mikrowellen und die kombinierte Verwendung von Mikrowellen und UV-Strahlen zum Abtöten von Parasiten, zur Keimreduktion (Bakterien, Viren, Pilzen, Sporen) auf Arbeitsgeräten und Materialien und zur Trocknung dieser geeignet. Das Gerät kann zur Abtötung von Parasiten und zur Keimreduktion auf Arbeitsgeräten und Materialien, die der Friseur, die Tierpflegeeinrichtung und/oder der Tierarzt verwendet, eingesetzt werden.

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Parasitäre Erkrankungen wie der Befall mit Kopfläusen, Milben, Haarlingen, Ferderlingen, Zecken, etc. kommen sehr häufig vor. Die Bekämpfung dieser Parasiten ist äußerst schwierig. Bei der medikamentösen Behandlung ist mit erheblichen Nebenwirkungen zu rechnen, zudem treten immer häufiger Resistenzen auf. In Kindergärten, Schulen, Ferienlagern, etc. sind Läuse Dauergäste.

Beim Friseur und in Tierpflegeeinrichtungen wird das Hauptaugenmerk auf den Parasiten liegen, beim Tierarzt ist eine gleichzeitige Desinfektion von kontaminierten Instrumenten wichtig. Allerdings kann man sich auch durchaus eine Situation vorstellen, bei der es durch infizierte Bürsten, Kämme, Lockenwickler, etc. zu einer Übertragung von schweren Erkrankungen kommen kann. Über Wunden auf der Kopfhaut, Pickel, infizierte Haarwurzeln, etc. können Bakterien, Viren, Pilze auf den nächsten Kunden übertragen werden. Dabei erscheint es wesentlich, dass damit zu rechnen ist, dass diese Krankheitsträger vornehmlich an den Enden der Borsten der Bürsten und Kämme und der Lockenwickler zu suchen sind.

Die meisten Frisöre versuchen diese Probleme durch desinfizierende Sprühlösungen zu lösen: Allerdings haben diese Lösungen und auch ihre Anwendung gravierende Nachteile. Es ist kaum vorstellbar, dass sie die erforderliche Wirkung erzielen. Durch die sich beim Sprühen gebildeten Aerosole können Allergien ausgelöst werden (wie bei allen Desinfektionslösungen). Sie belasten die Umwelt. Sie sind teuer: Einkauf, Entsorgung, Lagerhaltung, Verwaltung, sachgerechte Verarbeitung, etc. Bei unsachgerechter Behandlung sind sie gefährlich(Augenverletzungen, Verätzungen,etc.).

Aus diesen Gründen werden die Hygieneanforderungen beispielsweise beim Frisör, beim Tierarzt und in Tierpflegeeinrichtungen, auch im Hinblick auf den Selbstschutz für den Behandler, als unzureichend empfunden.

Bei der Desinfektion mit UV-Strahlung kann es sein, dass eine Wirkungsoptimierung dadurch erreicht wird, dass der zu desinfizierende Gegenstand getrocknet wird. Dies kann durch Mikrowellenbestrahlung erfolgen. Ein Beispiel dafür ist, wenn bei der UV-Bestrahlung besonders Wert auf die

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desinfizierende Wirkung gelegt wird, wie dies in Arztpraxen und/oder Zahnarztpraxen der Fall ist.

Die Zielsetzung und Wirkung muss sein: ausreichende abtötende Wirkung bei Parasiten wie Läusen, Zecken, Milben, Haarlingen, Federlingen, etc., Keimreduktion bei Bakterien, Viren, und Pilzen, wobei das Infektionsrisiko gesenkt wird, Verwendung von umweltschonenden Technologien, Personenschutz des Anwenders und Trocknungseffekt.

Erfindungsgemäß erfolgt die Lösung durch Verwendung von Mikrowellen zum Abtöten von Parasiten und zur Keimreduktion, Verwendung einer Kombination aus Mikrowellen- und UV-Strahlung zur Keimreduktion, Geräte, die diese Technologien verwenden und mit denen die Zielsetzungen umgesetzt werden können, zusätzliche Techniken und Einrichtungen an den Geräten, die eine Wirkungsoptimierung verursachen, durch spezielle Einrichtungen an den Geräten wird die Sicherheit erhöht.

Gerade die kombinierte Verwendung von Mikrowelle und UV-Desinfektion bietet große Vorteile. Durch die Mikrowelle können Parasiten auch dann erfolgreich abgetötet werden, wenn sie sich in schwer zugänglichen Gebieten aufhalten, wie dies zum Beispiel an der Borstenfassung der Fall ist. Durch die desinfizierende Wirkung der UV-Strahlen kann die Keimzahl erheblich reduziert werden, das Infektionsrisiko sinkt. Zudem kann durch Mikrowellen die Keimzahl reduziert werden.
Ein weiterer Vorteil ist darin zu sehen, dass durch Mikrowellen ein schneller Trocknungseffekt erzielt werden kann und dieser Trocknungseffekt zur Verbesserung der Wirksamkeit der UV-Strahlen in Bezug auf die desinfizierende Wirkung beiträgt und das Infektionsrisiko sinkt. Zudem kann auch durch Mikrowellen die Anzahl von bestimmten Keimen reduziert werden.

Aus diesem Grund kann es vorteilhaft sein, dass die UV-Bestrahlung zeitlich länger ist als die Mikrowellenbestrahlung.

Es liegt an der Wirkungsweise der Mikrowelle, dass durch Besprühen der Oberflächen mit Wasser Wirkungsoptimierung erreicht werden kann, da UV-

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Strahlen klares Wasser passieren können, wird deren keimabtötende Wirkung dadurch nicht beeinträchtigt. Durch H_2O_2 kann die Wirkung der UV-Strahlen optimiert werden.

Eiweiß gerinnt bei 56 grad Celsius und Parasiten, wenn sie mit Mikrowellen auf eine Temperatur von 60 Grad Celsius erhitzt werden, sterben ab. Da die Wirkung der Mikrowelle auf Wasser besonders intensiv ist, empfiehlt die beschriebene Methode, dass die Instrumente und Gegenstände vor dem Bestrahlen mit Wasser besprüht werden. UV-Strahlen können klares Wasser passieren, also wird deren keimabtötende Wirkung dadurch nicht beeinträchtigt.

Untersuchungen im Zusammenhang mit der Erfindung zeigen, dass Eiweiß in einem handelsüblichen Küchen-Mikrowellengerät bei 600 Watt bereits nach 9 Sekunden gerinnt, bei 360 Grad nach 11 Sekunden und bei 90 Watt nach einer Minute. Alle Angaben sind Circa-Angaben.

Im Bedarfsfall soll, wie man sich das beim Tierarzt, aber auch beim Friseur vorstellen kann, die desinfizierende Wirkung von UV-Strahlen ausgenutzt werden. Dies geschieht idealerweise durch die kombinierte Verwendung von UV-Strahlungsquellen und Mikrowellengerät. Dabei können die Bestrahlungszeiten differieren. Durch Voreinstellungen wird ein einfaches Handling gesichert.

Sobald aber der zu behandelnde Gegenstand aus Metall ist oder aber Metallbestandteile mit Mikrowelle bestrahlt werden, muss dafür gesorgt werden, dass es zu keiner Funkenbildung kommt. Dadurch wird auch vermieden, dass das Gerät beschädigt wird.

Hierzu gibt es verschiedene Möglichkeiten:

1. Der metallische Gegenstand wird teilweise in eine Lösung gelegt, die dafür sorgt, dass es keine Funkenbildung gibt. Auch Wasser eignet sich dafür.
2. Durch einen „ Metalldetektor" erkennt das Gerät, dass metallische Bestandteile bestrahlt werden sollen. Ein Signal gibt diese Information dann in geeigneter Weise weiter.
3. Der zu behandelnde Gegenstand wird vollständig in eine Flüssigkeit,

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vorzugsweise Wasser, gelegt; diese Flüssigkeit wird dann auf die erforderliche Temperatur gebracht. Hierbei kann man sich auch eine Lösung vorstellen, wie zum Beispiel eine H_2O_2-Lösung oder eine Nanosilber-Silberwasserlösung. Durch spezielle Beschichtung der Einsätze, in denen die Gegenstände behandelt werden, kann die abtötende bzw. die keimreduzierende Wirkung verstärkt werden.

4. Blitzableiter

Erreichte Vorteile sind dabei: Sichere Parasitenabtötung; vermindertes Infektionsrisiko durch Keimreduktion; umweltschonendes Verfahren; Kostenreduktion: Einkauf, Verwaltung, Abrechnung, Lagerhaltung, sachgerechte Anwendung, Entsorgung; Personenschutz des Anwenders; keine Allergien; Trocknungseffekt.

Das erfindungsgemäße Gerät zeichnet sich durch einfaches Handling durch wirkungsoptimierte Voreinstellungen aus; formschönes Design ist möglich; Wirkungsoptimierung durch kombinierte Verwendung von Mikrowelle- und UV-Strahlung; durch optische oder akustische Anzeigen nach erfolgter Bestrahlung; Sicherheitsabschaltung und/oder Sicherheitssignal; Temperaturanzeige; Sicherheitsoptimierung dadurch, dass die Bestrahlung nur in geschlossenem Gerät stattfindet.

Ein erfindungsgemäßes Mikrowellengerät wird zum Abtöten von Parasiten wie Läusen, Zecken, Milben, Haarlingen, Federlingen, Hirschläusen, etc. und zur Keimreduktion von Bakterien, Viren und Pilzen verwendet, und dieses Gerät wird vorzugsweise in Frisörläden, Tierpflegeeinrichtungen und in Tierarztpraxen angewandt. Das Gerät verfügt über Voreinstellungen, die die Bestrahlungszeit und Temperatur u.a. über die Leistung des Gerätes optimieren, wobei die Parasitenabtötung, keimabtötende Wirkung und die Schonung der bestrahlten Gegenstände Berücksichtigung finden. Das Gerät verfügt über eine Sicherheitsabschaltung. Das Gerät verfügt über eine Einrichtung, die wie ein Metalldetektor wirkt, und dieser Metalldetektor löst eine Sichheitsabschaltung oder ein Signal aus. Dadurch sollen Schäden an dem Gerät vermieden werden. In dieses Gerät können spezielle Einsätze gestellt werden, oder dieses Gerät verfügt über spezielle Einsätze, die eine leistungsoptimierte und eine sichere

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Handhabung gewährleisten und die zur Aufnahme von Flüssigkeiten geeignet sind. In dieses Gerät können spezielle Einsätze gestellt werden, oder dieses Gerät verfügt über spezielle Einsätze, die eine leistungsoptimierte und sichere Handhabung gewährleisten und die aus einem Material sind, das UV-Strahlen durchlässt (Beispiel Quarzglas). Dieses Gerät verfügt über Vorrichtungen, die sicherstellen, dass die zu entkeimenden Gegenstände und/oder die Gegenstände, auf den Parasiten abgetötet werden sollen, in einer definierten Weise an die Mikrowellen und/oder UV-Strahlungsquelle/Strahlungsquellen herangeführt wird, wobei die Bestrahlung den maximalem Wirkungsgrad bietet. Beispielhaft werden Führungsschienen, Einschubschächte, Arretierungen, Versteifungen, schwenkbare Vorrichtungen, etc. aufgeführt. Das Gerät verfügt über eine Einrichtung, die eine ähnliche Wirkung wie ein Blitzableiter hat. Dadurch sollen Schäden durch Funkenbildung und Überspannungsschäden im Gerät vermieden werden. Das Gerät zeigt ein optisches und/oder ein akustisches Signal an, wenn der Bestrahlungsvorgang erfolgreich beendet ist. Das Gerät zeigt durch ein akustisches und/oder ein optisches Signal an, wenn eine Störung auftritt. Das das Gerät verfügt über eine Temperaturanzeige bzw. über eine Temperaturkontrolle. Der Bestrahlungsvorgang wird über Schalter, Taster, Druckknöpfe, etc. gestartet. Dabei werden unterschiedlich voreingestellte Bestrahlungsprogramme durch verschiedene Bedientasten, Schalter o. ä. bedient. Das Gerät verfügt über eine Einrichtung, die sicherstellt, dass es nur betrieben werden kann, wenn es geschlossen ist. Dadurch wird vermieden, dass Strahlung austreten kann. Das Gerät verfügt über eine Einrichtung, mit der man den Abtötungs-Entkeimungsvorgang visualisieren kann, beispielhaft könnte dies durch eine durchsichtige Scheibe sein. Das Gerät verfügt über eine Einrichtung, die ein Besprühen der zu bestrahlenden Gegenstände ermöglicht. Zum Bespiel mit Wasser oder einer H_2O_2 Lösung; dadurch wird die Wirkung optimiert. Das Gerät verfügt über eine oder mehrere UV-Strahlungsquellen. Das Gerät verfügt über eine oder mehrere UV-Lichtquellen und zusätzlich über eine Einrichtung, die eine Dreh- und/oder eine Schwenkbewegung über eine oder mehrere Achsen ermöglicht. Ziel ist eine optimale Ausleuchtung der Gegenstände, die bestrahlt werden. Das Gerät verfügt über eine oder mehrere UV-Lichtquellen und zusätzlich über Spiegel, Linsen, Gitter, die eine Optimierung der Wirkung im Sinne eine Fokussierung, Verstärkung, Ablenkung, Brechung, etc. der UV-Strahlen verursachen. Das Gerät verfügt über eine oder mehrere UV-Lichtquellen

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und die Bestrahlungsdauer kann über eine Zeitschaltuhr geregelt werden.Das Gerät verfügt über eine oder mehrere UV-Lichtquellen und die Bestrahlungsdauer ist über Voreinstellungen an die Bestrahlungsdauer der Mikrowellenbestrahlung gekoppelt. Das Gerät verfügt über eine besondere Beschichtung, die die Parasitenabtötung und Keimreduktion unterstützt. Beispiele dafür sind Beschichtungen aus Nanosilber, Teflon, usw. Mikrowellengeeignete Materialien und UV-beständige Materialien kommen zum Einsatz. Die Mikrowellen werden zum Abtöten von Parasiten wie Läusen, Flöhen, Zecken, Milben, Haarlingen, Federlingen, Hirschläusen, etc. und zur Keimreduktion von Bakterien, Viren und Pilzen verwendet und Arbeitsmittel und Materialien können getrochnet werden. Diese Methode wird vorzugsweise in Frisörläden, Tierpflegeeinrichtungen, Arztpraxen, Zahnarztpraxen, zahntechnischen Laboren, kieferorthopädischen Praxen, Tierarztpraxen oder anderen Einrichtungen angewandt, in denen ein erhöhtes Hygienebewusstsein existiert, bzw. in denen spezielle Hygieneanforderungen existieren. Die Mikrowellen werden zum Abtöten von Parasiten, wie Läusen, Flöhen, Zecken, Milben, Haarlingen, Federlingen, Hirschläusen, etc.und zur Keimreduktion von Bakterien, Viren und Pilzen verwendet und Arbeitsmittel und Materialien können getrocknet werden. Die Methode wird vorzugsweise in Frisörläden, Tierpflegeeinrichtungen, Arztpraxen, Zahnarztpraxen, zahntechnischen Laboren, kieferorthopädischen Praxen, Tierarztpraxen oder anderen Einrichtungen angewandt, in denen ein erhöhtes Hygienebewußtsein existiert, bzw. in denen spezielle Hygieneanforderungen existieren und zusätzlich zur Mikrowellenbestrahlung eine Bestrahlung mit UV-Strahlen erfolgt, d.h. kombinierte Anwendung beider Methoden. Die Mikrowellen werden zum Abtöten von Parasiten, wie Läusen, Flöhen, Zecken, Milben, Haarlingen, Federlingen, Hirschläusen, etc., und zur Keimreduktion von Bakterien, Viren und Pilzen verwendet, und Arbeitsmittel und Materialien können getrochnet werden. Die Methode wird vorzugsweise in Frisörläden, Tierpflegeeinrichtungen, Arztpraxen, Zahnarztpraxen, zahntechnischen Laboren, kieferorthopädischen Praxen, Tierarztpraxen oder anderen Einrichtungen angewandt wird, in denen ein erhöhtes Hygienebewußtsein existiert, bzw. in denen spezielle Hygieneanforderungen existieren, und zusätzlich werden die zu bestrahlenden Gegenstände mit Flüssigkeit besprüht. Die Mikrowellen werden zum Abtöten von Parasiten wie Läusen, Flöhen, Zecken, Milben, Haarlingen, Federlingen, Hirschläusen, etc. und zur Keimreduktion von Bakterien, Viren und

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Pilzen verwendet, und Arbeitsmittel und Materialien können getrochnet werden. Die Methode wird vorzugsweise in Frisörläden, Tierpflegeeinrichtungen, Arztpraxen, Zahnarztpraxen, zahntechnischen Laboren, kieferorthopädischen Praxen, Tierarztpraxen oder anderen Einrichtungen angewandt, in denen ein erhöhtes Hygienebewußtsein existiert, bzw. in denen spezielle Hygieneanforderungen existieren und zusätzlich wird über chemische und/oder physikalische Methoden eine Wirkungsoptimierung erreicht. Bürsten, Kämme, Lockenwickler und andere Gegenstände, mit denen man im Frisörgeschäft, in der Tierpflegeeinrichtung oder beim Tierarzt arbeitet, sind aus mikrowellengeeigneten und UV-beständigen Materialien hergestellt.

Diese Anmeldung (3. Anhang) betrifft Indikationsbereiche, in denen auf eine schonende, kostengünstige Entkeimung Wert gelegt wird.
Aus diversen wissenschaftlichen Abhandlungen ist die Entkeimung mittels ultravioletter Strahlung bekannt. Besonders bei der Entkeimung von Trinkwasser wird sie erfolgreich eingesetzt. Aber auch in Krankenhäusern findet die UV-Sterilisation in Operationsräumen statt. Des Weiteren werden Materialien mit UV-Licht sterilisiert, die durch herkömmliche Sterilisationsarten wie harte Strahlen, Hitze, Druck, Dampf oder Chemikalien ihre Materialeigenschaft ändern.

Die Wirksamkeit der UV-Bestrahlung auf Bakterien soll auf denjenigen Wellenlängen des Lichtes beruhen, die von den Nukleinsäuren absorbiert werden. Durch die Strahlen werden die Nukleinsäuren verändert, so dass eine Vermehrung nicht mehr stattfinden kann. Dabei werden vorzugsweise UV-Lampen verwendet, die eine starke Strahlung erzeugen, um die Zeit der Bestrahlung möglichst kurz zu halten.

In der Medizin und in der Zahnmedizin gibt es besondere Anforderungen an die Hygiene. Anfang 2006 wurden für Zahnarztpraxen in der EU Hygienerichtlinien (RKI-Richtlinien) fixiert, um allgemeingültige Hygienestandards zu erreichen. Ein Teil dieser Vorschriften besagt, dass Arbeitsabläufe, die sich wiederholen, für jede Praxis "individuell" schriftlich definiert werden müssen, und dass diese Abläufe den RKI -Richtlinien entsprechen müssen. Zusätzlich wurde eine Dokumentationspflicht fixiert. Die Bundeszahnärztekammer (BZÄK) und der Deutsche Arbeitskreis für Hygiene in der Zahnarztpraxis (DAHZ) haben einen

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Hygieneplan mit Betriebsanweisungen erarbeitet, in dem Wege, Geräte und Materialien beschrieben werden, mit denen die RKI-Richtlinien eingehalten werden können.
In der zahnärztlichen Tätigkeit gibt es Arbeitsabläufe, in denen Materialien oder Geräte eingesetzt werden, die durch die Empfehlungen der BZÄK und des DAHZ (s.o.) nicht optimal gelöst sind.

Auszüge aus dem Hygieneplan:

"Auszug aus dem Hygieneplan/Betriebsanweisungen für die Zahnarztpraxis: Geeignete Desinfektionsverfahren müssen bakterizid, fungizid und zusätzlich begrenzt viruzid (inklusive HBV, HCV, HIV) wirksam sein. "

"Nach jeder abgeschlossenen Aufbereitung (Desinfektion oder Sterilisation) von Medizinprodukten hat eine Freigabe zur erneuten Verwendung zu erfolgen. Die Freigabe ist durch Beschäftigte mit Freigabeberechtigung vorzunehmen und ist zu dokumentieren. "

Im Hygieneplan steht unter "Abformungen, zahntechnische Werkstücke":
Wie: Entweder: Sprühdesinfektion im geschlossenen System
(Reinigung- und Desinfektionsgerät)
oder: Tauchdesinfektion.
Wann: - unmittelbar nach Entnahme aus dem Mund
- Abformungen im Anschluss an das Abspülen
- Zahntechnische Werkstücke vor Versand an das zahntechnische Labor
- Zahntechnische Werkstücke nach Erhalt aus dem zahntechnischen Labor
Wer: Beschäftigte im Untersuchungs-, Behandlungs- oder Wartungsbereich, Beschäftigte im zahntechnischen Labor/Praxislabor

Beispiel 1: Abdrucknahme:
Nach der Abdrucknahme empfiehlt der Hygieneplan eine Desinfektion mit Sprühlösung oder Tauchbad: Die eingesetzte Desinfektionslösung hat gravierende Nachteile:
1. Eine chemische Veränderung der Oberfläche kann nicht ausgeschlossen werden. Dadurch kann es zu Oberflächenveränderungen kommen, die die

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Passgenauigkeit der Arbeiten beeinflussen können.
2. Der Einsatz dieser Chemikalien, inklusive Bestellung, Lagerhaltung, Kaufpreis ist teuer. Mit dem Einsatz der Chemikalien ist fast an jedem Arbeitstag ein hoher finanzieller und personeller Aufwand verbunden.

a. Verwaltungsaufwand bei Einkauf, Lagerhaltung, Rechungswesen, Kontrolle, ggf. Reklamation;

b. Aufwand beim Ansetzen der Lösung, Kontrolle, Dokumentation der ordnungsgemäßen Verwendung der Chemikalien, Schulung des Personals;

c. Entsorgung dieser Umwelt belastenden Chemikalien und damit verbundener personeller Aufwand;

d. zusätzlicher finanzieller Aufwand für Schutzkleidung: Bsp. Schutzhandschuhe.

3. Durch den Einsatz dieser Chemikalien kommt es zu Sensibilisierung und allergischen Reaktionen, gesundheitliche Schäden für den Zahnarzt, sein Personal und den Patienten, ausgelöst durch Aerosole in der Luft oder durch Hautkontakt, können nicht ausgeschlossen werden.
4. Auf die Problematik der Hospitalkeime wird hingewiesen.
5. Umweltbelastung durch die Desinfektionsmittel.
6. Erhöhtes Gefahrenpotential in der Praxis: Diese Mittel haben in der Regel ätzende Eigenschaften, dadurch können Personen geschädigt werden.

Beispiel 2:
Die Prothese kommt aus dem Labor.
Um eine lückenlose Hygienekette zu gewährleisten, müsste die Arbeit vor dem Einsetzen desinfiziert werden. Eine Desinfektion mit Sprühlösung kann beim Patienten auf seiner gut durchbluteten Schleimhaut Kontaktallergien erzeugen. Es gibt keine Hinweise, wie die Sprühlösung so von der desinfizierten zahntechnischen Arbeit entfernt werden kann, dass für den Patienten keine gesundheitlichen Schäden entstehen.

Beispiel 3
Prothesenreparatur:
Die Problematik ist vergleichbar mit der Problematik bei den Abdrucknahmen.

Beispiel 4

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Verbrauchsmaterialien:
Beispiele dafür sind: Tupfer, Kerrstangen zur Bissnahme und Occlusionsfolien. Guttaperchastifte und Kunststoffstifte werden in 10-er Packungen gekauft: Bei der Entnahme eines Stiftes kommt es immer wieder zu Verunreinigungen. Die restlichen Stifte können durch die oben beschriebenen Desinfektionsarten nicht befriedigend entkeimt werden.

Aufgabe der Erfindung ist es ein Desinfektionsverfahren und ein Desinfektionsgerät bereitzustellen, das die Entkeimung von im zahnärztlichen Betrieb verwendeten Geräten, Abdrücken, zahntechnischen Arbeiten, Instrumenten, etc. vereinfacht und die Kosten minimiert

Die Entkeimung mit UV-Strahlen ist eine Methode, bei der folgende Nachteile entscheidend verbessert werden können:
1. UV-Entkeimung ist vergleichsweise kostengünstig
2. Keine Nachteile durch Chemikalien: Kontaktallergien, Verätzungen, etc.
3. Keine Umweltbelastung
4. UV-Licht verursacht keine Ungenauigkeiten und Oberflächenveränderungen, die die Paßgenauigkeiten beeinflussen.
5. Kein großer personeller Aufwand, um ein vorschriftsmäßiges Desinfektionsverfahren für Zahnarztpraxen und Dentallabors bereitzustellen.

Beispiel 5
Gummipolierer
Gummipolierer werden in der Zahnarztpraxis z. B. zum Polieren von Füllungen und prothetischen Arbeiten eingesetzt. Die Desinfektion dieser Gummipolierer ist schwierig: Bohrerbad und andere Tauchbäder greifen die Oberfläche an, in Gummikelchen kann sich eine Luftblase bilden, die die Desinfektion beeinflusst; werden Gummikelche im Sterilisator einkeimt, dann ändern sich die Materialeigenschaften, die Polierer sind nicht mehr so haltbar.

Gerät, Methode/Verfahren zur Desinfektion von Abdrücken in der Zahnarztpraxis und zahntechnischen Arbeiten, zur Desinfektion von Geräten und Instrumenten und zur Desinfektion von Verbrauchsmaterialien, die unter Hitze, Druck, Feuchtigkeit oder Chemikalien schlechter oder teurer zu desinfizieren sind. Diese

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Desinfektion erfolgt unter Verwendung von kurzwelligem bzw. ultrakurzwelligem Licht: UV-Strahlung.

Die Desinfektion erfolgt in einem Gerät, das eine optimale Ausleuchtung der zu desinfizierenden Abdrücke, zahntechnischen Arbeiten, Instrumente, Geräte und Materialien gewährleistet. Dies geschieht durch die Verwendung einer, zweier oder mehrerer UV-Lampen oder Röhren, die ggf. in einer definierten Stellung angebracht sind, so dass alle Flächen eines zu desinfizierenden Körpers vollumfänglich beleuchtet bzw. bestrahlt werden. Diese UV-Lampen können - bei Bedarf - auch verschiedenartig sein, d. h. sie können auch UV-Strahlen mit unterschiedlicher Wellenlänge erzeugen.

Die Desinfektion erfolgt in einem Gerät, das eine optimale Ausleuchtung der zu desinfizierenden Abdrücke, zahntechnischen Arbeiten, Instrumente, Geräte und Materialien gewährleistet. Dies geschieht durch die Verwendung von Hilfsmitteln zur Focusierung, Streuung, Bündelung, Brechung, Transmission, Reflektion, Beugung, Absorption, Ablenkung, Verstärkung oder Abschwächung der Strahlen aus UV-Lampen oder Röhren. Diese Hilfsmittel können sein: z, B.: Lichtleiter, Linsen, Gläser, Lichtverstärker, Spiegel, Gittern, Blende, etc. Besonders vorteilhaft erscheinen parabolförmige Spiegel.

Die Desinfektion erfolgt in einem Gerät, das eine optimale Ausleuchtung der zu desinfizierenden Abdrücke, zahntechnischen Arbeiten, Instrumente, Geräte und Materialien gewährleistet. Dies geschieht durch die Verwendung von Einsätzen, die eine reproduzierbare Stellung der zu desinfizierenden Gegenstände gewährleisten (z. B.: vorgegebene Auflageflächen, die der Kontur der zu desinfizierenden Gegenstände so nachgebildet sind, dass alle Flächenteile der Gegenstände ausreichend intensiv und zeitlich bestimmt bestrahlt werden können). Ein weiteres Beispiel sind spezielle Bohrerständer, die pssgenau in das Gerät eingebracht werden können, dadurch wird eine optimale Ausleuchtung/Desinfektion erreicht.

Die Desinfektion erfolgt in einem Gerät, das eine optimale Ausleuchtung der zu desinfizierenden Abdrücke, zahntechnischen Arbeiten, Instrumente, Geräte und Materialien gewährleistet. Dies geschieht durch die Verwendung einer oder

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mehrerer Lichtquellen, die um den zu desinfiziereden Gegenstand rotieren. Die Geschwindigkeit richtet sich nach der erforderlichen Beleuchtungsdauer.

Die Desinfektion erfolgt in einem Gerät, das eine optimale Ausleuchtung der zu desinfizierenden Abdrücke, zahntechnischen Arbeiten, Instrumente, Geräte und Materialien gewährleistet. Dies geschieht durch die Verwendung einer Vorrichtung/eines Gerätes, das eine Rotation der zu desinfizierenden Gegenstände verursacht. Alle Gegenstände können - bei Bedarf - automatisch im Gerät gedreht, verschoben, und/oder verschwenkt werden, so dass sich die Auflagefläche der Gegenstände während der Desinfektion im Gerät verändert.

Die Desinfektion erfolgt in einem Gerät, das eine optimale Ausleuchtung der zu desinfizierenden Abdrücke, zahntechnischen Arbeiten, Instrumente, Geräte und Materialien gewährleistet. Dies geschieht durch die Verwendung von Spiegeln, Gittern und Blenden, um zu verhindern, dass es zu Schattenbildungen und zur Änderung der gewünschten Wellenlänge des "UV-Lichtes" kommt.

Die Desinfektion erfolgt in einem Gerät, das eine optimale Ausleuchtung der zu desinfizierenden Abdrücke, zahntechnischen Arbeiten, Instrumente, Geräte und Materialien gewährleistet. Dies geschieht durch die Verwendung von Spiegeln und Blenden, die in einem bestimmten Winkel zu einander stehen. Dadurch sollen Schattenbildungen, Erhöhungen, Verringerungen der Wellenlänge vermieden werden.

Die Desinfektion erfolgt in einem Gerät, das eine optimale Ausleuchtung der zu desinfizierenden Abdrücke, zahntechnischen Arbeiten, Instrumente, Geräte und Materialien gewährleistet. Dies geschieht durch die Verwendung eines Klimagerätes, im Sinne eines Luftentfeuchters bzw. Luftbefeuchters und/oder durch Verwendung eines Kühlgerätes/einer Heizung oder eines Lüfters, die über einen Thermostat oder Fühler geregelt werden, und dafür sorgen, dass sich die Temperatur nicht unkontrolliert verändert.

Die Desinfektion erfolgt in einem Gerät, das eine optimale Ausleuchtung der zu desinfizierenden Abdrücke, zahntechnischen Arbeiten, Instrumente, Geräte und Materialien gewährleistet. Dies geschieht durch die Verwendung von

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eingebautem / eingebauten Geräten, im Sinne einer Zeitschaltuhr, ggf. gekoppelt mit Lichtschranken zum Einschalten/Ausschalten, bei denen die Bestrahlungdauer fest eingestellt ist oder frei wählbar ist. Sollten gesetzliche Bestimmungen eine Mindestbestrahldauer vorschreiben, kann diese Zeit so eingestellt werden, dass diese Zeit nicht unterschritten wird.

Die Desinfektion erfolgt in einem Gerät, das durch die Verwendung einer Lichtschranke oder durch einen Schalter dafür sorgt, dass die UV-Lampen bzw. Röhren nur dann eingeschaltet werden, wenn das Gerät geschlossen ist und somit ausgeschlossen ist , dass der Bediener des Geräts durch das UV-Licht geschädigt wird.

Die Desinfektion erfolgt in einem Gerät, das durch eine voreingestellte Impulszahl oder durch eine Impulszahl, die vom Bediener variiert werden kann, optimal arbeitet. Eine entsprechende Vorrichtung am Gerät ermöglicht dies. Sollten gesetzliche Bestimmungen eine Mindestimpulszahl vorschreiben, kann das Gerät so voreingestellt werden, dass diese Mindestimpulszahl nicht unterschritten werden kann.

Die Desinfektion erfolgt in einem Gerät, das einen Einsatz zum Herausnehmen hat, der auch außerhalb des Gerätes gereinigt werden kann. Dieser Einsatz verfügt vorzugsweise über einen Ozon-Auffangbehälter.

Die Desinfektion erfolgt in einem Gerät, das einen Einsatz zum Herausnehmen hat, der auch außerhalb des Gerätes gereinigt werden kann. Dieser Einsatz verfügt vorzugsweise über einen Ozonauffangbehälter. Dieser Einsatz verfügt vorzugsweise über eine Vorrichtung, die ein Absaugen von möglicherweise entstehendem Ozon gefahrlos ermöglicht (z. B. in Kombination mit einem Rückschlagventil).

Die Desinfektion erfolgt in einem Gerät, das zusätzlich über eine Vorrichtung verfügt, die entstehendes Ozon zur Desinfektion ausnutzt, zusätzlich zu der Desinfektion mit UV-Licht. Beispiel: Lüfter.

Die Desinfektion erfolgt in einem Gerät, das das zusätzlich über eine Vorrichtung

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zur Dokumentation der Desinfektion verfügt. Zusätzlich können Bediener, Datum, etc. eingegeben werden. Sollten über verbindliche Richtlinien Bestrahlungszeiten oder Strahlungsintensitäten oder eine zeitliche Dauer, bezogen auf einen zu desinfizierenden Gegenstand, vorgegeben sein, so können diese Parameter, bezogen auf den zu desinfizierenden Gegenstand, nicht geändert werden.

Die Desinfektion erfolgt in einem Gerät, das zusätzlich über eine Vorrichtung verfügt, die durch ein optisches und/oder akustisches Signal anzeigt, wenn der Desinfektionsvorgang zu kurz war.

Die Desinfektion erfolgt in einem Gerät, das zusätzlich über eine Vorrichtung verfügt, die durch ein optisches und/oder akustisches Signal anzeigt, wann der Bestrahlungsvorgang/Desinfektionsvorgang abgeschlossen ist.

Die Desinfektion erfolgt in einem Gerät, in das zusätzlich ein Meßgerät eingebaut ist, das durch ein optisches und/oder akustisches Signal anzeigt, wenn die Bestrahlungsintensität unzureichend ist.

Die Desinfektion erfolgt in einem Gerät, in das zusätzlich ein Meßgerät eingebaut ist, das durch ein optisches und/oder akustisches Signal anzeigt, wenn die Ozonkonzentration überhöht ist.

Die Desinfektion erfolgt in einem Gerät, in das zusätzlich ein Gerät zur Erzeugung eines Luftstroms eingebaut ist. Ziel dieser Vorrichtung ist es, Wassertropfen, Speicheltropfen, Bluttröpfchen, etc. zu verblasen.Dadurch wird erreicht, dass die erforderliche Durchdringtiefe für die UV-Strahlen reduziert wird, somit wird der Desinfektionsvorgang optimiert. Dieser Luftstrom kann in Verbindung mit der Wärme, die von der UV-Lampe bzw. UV-Röhre erzeugt wird, oder aber durch eine Zusatzheizung vorgewärmt werden, um zusätzlich eine Trocknung der zu desinfizierenden Gegenstände zu erreichen. Der Luftstrom kann durch Geräte wie Kompressor, Gebläse, Ventilator, etc. erzeugt werden.

Die Desinfektion erfolgt in einem Gerät, in das ein Aufnahmebehälter zur Aufnahme von Indikatoren zur Kontrolle der Wirksamkeit des Gerätes eingebaut

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ist.

Die Desinfektion erfolgt in einem Gerät, das über eine Vorrichtung verfügt, die eine erfolgreiche Desinfektion auch ohne Netzbetrieb ermöglicht, beispielsweise über eine Batterie und/oder eine Solarzelle, etc. Somit könnte das Gerät auch zum Transport zum bzw. ins Labor verwendet werden.

In einer weiteren Ausführungsform wird die UV-Quelle(n) vom Mikrowellengenerator energetisch gespeist und dies ist bei Geräten einsetzbar, die im Haushaltsbereich, im Frisörgeschäft oder in Zahnarztpraxen eingesetzt werden.

Durch die Verwendung von UV-Strahlen und/oder Mikrowellen zur Desinfektion von Gegenständen im Haushaltsbereich, Zahnarztbereich und im Frisörbereich soll die Aufgabe einer wirksamen Entkeimung bzw. Parasitenbekämpfung zur Gesundheitsförderung bzw. zur prophylaktischen Anwendung erledigt werden. Geräte, in denen die Desinfektion von Gegenständen durchgeführt werden sollen, weisen ultraviolette Strahlung emittierende Quellen und/oder Mikrowellen emittierende Quellen auf. Diese Quellen können beweglich in einem geschlossenen Gerät angeordnet sein. Ebenfalls werden erfindungsgemäß Bausätze für die schon vorhandenen Geräte in Haushalten, Arztpraxen und Frisörgeschäften beschrieben.

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Patentansprüche

1. Verwendung eines ein schließbares Gehäuse aufweisendes Haushaltsgeräts mit mindestens einer Ultraviolett-Strahlen ausstrahlenden Quelle zur Desinfektion von Gegenständen im Inneren des Gehäuses.

2. Verwendung nach Anspruch 1, dadurch gekennzeichnet, dass mehrere im Gehäuse angeordnete Strahlungsquellen verwendet werden.

3. Verwendung nach Anspruch 1 oder 2, dadurch gekennzeichnet, dass zur Desinfektion der Gegenstände zusätzlich mindestens eine Mikrowellen-Strahlen emittierende Quelle verwendet wird.

4. Verfahren zur Desinfektion von Gegenständen im Haushaltsbereich mit einer in einem schließbaren Gehäuse vorgesehenen Quelle, die Ultraviolett-Strahlen emittiert und wobei die Strahlen auf den zu desinfizierenden Gegenstand oder Gegenstände gerichtet sind, indem die Strahlung gestreut oder reflektiert wird und/oder die Quelle beweglich im Gehäuse den oder die zu desinfizierenden Gegenstände umkreist.

5. Verfahren nach Anspruch 4, dadurch gekennzeichnet, dass der zu desinfizierende Gegenstand zusätzlich mittels Mikrowellen bestrahlt wird.

6. Verfahren nach Anspruch 4 oder 5, dadurch gekennzeichnet, dass der zu desinfizierende Gegenstand mit Ultraviolett-Strahlen unterschiedlicher Wellenlänge bestrahlt wird.

7. Verfahren nach einem der Ansprüche 4 bis 6, dadurch gekennzeichnet, dass die Desinfizierung mit Ultraviolett-Strahlen und Mikrowellen zeitversetzt oder gleichzeitig erfolgt.

8. Verfahren nach einem der Ansprüche 4 bis 7, dadurch gekennzeichnet, dass der zu desinfizierende Gegenstand im Gehäuse während der Bestrahlung bewegt wird.

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9. Verfahren nach einem der Ansprüche 4 bis 8, dadurch gekennzeichnet, dass die Bestrahlung ausschließlich bei geschlossenem Gehäuse erfolgt.

10. Verfahren nach einem der Ansprüche 6 bis 9, dadurch gekennzeichnet, dass die Bestrahlungszeiten für den/die zu desinfizierenden Gegenstand bzw. Gegenstände in Abhängigkeit von den ausgewählten Wellenlängen ausgewählt werden.

11. Verfahren nach einem der Ansprüche 6 bis 9, dadurch gekennzeichnet, dass unterschiedliche Bestrahlungszeiten für die Ultraviolett-Bestrahlung und die Mikrowellen-Bestrahlung gewählt werden.

12. Haushaltsdesinfektionsgerät mit mindestens einer in einem schließbaren Gehäuse vorgesehenen Ultraviolett-Strahlen emittierenden Strahlungsquelle, die einen oder mehrere Gegenstände im Inneren des Gehäuses bestrahlt.

13. Haushaltsdesinfektionsgerät nach Anspruch 12, dadurch gekennzeichnet, dass die Strahlungsquelle in einem Backofen, Kühlschrank, Gefrierschrank, einer Waschmaschine oder einem Wäscheschrank vorgesehen ist.

14. Haushaltsdesinfektionsgerät nach Anspruch 12 oder 13, dadurch gekennzeichnet, dass mehre Strahlungsquellen vorgesehen sind.

15. Haushaltsdesinfektionsgerät nach einem der Ansprüche 12 bis 14, dadurch gekennzeichnet, dass die Strahlungsquelle oder Strahlungsquellen den zu desinfizierenden Gegenstand vollumfänglich bestrahlen.

16. Haushaltsdesinfektionsgerät nach einem der Ansprüche 12 bis 15, dadurch gekennzeichnet, dass die Strahlungsquelle(n) beweglich im Gehäuse angeordnet sind, insbesondere mittels eines motorischen Antriebs.

17. Haushaltsdesinfektionsgerät nach einem der Ansprüche 12 bis 16, dadurch gekennzeichnet, dass die Strahlungsquelle(n) neben ultravioletter

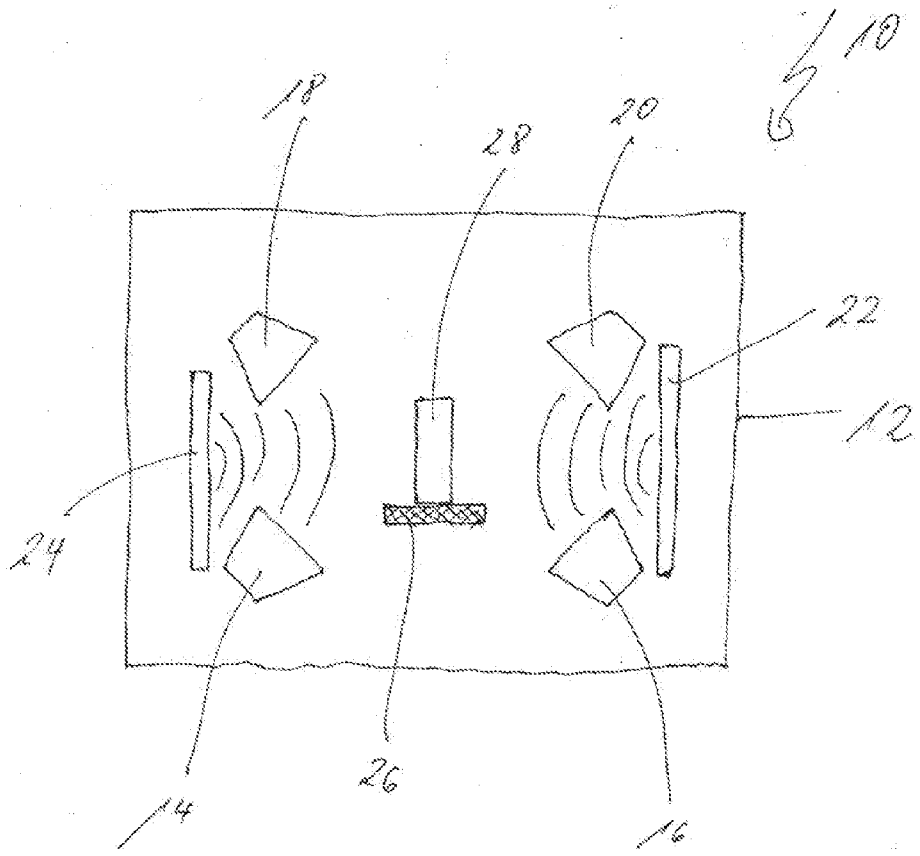
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Strahlung auch eine weitere auch eine weitere Strahlungsquelle(n) aufweisen, die Mikrowellen gleichzeitig oder zeitlich versetzt emittieren.

18. Haushaltsdesinfektionsgerät nach einem der Ansprüche 12 bis 17, dadurch gekennzeichnet, dass der oder die zu bestrahlenden Gegenstände beweglich im Gehäuse gehalten und/oder gelagert sind, insbesondere mittels eines motorischen Antriebs.

19. Bausatz von Ultraviolett-Strahlen und/oder Mikrowellen emittierenden Strahlungsquellen zum Einbau in bestehende Haushaltsgeräte, wie Ofen, Kühlschrank, Gefrierschrank, Waschmaschine, Wäschetrockner, Wäscheschrank.

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INTERNATIONAL SEARCH REPORT

International application No
PCT/DE2007/001735

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61L2/10 A61L2/12 F25D17/04 F24C14/00 A47L15/42
D06F35/00

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)
A61L F25D F24C A47L D06F

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, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 166 528 A (LE VAY THURSTON C [US]) 24 November 1992 (1992-11-24) claims 1,6,17; figures 2,3	1-19
X	US 2002/122743 A1 (HUANG RUIYAN [CN]) 5 September 2002 (2002-09-05) paragraph [0035]; claims 1,3,7,16	1-19
X	DE 200 14 633 U1 (MUENZER MANFRED [DE]) 23 November 2000 (2000-11-23) claim 1; figure 1	1-19
X	WO 2005/047562 A (LLOYD-DAVY DAWN YVONNE [GB]; PARKIN IVAN PAUL [GB]) 26 May 2005 (2005-05-26) page 10; claim 1	1-19

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[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
6 Februar 2008	18/02/2008

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INTERNATIONAL SEARCH REPORT

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 192 126 A (HO MEI LIU; CHENG HSIUNG TSENG) 6 January 1988 (1988-01-06) claim 10	1-19
X	US 3 571 939 A (PAUL BEVERLY) 23 March 1971 (1971-03-23) column 4, lines 27-36; claim 1	1-19

Form PCT/ISA/210 (continuation of second sheet) (April 2005)

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Ex. 1002
Page 467 of 701

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/DE2007/001736

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5166528	A	24-11-1992	NONE
US 2002122743	A1	05-09-2002	NONE
DE 20014633	U1	23-11-2000	NONE
WO 2005047562	A	26-05-2005	NONE
GB 2192126	A	06-01-1988	NONE
US 3571939	A	23-03-1971	NONE

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INTERNATIONALER RECHERCHENBERICHT

Internationales Aktenzeichen
PCT/DE2007/001735

A. KLASSIFIZIERUNG DES ANMELDUNGSGEGENSTANDES
INV. A61L2/16 A61L2/12 F25D17/04 F24C14/00 A47L15/42
D06F35/00

Nach der Internationalen Patentklassifikation (IPC) oder nach der nationalen Klassifikation und der IPC

B. RECHERCHIERTE GEBIETE

Recherchierter Mindestprüfstoff (Klassifikationssystem und Klassifikationssymbole)
A61L F25D F24C A47L D06F

Recherchierte, aber nicht zum Mindestprüfstoff gehörende Veröffentlichungen, soweit diese unter die recherchierten Gebiete fallen

Während der internationalen Recherche konsultierte elektronische Datenbank (Name der Datenbank und evtl. verwendete Suchbegriffe)
EPO-Internal, WPI Data

C. ALS WESENTLICH ANGESEHENE UNTERLAGEN

Kategorie*	Bezeichnung der Veröffentlichung, soweit erforderlich unter Angabe der in Betracht kommenden Teile	Betr. Anspruch Nr.
X	US 5 166 528 A (LE VAY THURSTON C [US]) 24. November 1992 (1992-11-24) Ansprüche 1,6,17; Abbildungen 2,3	1-19
X	US 2002/122743 A1 (HUANG RUIYAN [CN]) 5. September 2002 (2002-09-05) Absatz [0035]; Ansprüche 1,3,7,16	1-19
X	DE 200 14 633 U1 (MUENZER MANFRED [DE]) 23. November 2000 (2000-11-23) Anspruch 1; Abbildung 1	1-19
X	WO 2005/047562 A (LLOYD-DAVY DAWN YVONNE [GB]; PARKIN IVAN PAUL [GB]) 26. Mai 2005 (2005-05-26) Seite 10; Anspruch 1	1-19

-/--

[X] Weitere Veröffentlichungen sind der Fortsetzung von Feld C zu entnehmen [X] Siehe Anhang Patentfamilie

* Besondere Kategorien von angegebenen Veröffentlichungen :
"A" Veröffentlichung, die den allgemeinen Stand der Technik definiert, aber nicht als besonders bedeutsam anzusehen ist
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"X" Veröffentlichung von besonderer Bedeutung; die beanspruchte Erfindung kann allein aufgrund dieser Veröffentlichung nicht als neu oder auf erfinderischer Tätigkeit beruhend betrachtet werden
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"&" Veröffentlichung, die Mitglied derselben Patentfamilie ist

Datum des Abschlusses der internationalen Recherche	Absendedatum des internationalen Recherchenberichts
6. Februar 2008	18/02/2008
Name und Postanschrift der Internationalen Recherchenbehörde Europäisches Patentamt, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fx. 31 651 epo nl, Fax: (+31-70) 340-3016	**Bevollmächtigter Bediensteter** Bjola, Bogdan

Formblatt PCT/ISA/210 (Blatt 2) (April 2005)

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INTERNATIONALER RECHERCHENBERICHT

Internationales Aktenzeichen
PCT/DE2007/001735

C. (Fortsetzung) ALS WESENTLICH ANGESEHENE UNTERLAGEN

Kategorie*	Bezeichnung der Veröffentlichung, soweit erforderlich unter Angabe der in Betracht kommenden Teile	Betr. Anspruch Nr.
X	GB 2 192 126 A (HO MEI LIU; CHENG HSIUNG TSENG) 6. Januar 1988 (1988-01-06) Anspruch 10	1-19
X	US 3 571 939 A (PAUL BEVERLY) 23. März 1971 (1971-03-23) Spalte 4, Zeilen 27-36; Anspruch 1	1-19

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INTERNATIONALER RECHERCHENBERICHT

Angaben zu Veröffentlichungen, die zu selben Patentfamilie gehören

Internationales Aktenzeichen
PCT/DE2007/001735

Im Recherchenbericht angeführtes Patentdokument		Datum der Veröffentlichung	Mitglied(er) der Patentfamilie	Datum der Veröffentlichung
US 5166528	A	24-11-1992	KEINE	
US 2002122743	A1	05-09-2002	KEINE	
DE 20014633	U1	23-11-2000	KEINE	
WO 2005047562	A	26-05-2005	KEINE	
GB 2192126	A	06-01-1988	KEINE	
US 3571939	A	23-03-1971	KEINE	

Formblatt PCT/ISA/210 (Anhang Patentfamilie) (April 2005)

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Espacenet

Bibliographic data: CN101951004 (A) — 2011-01-19

Multifunctional disinfecting and charging device for mobile phones

Inventor(s):	YALIN ZHU
Applicant(s):	YALIN ZHU
Classification:	**- international:** *A61L2/00; A61L2/10; A61L9/00; A61L9/20; H02J7/00* **- European:**
Application number:	CN20101506277 20101014
Priority number (s):	CN20101506277 20101014

Abstract of CN101951004 (A)

The invention discloses a multifunctional disinfecting and charging device for mobile phones, comprising a shell, wherein an ultraviolet light tube is arranged on the inner side on the upper part of the inner side wall of the shell, the shell is internally provided with a universal charging device for charging the mobile phones, and the universal charging device is a universal charging device which is widely used in the market at present; the inner wall of the shell is further provided with a photo catalyst; and the shell is internally provided with a plurality of sets of supports for holding the mobile phones, the shell wall is provided with a plurality of light transmission holes, purple light emitted by the ultraviolet light tube and penetrating through the light transmission holes can be used for counterfeit money detection. The invention has the advantages of simple structure, convenient use, time saving and trouble saving, can kill bacteria and viruses attached on the mobile phones completely, without secondary pollution and simultaneously has a plurality of functions of mobile phone charging, counterfeit money detection and air purification.

Last updated: 14.03.2012 Worldwide Database 5.7.36; 92p

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(19)中华人民共和国国家知识产权局

(12)发明专利申请

(10)申请公布号 CN 101951004 A
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(21)申请号 201010506277.3

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(72)发明人 朱亚林

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代理人 陈亚石

(51)Int.Cl.
H02J 7/00(2006.01)
A61L 2/10(2006.01)
A61L 2/00(2006.01)
A61L 9/00(2006.01)
A61L 9/20(2006.01)

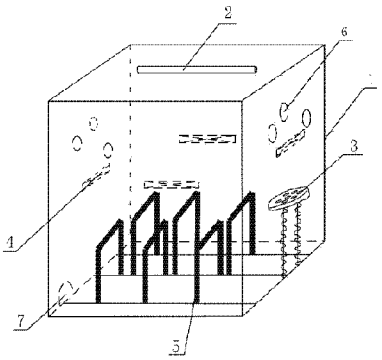
权利要求书 1 页 说明书 2 页 附图 1 页

(54)发明名称

多功能手机杀菌消毒、充电装置

(57)摘要

本发明公开了一种多功能手机杀菌消毒、充电装置，包括壳体，其中，所述壳体内侧壁上部内侧设置紫外线灯管，所述壳体内设有供手机充电的万能充电装置，该万能充电装置采用现今市面上广泛使用的万能充电装置；在壳体内壁还设置有光触媒；所述壳体内设置有多组用于搁置手机的支架，所述壳体壁上开有多个透光孔，穿过透光孔的紫外线灯管发出的紫光可以用于辨别钞票的真伪。本发明结构简单，使用方便、省时、省事，能杀灭手机上附着细菌、病毒能力，杀灭细菌、病毒彻底且无二次污染，同时还具有给手机充电和鉴别钞票真伪和净化空气的多种功能。



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1. 一种多功能手机杀菌消毒、充电装置，包括壳体(1)，其特征在于：所述壳体(1)内侧壁上部内侧设置紫外线灯管(2)，所述壳体(1)内设有供手机充电的万能充电装置(3)，在壳体内壁还设置有若干个光触媒(4)；所述壳体内设置有多组用于搁置手机的支架(5)，所述壳体壁上开有多个透光孔(6)。

2. 根据权利要求 1 所述的多功能手机杀菌消毒、充电装置，其特征在于：所述支架(5)为两端脚固定于壳体底部的平头“n”型支架。

3. 根据权利要求 1 所述的多功能手机杀菌消毒、充电装置，其特征在于：所述壳体(1)壁上还开有线孔(7)。

4. 根据权利要求 1 所述的多功能手机杀菌消毒、充电装置，其特征在于：所述壳体(1)内壁上还设有反光板。

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多功能手机杀菌消毒、充电装置

技术领域

[0001] 本发明涉及一种多功能手机杀菌消毒、充电装置，特别是具有复合杀灭手机表面细菌、病毒能力的同时还能给手机充电和鉴别钞票真伪以及净化空气的多功能装置。

技术背景

[0002] 现在的手机是每个人必备的社交工具，而且手机非常容易附着上各种细菌、病毒，同时手机在使用时常常要和使用者的面部皮肤与手接触，这就使使用者更容易感染疾病，现今市面上出现的手机杀菌消毒装置也仅是单纯的用于手机杀菌消毒，功能单一，不具备充电功能。

发明内容

[0003] 本发明的目的在于提供一种多功能手机杀菌消毒、充电装置，它不但能杀菌消毒，还能给手机充电和鉴别假币，非常的方便实用。

[0004] 本发明的目的通过以下技术方案来实现：一种多功能手机杀菌消毒、充电装置，包括壳体，其中，所述壳体内侧壁上部内侧设置紫外线灯管，所述壳体内设有供手机充电的万能充电装置，该万能充电装置采用现今市面上广泛使用的万能充电装置；在壳体内壁还设置有光 触媒；所述壳体内设置有多组用于搁置手机的支架，所述壳体壁上开有多个透光孔，穿过透光孔的紫外线灯管发出的紫光可以用于辨别钞票的真伪。

[0005]

上述支架为两端脚固定于壳体底部的 平头“n”型支架，手机可以平放于该平头“n”型支架顶部，也可以置于在平头“n”型支架的中空部。

[0006] 上述壳体壁上还开有线孔，该线孔用于手机的连接线和电源线的接入。

[0007] 上述壳体内壁上还设有反光板。

[0008] 本发明的有益效果在于：在紫外线光和光触媒的共同作用下会产生类似光合作用的光催化反应，产生出氧化能力极强的自由氢氧基和活性氧，具有很强的光氧化还原功能，可氧化分解各种有机化合物和部分无机物，能破坏细菌的细胞膜和固化病毒的蛋白质，可杀灭细菌和分解有机污染物，把有机污染物分解成无污染的水（H2O）和二氧化碳（CO2），因而具有极强的杀菌、除臭、防霉、防污自洁、净化空气功能。同时紫外线也具有很强的杀灭附着手机上的细菌、病毒的功效。因而在此复合杀灭细菌、病毒的能力下，能非常彻底的杀灭手机表面的细菌、病毒。本发明壳体内设置的万能充电装置还可以更方便的对手机进行充电，而通过透光孔的紫外线灯管发出的紫光可以用于辨别钞票的真伪。

[0009] 本发明结构简单、使用方便，具有复合杀菌能力，能彻底杀灭手机表面细菌、病毒，具备能净化室内空气的能力，具备手机充电功能和假币鉴别能力，是非常实用和贴心的产品。

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附图说明

[0010] 图 1 本发明结构示意图。

[0011] 1. 壳体 ;2. 紫外线灯管 ;3. 万能充电装置 ;4. 光触媒 ;5. 支架 ;6. 透光孔 ;7. 线孔。

具体实施方式

[0012] 下面我们将结合附图对本发明做进一步的说明 :

如图 1 所示，一种多功能手机杀菌消毒、充电装置，包括壳体 1，壳体 1 内侧壁上部内侧设置紫外线灯管 2、光触媒 4，还设有供手机充电的万能充电装置 3，壳体 1 内设置有多组用于搁置手机的两端脚固定于壳体底部的平头“n”型支架，且壳体壁上开有多个透光孔 6。壳体壁上还开有线孔 7。所述壳体内壁上还设有反光板。在壳体外壁前后可以设置镜子和相片等。企业也可在上面印制企业标记，企业文化等宣传企业本身。

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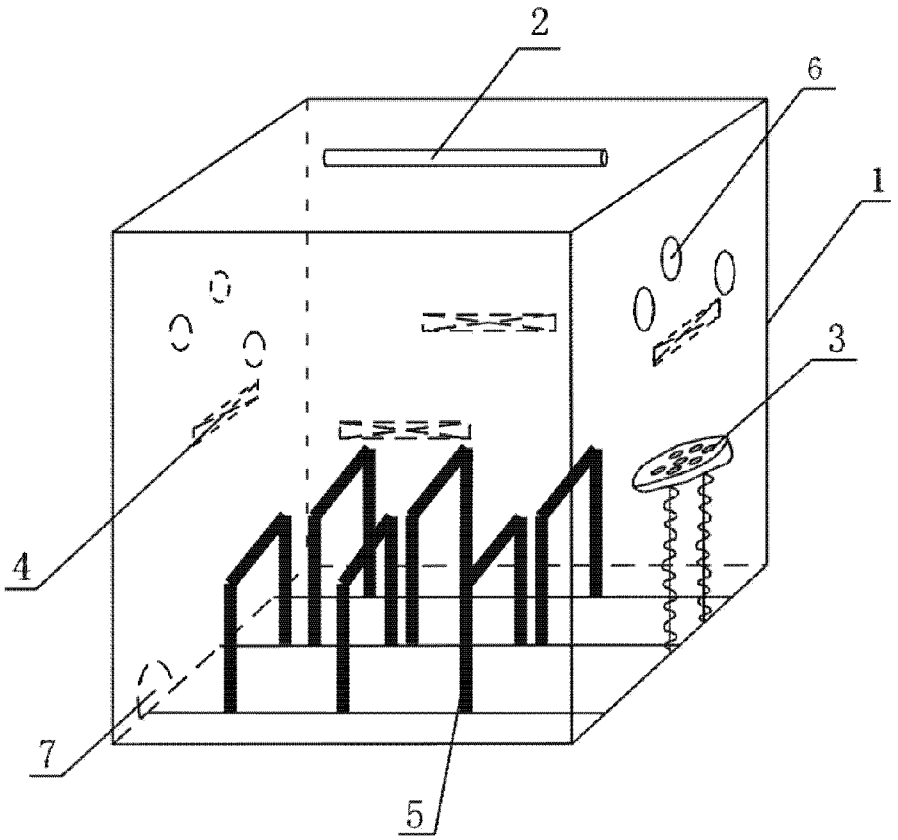


图 1

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Espacenet

WO2007036130A1 TOILET PAPER ROLL DISPENSER STERILIZED BY ULTRAVIOLET LIGHT IN FULL ORIENTATION

Applicants: NG KING LUN [CN]

Inventors: NG KING LUN [CN]

Classifications:
IPC ***A47K10/22; A61L2/10;***

CPC **A47K10/38 (EP); A61L2/10 (EP); A61L2/24 (EP);** A47K2010/389 (EP);

Priorities: CN200520129213U 2005-09-30

Application: CN2006002289W 2006-09-05

Publication: WO2007036130A1 2007-04-05

Published as: **CN2840904Y; DE212006000067U1; JP3146285U;** WO2007036130A1;**WO2007036130A8**

TOILET PAPER ROLL DISPENSER STERILIZED BY ULTRAVIOLET LIGHT IN FULL ORIENTATION

Abstract

A toilet paper roll dispenser sterilized by ultraviolet light in full orientation comprises a housing of the paper roll dispenser and a paper roll dispenser shaft mounted inside the housing. A plurality of ultraviolet lights are arranged annularly on the inner perimeter of the housing of the paper roll dispenser equably. The reflecting object is provided on the rear of the ultraviolet light. The said toilet paper roll dispenser further comprises a power supply system, and each of the ultraviolet light is connected to the power supply system, respectively. The said toilet paper roll dispenser also comprises a moveable cover connected to the housing by a moveable shaft. A on-off controllable switch is provided on the moveable cover, so that the switch may control the illumination and the extinguish of the ultraviolet light.

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(12) 按照专利合作条约所公布的国际申请

(19) 世界知识产权组织
国 际 局

(43) 国际公布日
2007 年4 月5 日 (05.04.2007)

PCT

(10) 国际公布号
WO 2007/036130 A1

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A47K 10/22 (2006.01) A61L 2/10 (2006.01)

(21) 国际申请号: PCT/CN2006/002289

(22) 国际申请日: 2006 年9 月5 日 (05.09.2006)

(25) 申请语言: 中文

(26) 公布语言: 中文

(30) 优先权:
200520129213.0
2005 年9 月30 日 (30.09.2005) CN

(71) 申请人及
(72) 发明人: 伍经纶(NG, King Lun) [CN/CN]; 中国香港特别行政区跑马地黄泥涌道27号3楼B室, Hong Kong (CN)。

(74) 代理人: 北京市柳沈律师事务所(LIU, SHEN & ASSOCIATES); 中国北京市朝阳区北辰东路8号汇宾大厦A0601, Beijing 100101 (CN)。

(81) 指定国 (除另有指明, 要求每一种可提供的国家保护): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW。

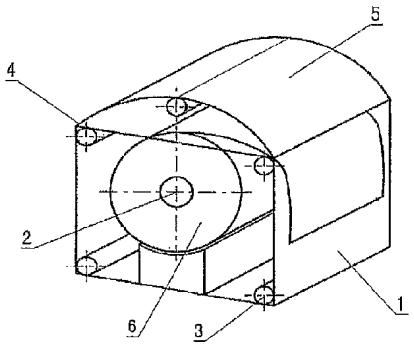
(84) 指定国 (除另有指明, 要求每一种可提供的地区保护): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), 欧亚 (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), 欧洲 (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)。

本国际公布:
— 包括国际检索报告。

[见续页]

(54) Title: TOILET PAPER ROLL DISPENSER STERILIZED BY ULTRAVIOLET LIGHT IN FULL ORIENTATION

(54) 发明名称: 紫外线全方位杀菌卫生纸筒



(57) Abstract: A toilet paper roll dispenser sterilized by ultraviolet light in full orientation comprises a housing of the paper roll dispenser and a paper roll dispenser shaft mounted inside the housing. A plurality of ultraviolet lights are arranged annularly on the inner perimeter of the housing of the paper roll dispenser equably. The reflecting object is provided on the rear of the ultraviolet light. The said toilet paper roll dispenser further comprises a power supply system, and each of the ultraviolet light is connected to the power supply system, respectively. The said toilet paper roll dispenser also comprises a moveable cover connected to the housing by a moveable shaft. A on-off controllable switch is provided on the moveable cover, so that the switch may control the illumination and the extinguish of the ultraviolet light.

(57) 摘要:

一种紫外线全方位杀菌卫生纸筒，包括纸筒外壳和安装于内部的纸筒轴，其中所述纸筒外壳内侧周面上环形均匀排列安设有数个紫外光灯，紫外光灯后设置有反光物体，所述卫生纸筒还包括有供电系统，所述每个紫外灯均分别与所述供电系统相连接。所述卫生纸筒外壳还包括一个通过活动轴与该外壳相连接的活动盖，所述活动盖上设置有开闭控制开关，可控制紫外光灯的点亮与熄灭。

WO 2007/036130 A1

所引用双字母代码及其它缩写符号，请参考刊登在每期PCT公报期刊起始的“代码及缩写符号简要说明”。

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紫外光全方位杀菌卫生纸筒

技术领域

本实用新型涉及卫生用品领域，特别涉及卫生纸用具领域，具体是指一种紫外光全方位杀菌卫生纸筒。

背景技术

在现代生活中，人们对生活质量的追求越来越高，而其中一个最明显的标志就是厕所里面都配备有卫生纸(厕纸)。而通常的卫生纸是一种需要高度卫生和防菌的物品，因为卫生纸本身是用来涂抹污物，同时也需要与人的身体相接触，包括手、脸、阴部等部位，因此卫生纸的全面消毒杀菌是非常重要的。

而现有环境中，由于厕所一般都较为潮湿和阴暗，很容易滋生细菌，同时空气中也有大量的细菌存在，因此对卫生纸来说，保持卫生和无菌是相当困难的。在现有技术中，有一种用于厕所卫生纸的纸筒，其装有一个紫外光灯，利用紫外光灯的照射来达到对其中的卫生纸杀菌的目的，但是由于卫生纸本身是圆柱形或者方形，因此单凭一般的紫光灯有很多部位是无法直接照射到的，对杀菌有很大的盲区，这样就影响了杀菌的效果，给人们的生活带来了很大的不便。

实用新型内容

本实用新型的目的是克服了上述现有技术中的缺点，提供一种能够对卫生纸进行充分杀菌消毒、保持卫生、使用方便、结构简单、安全可靠、适用面较为广泛的紫外光全方位杀菌卫生纸筒。

为了实现上述的目的，本实用新型的紫外光全方位杀菌卫生纸筒具有如下构成:

该紫外光全方位杀菌卫生纸筒，包括纸筒外壳和安设于内部的纸筒轴，其主要特征是，所述的纸筒外壳内侧周面上环形均匀排列安设有数个紫外光灯，所述的卫生纸筒还包括有供电系统，所述的每个紫外光灯均分别与所述的供电系统相连接。

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该紫外光灯全方位杀菌卫生纸筒的紫外光灯可以为紫外光灯管或者紫外光灯泡或者紫外光二极管。

该紫外光全方位杀菌卫生纸筒的每个紫外光灯后侧均安设有反光物体。

该紫外光全方位杀菌卫生纸筒的反光物体可以为铝铂或者铝片。

该紫外光全方位杀菌卫生纸筒的供电系统可以为交流电源或者电池或者太阳能。

该紫外光全方位杀菌卫生纸筒的卫生纸筒外壳还包括一个通过活动轴与该外壳相连接的活动盖，所述的活动轴上还设置有一个开闭控制开关，所述的供电系统通过该开闭控制开关与所述的各个紫外光灯相连接。

采用了该实用新型的紫外光全方位杀菌卫生纸筒，由于卫生纸筒内侧周面环形均匀分布有紫外光灯，同时紫外光灯后侧均设置有反光物体，使得装在卫生纸筒内的卫生纸表面可以得到充分的紫外光照射，从而杀菌效果较好，而且由于紫外光本身产生的热量，这样使得卫生纸处于一个温度较高的环境，其中的湿气会下降，从而使得卫生纸可以保持干燥，减少了细菌滋生的机会；同时对于移动式卫生纸筒，其活动盖部位还安设有开闭控制开关，当活动盖打开时，其中的紫外光灯受开关控制会熄灭，不会使紫外光外泻从而对人造成伤害，因此使用安全可靠；不仅如此，该卫生纸筒的供电系统采用交流电源或者电池或者太阳能，适用面非常广泛，而且结构简单，制造成本较低，使用方便，大大方便了人们的使用，保障了人们的健康。

附图说明

图 1(a)、(b)为本实用新型的紫外光全方位杀菌固定式卫生纸筒的侧面剖视图。

图 2 为本实用新型的紫外光全方位杀菌移动式卫生纸筒活动盖打开状态的侧面剖视图。

图 3 为本实用新型的紫外光全方位杀菌移动式卫生纸筒活动盖关闭状态的侧面剖视图。

图 4 为本实用新型的紫外光全方位杀菌卫生纸筒中平面紫外光灯排列示意图。

图 5 为本实用新型的紫外光全方位杀菌卫生纸筒中弧面紫外光灯排列示

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意图。

图 6 为本实用新型的紫外光全方位杀菌卫生纸筒中圆形卫生纸受光效果示意图。

图 7 为本实用新型的紫外光全方位杀菌卫生纸筒中方形卫生纸受光效果示意图。

具体实施方式

为了能够更清楚地理解本实用新型的技术内容，特举以下实施例详细说明。

请参阅图 1 至图 7 所示，该紫外光全方位杀菌卫生纸筒，包括纸筒外壳 1 和安设于内部的纸筒轴 2，其中，所述的纸筒外壳 1 内侧周面上环形均匀排列安设有数个紫外光灯 3，该紫外光灯 3 可以为紫外光灯管，也可以为紫外光灯泡、紫外光二极管(Ultra Violet LED)，或者一切可以发出紫外光的物体，在本实施例中，采用紫外光灯管的方式，同时，在每个紫外光灯后侧均安设有反光物体，该反光物体可以为铝铂，也可以为铝片或者其它反光物体，其主要作用是能够对紫外光起到很好的反射和散射作用，增强对卫生纸 6 的照射强度；所述的卫生纸筒还包括有供电系统，所述的每个紫外光灯 3 均分别与所述的供电系统相连接，该供电系统可以为交流电源，也可以为电池，还可以是太阳能，能够适用于不同的工作环境中。

在纸筒外壳 1 内侧的周面上，既有可能是平面，也有可能是弧面，因此图 4 和图 5 分别表示了在平面情况下和弧面情况下的各个紫外光灯管 3 的排列情况。

不仅如此，对于紫外光全方位杀菌移动式卫生纸筒来说，该卫生纸筒外壳 1 还包括一个通过活动轴 4 与该外壳 1 相连接的活动盖 5，所述的活动轴 4 上还设置有一个开闭控制开关，所述的供电系统通过该开闭控制开关与所述的各个紫外光灯 3 相连接，该活动盖 5 一经打开，紫外光灯 3 会在开闭控制开关的控制下立即完全关掉，从而防止紫外光灯照射到人的眼睛上，保证了人们的使用安全。

采用了上述的紫外光全方位杀菌卫生纸筒，由于卫生纸筒外壳 1 内侧周面环形均匀分布有紫外光灯 3，同时紫外光灯 3 后侧均设置有反光物体，使

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得装在卫生纸筒内的卫生纸 6 无论是圆形的还是方形的，其表面可以得到100%的充分的紫外光照射，从而杀菌效果较好，而且由于紫外光本身产生的热量，这样使得卫生纸 6 处于一个温度较高的环境，其中的湿气会下降，从而使得卫生纸 6 可以保持干燥，减少了细菌滋生的机会。

在本实用新型中，对于移动式和固定式紫外光全方位杀菌卫生纸筒，其活动盖 5 部位还安设有开闭控制开关，当活动盖 5 打开时，其中的紫外光灯 3 受开关控制会熄灭，不会使紫外光外泻从而对人造成伤害，因此使用安全可靠。

不仅如此，该卫生纸筒的供电系统采用交流电源或者电池，适合于各种不同的场合，同时在突然停电故障的时候，该电池也可以作为备用电源使用，因此适用面非常广泛；同时本实用新型设计的结构非常简单，人们使用起来非常地方便，大大提高了人们的生活质量，保障了人们的健康。

在此说明书中，本实用新型已参照其特定的实施例作为描述。但是，很显然仍可以作出各种修改和变换而不背离本实用新型的精神和范围。因此，说明书和附图应被认为是说明性的而非限制性的。

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权利要求书

1. 一种紫外光全方位杀菌卫生纸筒，包括纸筒外壳和安设于内部的纸筒轴，其特征在于，所述的纸筒外壳内侧周面上环形均匀排列安设有数个紫外光灯，所述的卫生纸筒还包括有供电系统，所述的每个紫外光灯均分别与所述的供电系统相连接。

2. 根据权利要求 1 所述的紫外光全方位杀菌卫生纸筒，其特征在于，所述的紫外光灯为紫外光灯管或者紫外光灯泡或者紫外光二极管。

3. 根据权利要求 1 或 2 所述的紫外光全方位杀菌卫生纸筒，其特征在于，所述的每个紫外光灯后侧均安设有反光物体。

4. 根据权利要求 3 所述的紫外光全方位杀菌卫生纸筒，其特征在于，所述的反光物体为铝铂或者铝片。

5. 根据权利要求 1 或 2 所述的紫外光全方位杀菌卫生纸筒，其特征在于，所述的供电系统为交流电源或者电池或者太阳能。

6. 根据权利要求 1 或 2 所述的紫外光全方位杀菌卫生纸筒，其特征在于，所述的卫生纸筒外壳还包括一通过活动轴与该外壳相连接的活动盖，所述的活动轴上还设置有一开闭控制开关，所述的供电系统通过该开闭控制开关与所述的各个紫外光灯相连接。

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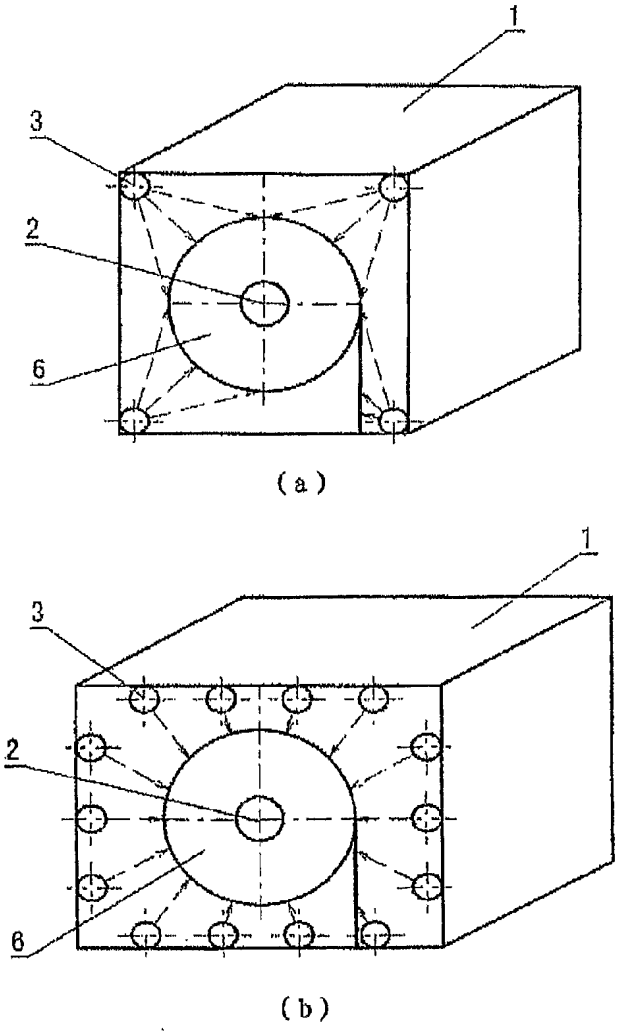


FIG. 1

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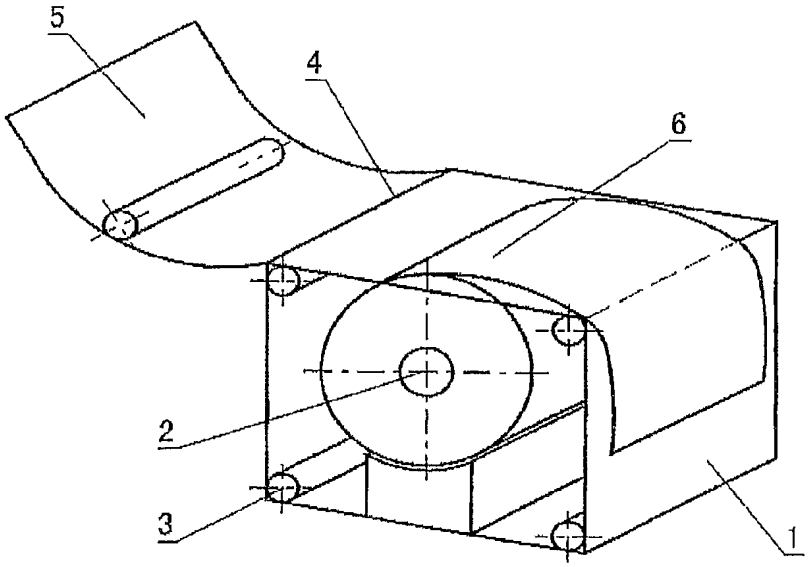


FIG. 2

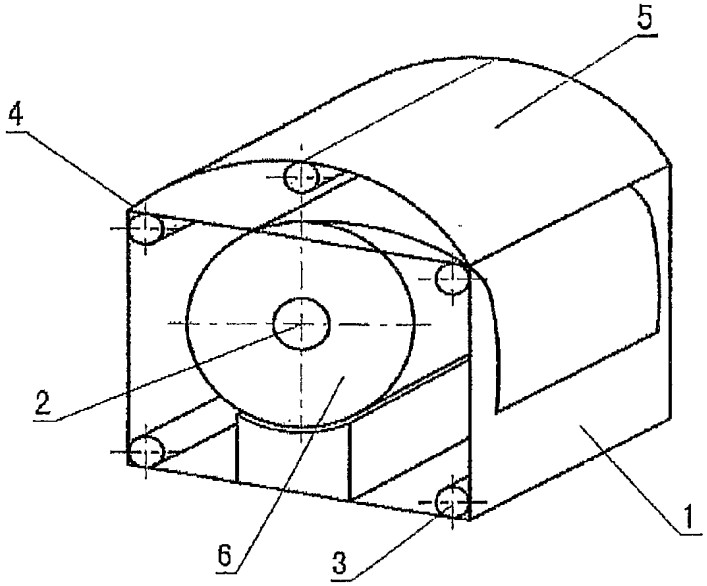


FIG. 3

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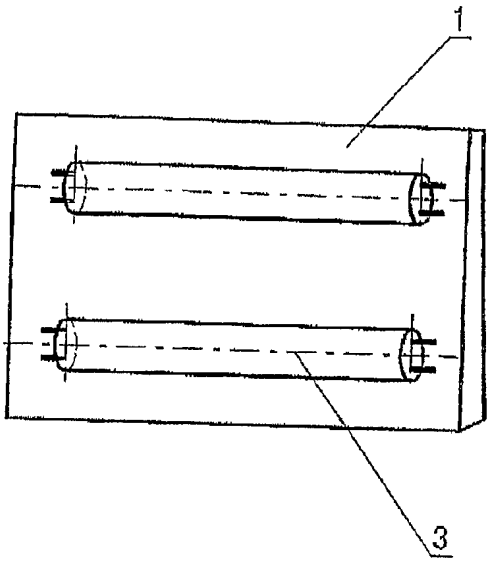


FIG. 4

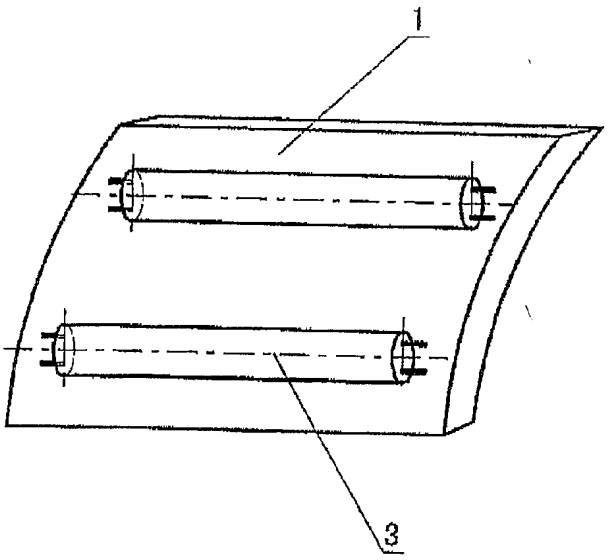


FIG. 5

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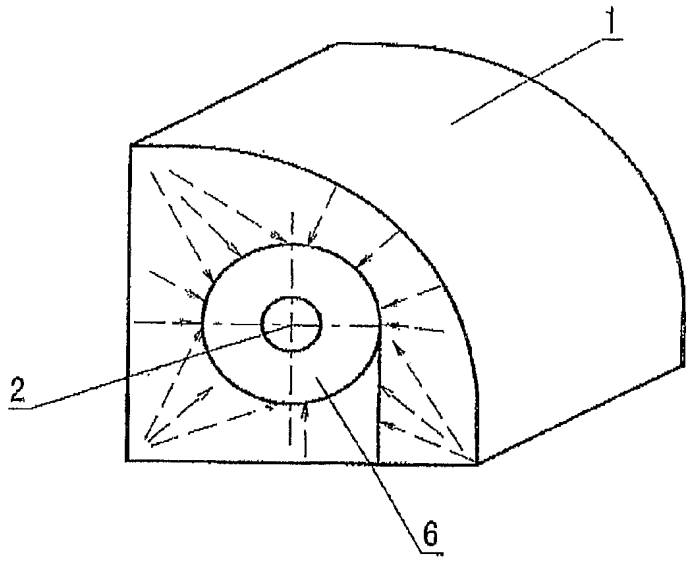


FIG. 6

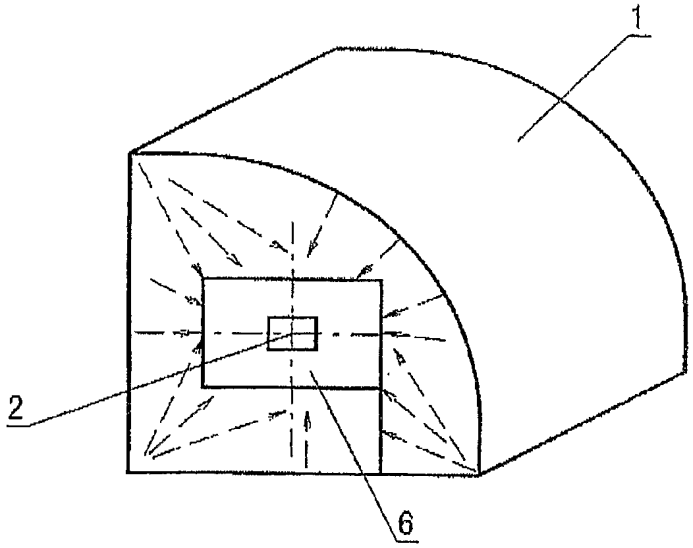


FIG. 7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2006/002289

A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet
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 A47K10,A61L2,A47K7

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 practicable, search terms used)

Toilet, paper, ultraviolet, ray, UV, sterilize, switch

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN2364887Y(WU,Chunwang) 23.Feb.2000(23.02.2000),	1—5
Y	Abstract, pages 2-3, figs.	6
Y	CN2652853Y(GAO,Guijun) 03.Nov2004(03.11.2004),	6
	Claim 1, fig. 1.	
A	CN2513581Y(HUANG,Lizheng) 02.Oct.2002(02.10.2002), the whole document.	1—6
A	CN2506258Y(LU,Baocheng) 21.Aug.2002(21.08.2002), the whole document.	1—6
A	CN2487329Y(WU,Chunwang) 24.Apr.2002(24.04.2002), the whole document.	1—6

☐ Further documents are listed in the continuation of Box C. ☒ See patent family 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 application or patent 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

"&"document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
15.Nov.2006(15.11.2006)	04 · JAN 2007 (04 · 01 · 2007)

Name and mailing address of the ISA/CN	Authorized officer
The State Intellectual Property Office, the P.R.China 6 Xitucheng Rd., Jimen Bridge, Haidian District, Beijing, China 100088 Facsimile No. 86-10-62019451	yangqinzhi Telephone No. (86-10)62085833

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2006/002289

CLASSIFICATION OF SUBJECT MATTER

A47K10/22(2006.01)i
A61L2/10(2006.01)i

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2006/002289

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN2364887Y	23.Feb.2000(23.02.2000)	NONE	
CN2652853Y	03.Nov.2004(03.11.2004)	NONE	
CN2513581Y	02.Oct.2002(02.10.2002)	NONE	
CN2506258Y	21.Aug.2002(21.08.2002)	NONE	
CN2487329Y	24.Apr.2002(24.04.2002)	NONE	

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国际检索报告

国际申请号
PCT/CN2006/002289

A. 主题的分类

参见附加页

按照国际专利分类表(IPC)或者同时按照国家分类和 IPC 两种分类

B. 检索领域

检索的最低限度文献(标明分类系统和分类号)

IPC A47K10,A61L2,A47K7

包含在检索领域中的除最低限度文献以外的检索文献

在国际检索时查阅的电子数据库(数据库的名称，和使用的检索词（如使用）)

DATABASE:CNPAT,WPI,PAJ,EPODOC

KEYWORDS:卫生，纸筒，紫外，紫外线，UV，消毒，杀菌，反光，开关，压动

Toilet, paper, ultraviolet, ray, UV, sterilizer, switch

类 型*	引用文件，必要时，指明相关段落	相关的权利要求
X	CN2364887Y(WU,Chunwang) 23.2 月 2000(23.02.2000),	1—5
Y	摘要、说明书第 2—3 页、附图。	6
Y	CN2652853Y(GAO,Guijun) 03.11 月 2004(03.11.2004), 权利要求 1，附图标记 3。	6
A	CN2513581Y(HUANG,Lizheng) 02.10 月 2002(02.10.2002)，全文。	1—6
A	CN2506258Y(LU,Baocheng) 21.8 月 2002(21.08.2002)，全文。	1—6
A	CN2487329Y(WU,Chunwang) 24.4 月 2002(24.04.2002)，全文	1—6

☐ 其余文件在 C 栏的续页中列出。　　☒ 见同族专利附件。

* 引用文件的具体类型：

"A" 认为不特别相关的表示了现有技术一般状态的文件

"E" 在国际申请日的当天或之后公布的在先申请或专利

"L" 可能对优先权要求构成怀疑的文件，为确定另一篇引用文件的公布日而引用的或者因其他特殊理由而引用的文件

"O" 涉及口头公开、使用、展览或其他方式公开的文件

"P" 公布日先于国际申请日但迟于所要求的优先权日的文件

"T" 在申请日或优先权日之后公布，与申请不相抵触，但为了理解发明之理论或原理的在后文件

"X" 特别相关的文件，单独考虑该文件，认定要求保护的发明不是新颖的或不具有创造性

"Y" 特别相关的文件，当该文件与另一篇或者多篇该类文件结合并且这种结合对于本领域技术人员为显而易见时，要求保护的发明不具有创造性

"&" 同族专利的文件

国际检索实际完成的日期	国际检索报告邮寄日期
15.11 月 2006(15.11.2006)	04 · 1月 2007 (04 · 01 · 2007)
中华人民共和国国家知识产权局(ISA/CN) 中国北京市海淀区蓟门桥西土城路 6 号 100088 传真号： (86-10)62019451	授权官员 杨勤之 电话号码：(86-10)62085833

PCT/ISA/210 表(第 2 页)(2005 年 4 月)

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国际检索报告
关于同族专利的信息

国际申请号
PCT/CN2006/002289

检索报告中引用的专利文件	公布日期	同族专利	公布日期
CN2364887Y	23.2 月 2000(23.02.2000)	无	
CN2652853Y	03.11 月 2004(03.11.2004)	无	
CN2513581Y	02.10 月 2002(02.10.2002)	无	
CN2506258Y	21.8 月 2002(21.08.2002)	无	
CN22487329Y	24.4 月 2002(24.04.2002)	无	

PCT/ISA/210 表(同族专利附件)(2005 年 4 月)

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国际检索报告	国际申请号 PCT/CN2006/002289

主题的分类

A47K10/22(2006.01)i

A61L2/10(2006.01)i

PS_001031

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Espacenet

JPH07265394A RINSING DEVICE

Applicants: OKAYA ELECTRIC INDUSTRY CO

Inventors: WAKATSUKI MASAHARU

Classifications:
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Priorities: JP8783194A 1994-03-31

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RINSING DEVICE

Abstract

PURPOSE:To realize a rinsing device wherein objects such as contact lenses can be simultaneously rinsed and sterilized in a single rinsing tank without affecting bad influence to life characteristics of the rinsing device. CONSTITUTION:In a rinsing device 10 wherein a rinsing tank 14 is formed on the upper face of the main body 12, a recessed part 18 is formed on the inner wall faces 14a and 14b of the rinsing tank 14 and an opening of the recessed part 18 is closed by means of an ultraviolet transmitting plate 20 and an ultraviolet sterilizing lamp 22 is arranged in the recessed part 18 and an ultrasonic oscillating member 24 is fixed on the rear face 14b of the bottom face of the rinsing tank 14.

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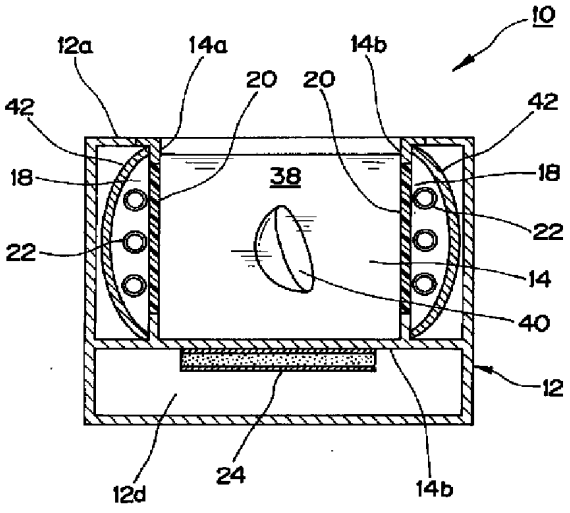
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(54)【発明の名称】　洗浄器

(57)【要約】

【目的】　洗浄器の寿命特性に悪影響を及ぼすことなく、コンタクトレンズ等の洗浄対象物を、単一の洗浄槽において同時に洗浄・殺菌することが可能な洗浄器を実現する。

【構成】　本体12の上面12ａに洗浄槽14を形成した洗浄器10において、洗浄槽14の内壁面14ａ，14ｂに凹部18を形成し、凹部18の開口を紫外線透過板20で閉塞すると共に、凹部18内に紫外線殺菌灯22を配置し、洗浄槽14の底面裏側14ｂに超音波発振部材24を固着した。



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【特許請求の範囲】
【請求項１】　洗浄液が充填される洗浄槽と、該洗浄槽に取り付けられた超音波発振部材と紫外線殺菌灯とを備えて成る洗浄器。
【請求項２】　上記紫外線殺菌灯に防水対策を施すと共に、これを直接洗浄槽内に配置したことを特徴とする請求項１に記載の洗浄器。
【請求項３】　上記洗浄槽の内面に凹部を形成すると共に、該凹部の開口に紫外線透過板を嵌合させてこれを液密に閉塞し、該凹部内に上記紫外線殺菌灯を配置したことを特徴とする請求項１に記載の洗浄器。
【請求項４】　上記紫外線殺菌灯の背面に、反射部材を配置したこを特徴とする請求項３に記載の洗浄器。
【請求項５】　上記紫外線殺菌灯が、紫外線透過性物質よりなる管状気密容器と、該管状気密容器内に充填された紫外線放射ガスと、該管状気密容器の両端に配された一対の筒状電極と、両筒状電極間に形成される主放電間隙と、各筒状電極に囲繞された針状電極と、該針状電極と筒状電極との間に形成される補助放電間隙とを備えて成ることを特徴とする請求項１乃至４の何れかに記載の洗浄器。
【請求項６】　上記紫外線殺菌灯の管状気密容器を湾曲させて略Ｕ字型あるいは略Ｃ字型に形成すると共に、上記洗浄槽を紫外線透過性物質によって形成し、該洗浄槽の外面を紫外線殺菌灯の管状気密容器で囲繞したことをを特徴とする請求項５に記載の洗浄器。
【請求項７】　上記紫外線殺菌灯が、紫外線透過性物質よりなる紡錘形の気密容器内に、放電間隙を隔てて対向配置された一対の放電電極と紫外線放射ガスを封入し、各放電電極からのリード端子を上記気密容器外に導出して成ることを特徴とする請求項１乃至４の何れかに記載の洗浄器。
【請求項８】　上記紫外線殺菌灯から発せられる紫外線の波長が、約２５３．７ｎｍであることを特徴とする請求項１乃至７の何れかに記載の洗浄器。
【発明の詳細な説明】
【０００１】
【産業上の利用分野】この発明は洗浄器に係り、特に、物品に付着した汚れを除去し得るのみならず、殺菌作用をも備えた洗浄器に関する。
【０００２】
【従来の技術】コンタクトレンズを長時間使用すると、その表面に蛋白質や眼脂、あるいは大腸菌等の雑菌が付着するため、専用の洗浄器を用いて定期的に洗浄・殺菌する必要がある。従来の洗浄器としては、例えば図１０に示すものがある。この洗浄器90は、本体91に有底筒状の第１の洗浄槽92と第２の洗浄槽93を形成し、第１の洗浄槽92の底面裏側に圧電振動子等よりなる超音波発振部材94を取り付けると共に、第２の洗浄槽93の外周面に電熱ヒータ等よりなる加熱部材95を取付けて成る。この洗浄器90の利用者は、まず蒸留水等よりなる洗浄液96が満たされた第１の洗浄槽92にコンタクトレンズ97を浸け、超音波振動部材94を駆動させる。これにより、コンタクトレンズ97の表面や酸素透過用の微細孔内に付着した蛋白質や眼脂などの汚れが、超音波振動を受けて除去される。つぎに、コンタクトレンズ97を第１の洗浄槽92から取り出して第２の洗浄槽93に移し、加熱部材95を作動させて洗浄液96を煮沸させることにより、コンタクトレンズ97の殺菌が実現される。
【０００３】
【発明が解決しようとする課題】ところが、この洗浄器90は、洗浄用の第１の洗浄槽92と、殺菌用の第２の洗浄槽93を別個に設けて成るため、その分スペース効率が悪いものであった。また、第１の洗浄槽92から第２の洗浄槽93にコンタクトレンズ97を移し替える手間もかかる上、その際せっかく汚れを落としたコンタクトレンズ97が再び汚れるおそれがあった。
【０００４】この問題を解決するため、図１１に示すように、二つの洗浄槽を設ける代わりに、一つ洗浄槽98に超音波発振部材94と加熱部材95を取付けた洗浄器99も存在している。このように構成すれば、確かに、スペース効率の向上や洗浄作業の省力化、再汚染の防止が図れる。また、洗浄と殺菌を同時に行うことが可能であるため、所要時間の短縮も図れる利点を有する。しかしながら、超音波発振部材94は一般に熱に弱いため、同一の洗浄槽98に超音波発振部材94と加熱部材95を互いに隣接させて設けると、加熱部材95からの熱によって超音波発振部材94が劣化し、洗浄器99の短命化を招くおそれがある。
【０００５】本発明は、上記従来の洗浄器が抱える欠点に鑑みてなされたものであり、その目的とするところは、洗浄器の寿命特性に悪影響を及ぼすことなく、コンタクトレンズ等の洗浄対象物を、単一の洗浄槽において同時に洗浄・殺菌することが可能な洗浄器を実現することにある。
【０００６】
【課題を解決するための手段】上記目的を達成するために、本発明に係る洗浄器は、洗浄液が充填される洗浄槽と、該洗浄槽に取り付けられた超音波発振部材と紫外線殺菌灯とを備えて成るよう構成した。上記紫外線殺菌灯は、例えば、適当な防水対策を施して直接洗浄槽内に配置される。あるいは、洗浄槽の内面に凹部を形成すると共に、該凹部の開口に紫外線透過板を嵌合させてこれを液密に閉塞し、該凹部内に紫外線殺菌灯を配置するよう構成してもよい。この場合、紫外線殺菌灯の背面に、凹面鏡等の反射部材を配置するのが望ましい。
【０００７】上記紫外線殺菌灯としては、例えば、紫外線透過性物質よりなる管状気密容器と、該管状気密容器内に充填された紫外線放射ガスと、該管状気密容器の両端に配された一対の筒状電極と、両筒状電極間に形成さ

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れる主放電間隙と、各筒状電極に囲繞された針状電極と、該針状電極と筒状電極との間に形成される補助放電間隙とを備えたものを用いる。この紫外線殺菌灯の管状気密容器を湾曲させて略Ｕ字型あるいは略Ｃ字型に形成すると共に、上記洗浄槽を紫外線透過性物質によって形成し、該洗浄槽の外面を紫外線殺菌灯の管状気密容器で囲繞するよう構成してもよい。あるいは、紫外線殺菌灯として、紫外線透過性物質よりなる紡錘形の気密容器内に、放電間隙を隔てて対向配置された一対の放電電極と紫外線放射ガスを封入し、各放電電極からのリード端子を上記気密容器外に導出して形成したものを用いていもよい。上記紫外線殺菌灯から発せられる紫外線の波長は、例えば約２５３．７ｎｍに設定される。

【０００８】

【作用】このように、単一の洗浄槽に、洗浄用の超音波発振部材と、殺菌用の紫外線殺菌灯を装着したため、洗浄器の省スペース化や洗浄・殺菌作業の省力化が実現できると共に、洗浄工程と殺菌工程を同時に実施することにより、所要時間の短縮化も図れる。また、加熱部材と超音波発振部材との併用を避け、紫外線殺菌灯によって殺菌を行うため、超音波発振部材が熱劣化するという問題も生じない。

【０００９】

【実施例】以下に本発明を、図示の実施例に基づいて説明する。図１は本発明に係る洗浄器の外観を示すものであり、この洗浄器10は、本体12と、該本体12の上面12ａに形成された洗浄槽14とを有して成る。この洗浄槽14は、隔壁16によって２つの領域に区画されており、図２に示すように、相対向する２つの内壁面14ａ，14ｂには凹部18が形成され、該凹部18の開口にはそれぞれ紫外線透過板20が液密に嵌め込まれている。この紫外線透過板20は、例えば高純度の石英ガラスや紫外線透過ガラス（ソーダライムガラス）等で構成される。各凹部18内には、それぞれ３本の紫外線殺菌灯22が、上下一列に配置されている。洗浄槽14の底面裏側14ｂには、圧電振動子等よりなる超音波発振部材24が固着されている。本体12の前面12ｂには作動スイッチ26とパイロットランプ28が、また左側面12ｃには電源接続用のプラグ30が配されている（図１）。このプラグ30は、その基端が本体12内において回動自在に軸着されているため（図示省略）、携帯時には収納溝32内に折り入れることができる。本体12の左右両側面には、蓋部材34の取付片部34ａが、ネジ36を介して回動自在に軸着されている。この蓋部材34を本体上面12ａ側に被せることにより、洗浄槽14の開口が閉塞される。なお、図示は省略したが、本体12の基部空間12ｄ内には、超音波発振部材24を駆動する発振回路や電源回路等が収納されている。

【００１０】この洗浄器10を利用する際には、まず上記プラグ30を電源コンセントに接続すると共に、蒸留水等よりなる洗浄液38を充填した洗浄槽14内にコンタクトレンズ40を挿置する（図２）。洗浄槽14は、上記のように隔壁16によって二分されているため、左右一対のコンタクトレンズ40を、それぞれ別個の領域に挿置できる。なお、図示は省略したが、適当な支持部材を介して、コンタクトレンズ40を洗浄槽14の略中央部に配置・固定するのが望ましい。つぎに、蓋部材34を被せて作動スイッチ26をＯＮすると、パイロットランプ28が点灯すると共に、超音波発振部材24が駆動して超音波が発生し、同時に紫外線殺菌灯22が点灯して紫外線が放射される。上記超音波は、洗浄液38を介してコンタクトレンズ40に到達し、これを振動させて表面や酸素透過用微細孔内に付着した蛋白質や眼脂等の汚れを除去する。上記紫外線は、紫外線透過板20を透過して洗浄槽14内に到達し、洗浄槽14内の細菌を死滅させる。なお、紫外線殺菌灯22の裏側に向けて放射された紫外線は、凹部18内に配置された反射部材としての凹面鏡42によって洗浄槽14側に反射・集光されるため、エネルギーロスを抑えて高い殺菌効率を実現できる。

【００１１】そして、所定時間経過後に上記作動スイッチ26をＯＦＦすることで、コンタクトレンズ40の洗浄・殺菌が完了する。図示は省略したが、上記作動スイッチ26にタイマーを接続すると共に、該タイマーに洗浄・殺菌に必要十分な時間を予めセットしておくことにより、洗浄・殺菌終了後に洗浄器10を自動的にＯＦＦすることが可能となる。超音波発振部材24と紫外線殺菌灯22は、必ずしも同時作動、同時停止する必要はない。したがって、独立した２つの作動スイッチやタイマーを設けることにより、超音波発振部材24と紫外線殺菌灯22を別個にＯＮ／ＯＦＦ制御するよう構成してもよい。なお、本体12内に適当な電池を内蔵させ、紫外線殺菌灯22及び超音波発振部材24をバッテリー駆動するよう構成しても勿論よい。

【００１２】紫外線は人体に有害であるため、上記蓋部材34は、紫外線を遮蔽する物質によって構成されている。また、蓋部材34の閉め忘れを想定して、安全スイッチ44が本体上面12ａに突設されている。この安全スイッチ44は、蓋部材34を閉めるとその重さで本体12内に沈んで図示しない電源回路を閉じると共に、蓋部材34を開けると本体12外に突出して電源回路を開くものである。したがって、蓋部材34を開けたまま作動スイッチ26をＯＮしても、紫外線殺菌灯22に電源供給はされず、紫外線が発生することもない。また、洗浄・殺菌の途中で蓋部材34を開けた場合には、直ちに電源供給が中断され、紫外線殺菌灯22が消灯することとなる。あるいは、適当な施錠機構を蓋部材34や本体12に設けることにより、洗浄・殺菌中は蓋部材34が絶対に開かないよう構成してもよい。

【００１３】なお、紫外線殺菌灯22を洗浄槽14内に組み込むに際し、必ずしも上記のように洗浄槽14の内壁面14ａ，14ｂに凹部18を形成し、該凹部18内に紫外線殺菌灯

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22を配置すると共に、その開口を紫外線透過板20で液密に閉塞するよう構成する必要はない。例えば、紫外線透過性の保護管内に収納する等、適当な防水対策を施した紫外線殺菌灯22を、直接洗浄槽14内に配置してもよい。この場合、保護管の表面に紫外線透過性のフッ素樹脂（例えば商品名「テフロン」が該当する）をコーティングして、その機械的強度を高めることが望ましい。

【００１４】図３は、上記紫外線殺菌灯22を示すものである。この紫外線殺菌灯22は、透明石英ガラスなどの紫外線透過材料で形成した管状気密容器46を有して成り、該管状気密容器46の左端は排気管48ａを備えたステム48によって閉塞されている。また、一対のリード端子50ａ，50ｂが、このステム48を貫通して管状気密容器46内に導入されており、一方のリード端子50ａの先端は針状電極52を構成すると共に、他方のリード端子50ｂの先端には、一定の間隙（補助放電間隙55）を保って針状電極52を囲繞する筒状電極54が接続されている。この筒状電極54の外周面には支持棒56が接続され、該支持棒56の先端には水銀を収納したリング状のゲッタ部材58が接続されている。管状気密容器46の右端も、同様にステム48によって閉塞されると共に、一対のリード端子50ａ，50ｂ、針状電極52、筒状電極54及び支持棒56によって支持されたゲッタ部材58が配されている。この結果、管状気密容器46両端の筒状電極54同士が、所定の間隙（主放電間隙60）を隔てて対向配置される。なお、この紫外線殺菌灯22には製造過程で高周波加熱が施され、これによって上記ゲッタ部材58内に収納されている水銀が蒸発するため、最終的には管状気密容器46内に水銀蒸気が充満することとなる。

【００１５】図４は、この紫外線殺菌灯22の回路構成を示す概念図であり、電源62より交流電源の供給が開始されると、まず距離の短い補助放電間隙55（針状電極52と筒状電極54との間）間でトリガ放電が開始される。つぎに、このトリガ放電によって生じたイオンのプライミング効果により、主放電間隙60（筒状電極管54間）において主放電が生成され、電子が水銀蒸気に衝突して約２５３．７ｎｍの波長を有する紫外線が放射される。従来の紫外線殺菌灯は、フィラメントを備えた熱電極型であるため、超音波発振部材からの振動によって断線する危険性が高いものであった。これに対し、この紫外線殺菌灯22はフィラメントを用いない構造であるため、超音波振動によって断線するおそれがなく、超音波発振部材24との併用が可能である。

【００１６】上記においては、直管型の紫外線殺菌灯22を用い、洗浄槽14の２つの内壁面14ａ，14ｂ方向から紫外線を照射するよう構成したが、本発明はこれに限られるものではない。例えば、図５に示すように、略Ｕ字型に加工した管状気密容器64を備えた紫外線殺菌灯66を用いると共に、洗浄槽14の３つの内壁面方向から紫外線を照射するよう構成してもよい。あるいは、図６に示すように、略円環状（Ｃ字型）に加工した管状気密容器68を備えた紫外線殺菌灯70を用いると共に、図７に示すように、紫外線透過性物質にて形成した有底円筒状の洗浄槽72を囲繞するように複数個の紫外線殺菌灯70を積層させてもよい。

【００１７】また、上記のように細長い管形の紫外線殺菌灯を用いる代わりに、図８に示すように、紡錘形の紫外線殺菌灯74を用いてもよい。この紫外線殺菌灯74は、紫外線透過性ガラスよりなる紡錘形の気密容器76内に、水銀蒸気等の紫外線放射ガスを充填すると共に、一対の放電電極78，78を所定の放電間隙80を隔てて対向配置し、両電極78，78に接続したリード端子82，82を外部に導出した構造を備えている。この紫外線殺菌灯74を多数集積させて発光ユニットを形成し、該発光ユニットを洗浄槽の内部あるいは外部に配置することにより、洗浄槽内のコンタクトレンズを殺菌できる。例えば、図９に示すように、円環状のランプホルダ84に形成された図示しない係合孔部に多数の紡錘形紫外線殺菌灯74を挿入・固定し、各紫外線殺菌灯74の発光部をランプホルダ84の内円84ａ側に向けることによって発光ユニット86を形成すると共に、ランプホルダ84の内円84ａに有底円筒状の洗浄槽72を挿着する。この場合、複数の発光ユニット86を積層すれば、より強力な紫外線発光源を構成することができる。なお、紡錘形紫外線殺菌灯74を直接洗浄槽内に配置する場合には、上記と同様に適当な防水対策及び機械的強度向上対策を講ずるのが望ましい。

【００１８】上記においては、コンタクトレンズの洗浄・殺菌を例に説明したが、本発明に係る洗浄器は、これに限定されるものではない。例えば、眼鏡や医療器具、食器など、洗浄と殺菌が必要な物品の洗浄器として広く応用可能である。

【００１９】

【発明の効果】本発明に係る洗浄器は、単一の洗浄槽に、洗浄用の超音波発振部材と、殺菌用の紫外線殺菌灯を併せて装着したため、洗浄器の省スペース化や洗浄・殺菌作業の省力化が実現できると共に、洗浄工程と殺菌工程を同時に実施することにより、所要時間の短縮化も図れる。また、加熱部材を用いることなく、紫外線殺菌灯によって殺菌を行うため、超音波発振部材が熱劣化することがなく、その分洗浄器の寿命特性が向上する。

【図面の簡単な説明】

【図１】本発明に係る洗浄器の外観を示す斜視図である。

【図２】上記洗浄器の概略断面図である。

【図３】紫外線殺菌灯の一例を示す部分断面図である。

【図４】上記紫外線殺菌灯の回路構成を示す概念図である。

【図５】紫外線殺菌灯の変形例を示す平面図である。

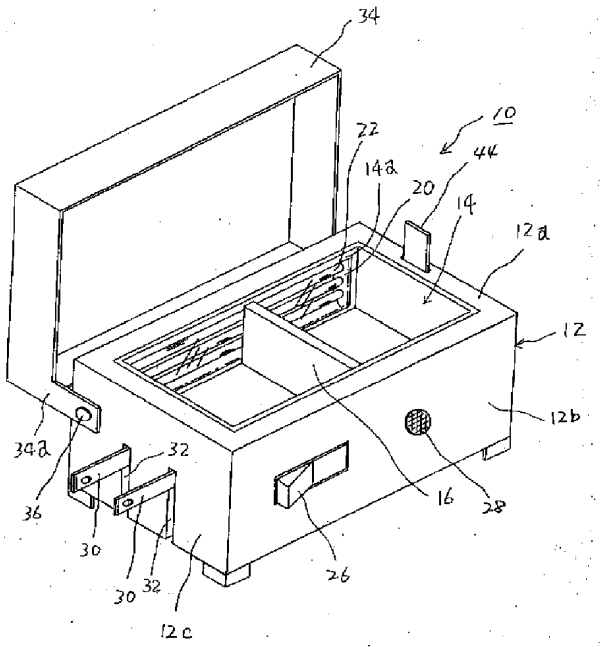
【図６】紫外線殺菌灯の変形例を示す平面図である。

【図７】紫外線殺菌灯の応用例を示す側面図である。

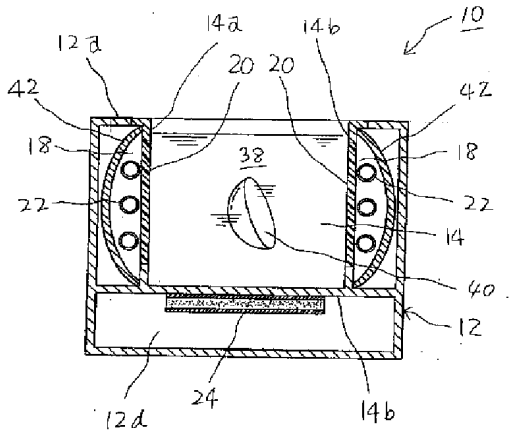
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【図８】紫外線殺菌灯の他の例を示す側面図である。
【図９】紫外線殺菌灯の応用例示す平面図である。
【図１０】従来例を示す概略断面図である。
【図１１】従来例を示す概略断面図である。
【符号の説明】
10　洗浄器
12　本体
14　洗浄槽
18　凹部
20　紫外線透過板
22　紫外線殺菌灯
24　超音波発振部材
38　洗浄液
42　凹面鏡
46　管状気密容器
52　針状電極
54　筒状電極
55　補助放電間隙
60　主放電間隙
64　管状気密容器
66　紫外線殺菌灯
68　管状気密容器
70　紫外線殺菌灯
72　洗浄槽
74　紫外線殺菌灯
76　紡錘形気密容器
78　放電電極
80　放電間隙
82　リード端子

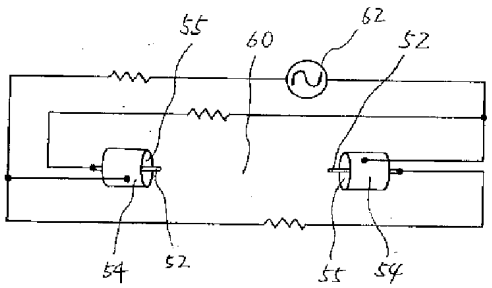
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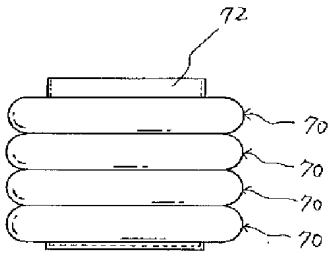
【図２】



【図４】

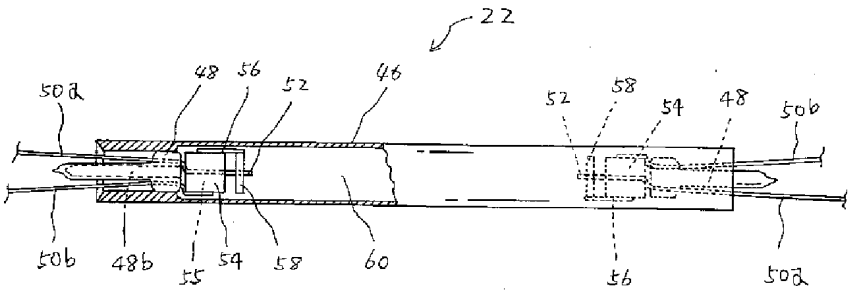


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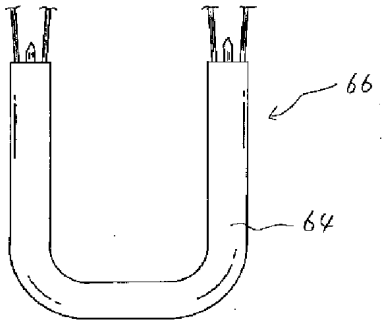


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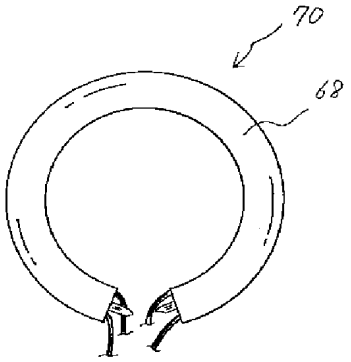
【図３】



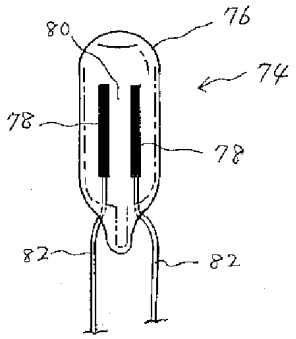
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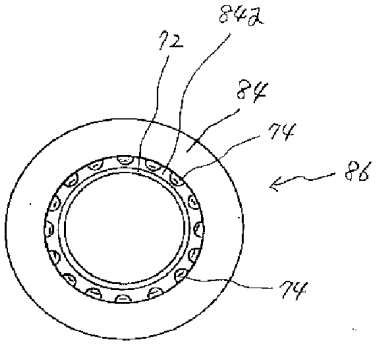
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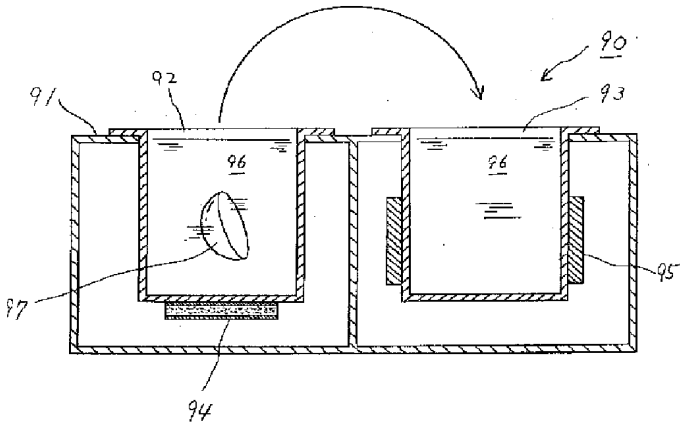
【図８】



【図９】

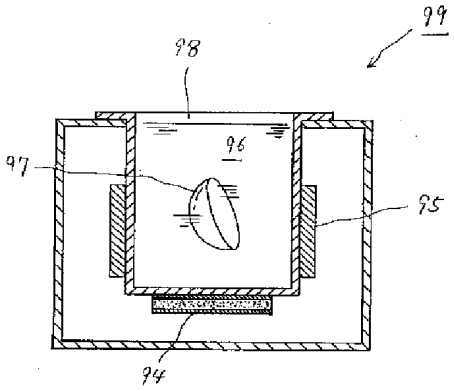


【図１０】



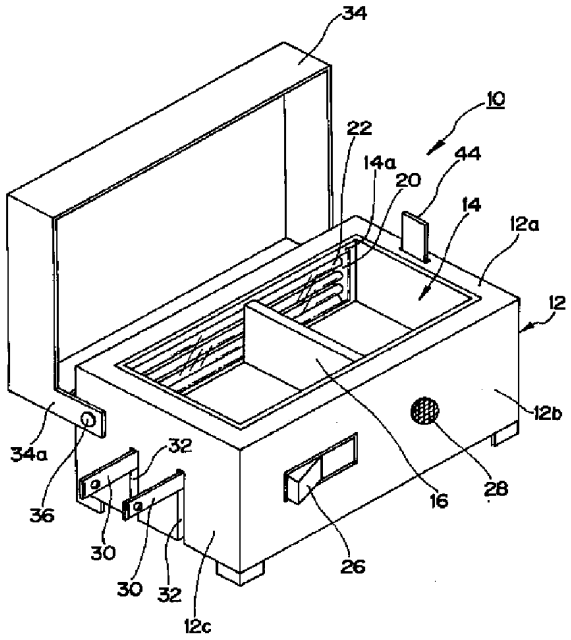
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【図１１】

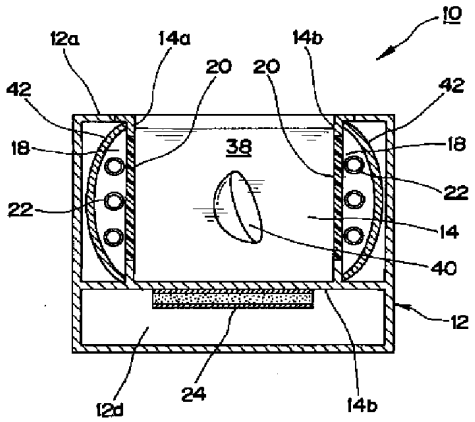


【手続補正書】
【提出日】平成６年８月８日
【手続補正１】
【補正対象書類名】図面
【補正対象項目名】全図
【補正方法】変更
【補正内容】

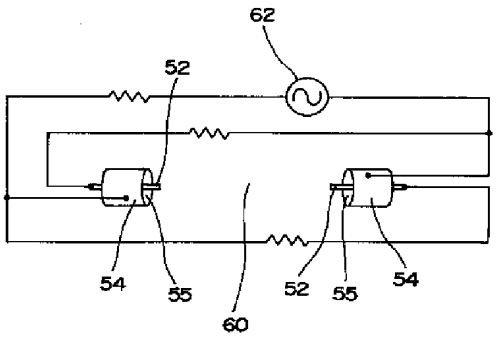
【図１】



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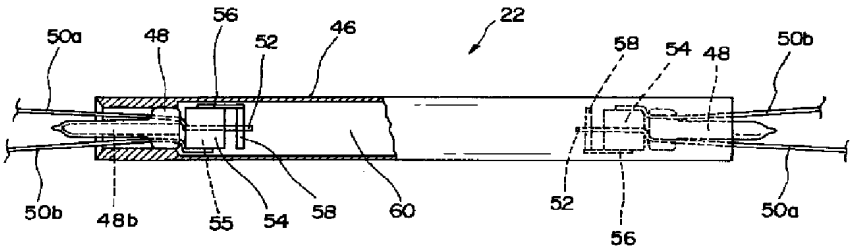


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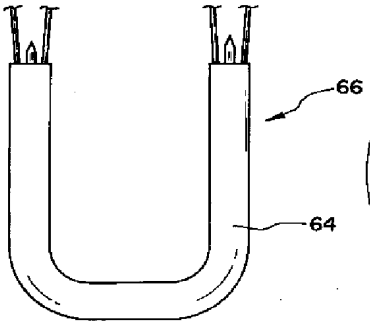


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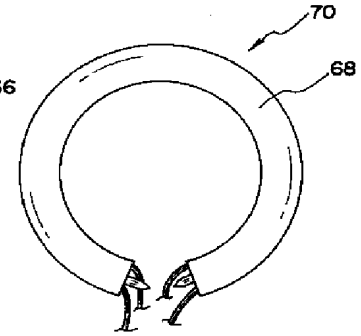
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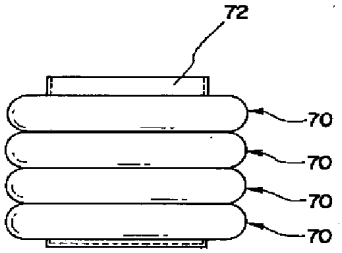
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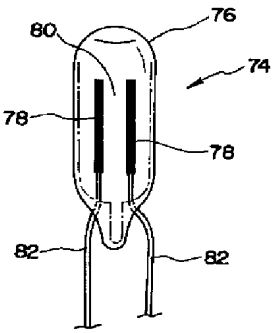
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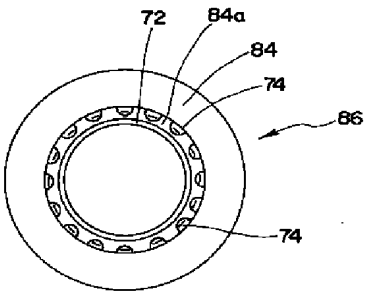
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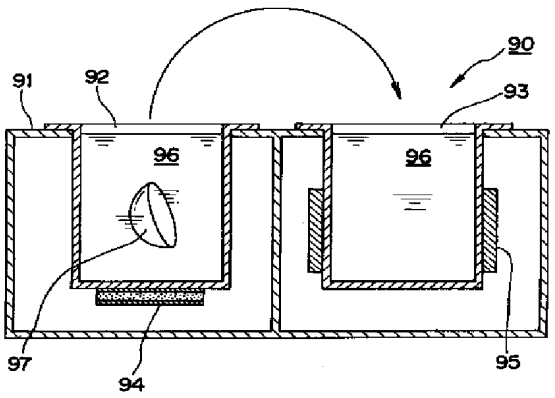
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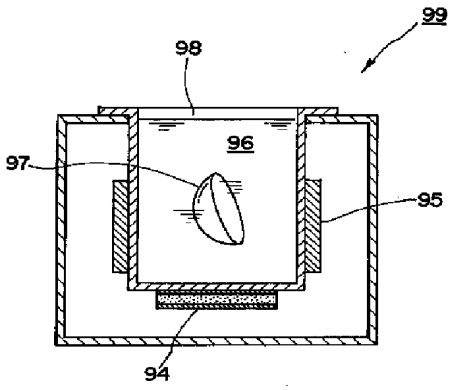


【図１０】



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【図１１】



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Espacenet

KR20010053840A HAND STERILIZER

Applicants: I & Q TECHNOLOGY CORP CO LTD [KR]

Inventors: KANG HO GYEONG [KR],KIM JEONG GUK [KR]

Classifications:
IPC ***A61L2/10;*** (IPC1-7): A61L2/10;

CPC **A61L2/0047 (EP); A61L2/0088 (EP); A61L2/10 (KR); A61L2/22 (EP); A61L2/24 (EP);** A61L2202/11 (KR); A61L2202/121 (KR); A61L2202/14 (KR); A61L2202/15 (KR);

Priorities: KR19990054368A 1999-12-02

Application: KR19990054368A 1999-12-02

Publication: KR20010053840A 2001-07-02

Published as: KR20010053840A

HAND STERILIZER

Abstract

PURPOSE: Provided is a hand sterilizer which sterilizes hands by sterilizing water perfectly and work tools using an infrared ray so that it eliminates contamination factors. CONSTITUTION: The hand sterilizer comprises the parts of: a housing part(110) wherein a sterilizing room(109), a semicircular alarm part(118) and a cover are formed; a power supplier wherein more than two sensors are placed, a selection switch is placed to spray sterilizing water selectively, a signal treatment plate is formed to be connected to the sensor and the selection switch and a display lamp are formed to display red and blue color; and a sterilization driving part wherein a pump, a storage vessel, a valve, a nozzle and an ultraviolet sterilization lamp are electronically connected to the signal treatment plate of the power supplier.

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Patents KR20010053840A

Sterilizer of hand

Abstract

translated from Korean

The present invention relates to a hand sterilizer, and in particular, the housing portion to form a disinfection room while going deeply in the lower front side to disinfect the hands; it is mounted inside the housing part and installs two sensors in the direction of hand entry in the ceiling of the disinfection room, and installs a selection switch for spraying disinfectant water selectively on one side where the sensor is mounted, and the sensor and the selection switch and electrical A power supply unit connected to the power supply unit to form a signal processing plate mounted on a lid of the housing unit and to form a separate display lamp in front of the housing unit; The pump is operated by receiving power from the power supply unit, and the pump is mounted on the upper side of the disinfection chamber forming part inside the housing part, connected to the inlet and the hose of the pump, and connected to the reservoir of the glass material storing the disinfecting water by the hose. It is equipped with a valve which is connected to the outlet of the hose and the hose and the nozzle connected to the outlet of the pump and the hose is composed of a sterilization drive unit which is mounted in the direction in which the hand enters the ceiling of the disinfection room of the housing part, the working hand is further disinfected water Not only does it disinfect completely, it also disinfects the work tools with ultraviolet rays, and it also has the effect of removing contaminants caused by the disinfectant itself in storage containers and disinfection rooms.

KR20010053840A

South Korea

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Other languages: Korean

Inventor: 김정수, 장도경

Worldwide applications

1999 KR

Application KR1019990054388A events

1999-12-02 Application filed by 김정수, (주)정이엔구 filed as KR1019990054388A

1999-12-02 Priority to KR1019990054388A

2001-07-02 Publication of KR20010053840A

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Classifications

- A61L2/0088 Liquid substances

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Claims (2)

Hide Dependent

translated from Korean

A housing part which forms a disinfection room and protrudes in a semicircular shape to the inside of the front lower side so as to sterilize a hand and forms a notice plate 118 protruding upward in a semicircular shape, and opens and closes the entire lid by a screw; The sensor is mounted inside the housing part and two or more sensors are installed in the direction in which the hand enters the ceiling of the disinfection room, and a selection switch for selectively spraying disinfectant water is installed on one side where the sensor is mounted. A power supply unit electrically connected to a selection switch and having a signal processing plate mounted on a lid of the housing unit, and a separate display lamp formed in red and blue in front of the housing unit; It operates by receiving power from the power supply unit, and a pump is mounted on the upper side of the disinfection chamber forming part inside the housing part, connected to the inlet of the pump by a hose, and a storage container formed of glass is mounted. A valve connected to the outlet of the pump and a hose is connected to the pump, and a nozzle connected to the outlet of the pump and the hose is mounted in the direction in which the hand enters the ceiling of the disinfection chamber of the housing part. UV sterilization driver is mounted on the ceiling and electrically connected to the signal processing plate of the power supply unit; Hand sterilizer, characterized in that consisting of. The hand sterilizer of claim 1, wherein the disinfection chamber of the housing unit includes a grille formed therein and a door formed outside thereof.

Description

translated from Korean

Hand Sterilizer (STERILIZER OF HAND)

The present invention relates to a hand sterilizer, and in particular, it is formed in a small and simple size that can be efficiently used in the manufacture of pharmaceuticals, food processing, and various laboratories. The present invention relates to a hand sterilizer which not only makes it possible to disinfect completely, but also prevents contamination of the disinfectant itself and prevents secondary contamination after disinfection.

In general, people do all the work by hand, so it is necessary to disinfect hands before entering work in an industrial workplace that requires special hygiene, such as food processing and cooking, pharmaceutical manufacturing, and hospitals. It is also necessary to disinfect hands when leaving work at the quarantine station and in various laboratory laboratories.

In addition, various germs originate from the hands, so it is desirable to regularly disinfect the hands of housewives or family members in order to protect the family's health at home, in addition to the above-mentioned workplaces, and more necessary when there are patients in the family.

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Conventionally, in order to disinfect hands, the disinfecting water was put in a container and washed by washing the hands. This method is not only cumbersome, but also waste of disinfecting water is severe and cannot be completely disinfected.

Accordingly, the finger sterilizer of Japanese Patent Application Laid-open No. Hei 6-54772 solves the above-mentioned conventional problem. As shown in FIG. 6, the nozzle 18 is sprayed so that the disinfecting water is injected into the interior ceiling of the disinfection chamber 17. Mounted.

The disinfection chamber 17 is formed on the upper side of the housing 16, and the storage chamber 11 is formed on the lower side of the housing 16, but the storage vessel containing the disinfecting water, the pump and the valve are connected through a hose.

In addition, there is an operation panel 27 on the front of the storage chamber 11 to include a power switch 23 to form a knob (unsigned) for controlling the amount of disinfectant water, and the operation panel 27 is a cover. We open and close at (26).

Meanwhile, a hose connected to the pump and the valve of the storage chamber 11 extends into the upper side of the disinfection chamber 17 through the rear passage 15 to be connected to the nozzle 18, and a sensor is located at the center of the nozzle 18. (20) is formed to detect the hand entered for disinfection to spray disinfectant water.

This prior art has the advantage of being able to easily disinfect the hand and also to disinfect the whole by solving the conventional problems described above and by disinfecting the hand through the disinfecting water sprayed from the disinfection room. Have.

First, the prior art requires that the pump has a large delivery pressure so that the nozzle is in the ceiling of the disinfection room and the reservoir and pump and the valve are at the bottom of the floor of the disinfection room so that the disinfectant can be drawn up to the ceiling and sprayed out of the nozzle. The capacity of the pump must be increased.

Secondly, since the prior art is only disinfecting hands by disinfecting water, if the disinfecting water itself is contaminated, no other countermeasures are provided and a separate disinfectant is required to disinfect the tools for the work.

Third, the prior art will not be able to disinfect until the repair is over if the sensor fails or there is an error in signal transmission.

The present invention was invented to solve the above problems, an object of the present invention is to first install a storage container, a pump and a valve on the upper side of the disinfection room to improve the injection efficiency of the disinfectant water with a pump of the same capacity, and secondly in addition to disinfecting the nozzle inside the disinfection room, a separate ultraviolet sterilization lamp can be used to disinfect and disinfect by ultraviolet rays. Third, the hand can be manually selected in addition to disinfection by the sensor so that the hand can be disinfected even if the sensor breaks down. To provide a sterilizer.

In order to achieve the above object, the present invention provides a disinfection room while going deeply into the bottom of the front underneath to disinfect hands, and a housing part for forming a lid on the rear to open and close with a screw; It is mounted inside the housing part and installs two sensors in the direction of hand entry in the ceiling of the disinfection room, and installs a selection switch for spraying disinfectant water selectively on one side where the sensor is mounted, and the sensor and the selection switch and electrical A power supply unit connected to the power supply unit to form a signal processing plate mounted on a lid of the housing unit and to form separate display lamps in red and blue in front of the housing unit; It is operated by receiving power from the power supply unit and mounted a pump on the upper side of the disinfection chamber forming part in the housing part, connected to the inlet and the hose of the pump, and stores the disinfecting water and equipped with a storage container formed of glass, It is equipped with a valve connected to the reservoir and the hose, and connected to the outlet of the pump and the hose, and the nozzle connected to the outlet and the hose of the pump in the direction in which the hand enters the ceiling of the disinfection room of the housing part and UV sterilization Hand sterilizer characterized in that consisting of a sterilization drive unit made by mounting.

Therefore, according to a preferred embodiment of the present invention, when the operator puts his hand in the disinfection room when disinfecting the hand for work, the sensor of the power supply detects this and sends it to the signal processing plate, the signal processing plate is the power to the pump of the sterilization drive unit Allow it. At this time, the pump operates to inhale the disinfectant water in the storage container and send it to each nozzle through the outlet for injection. Return to storage container.

1 is an overall perspective view of a hand sanitizer according to a first embodiment of the present invention,

2 is a system diagram of the hand sanitizer shown in FIG. 1;

3 is a view showing the mounting state of the sensor, the selector switch and the nozzle of the hand sterilizer shown in FIG.

Figure 4 is a view showing the mounting state of the sterilization drive unit of the hand sterilizer shown in Figure 1,

5 is an overall perspective view of a hand sanitizer according to a second embodiment of the present invention;

Figure 6 shows a finger sterilizer according to the prior art Japanese Patent Laid-Open No. 6-54772.

Explanation of symbols on the main parts of the drawings

100: hand sanitizer 104: grill

106: door 109: disinfection room

110: housing portion 112: storage container inlet

114: plug 116a, 116b: indicator lamp

118: notice board 119: disinfecting water tray

120: power supply 122: sensor

124: selection switch 126: signal processing board

130: sterilization drive unit 132: pump

134: valve 136: storage container

200: UV sterilization lamp

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Hereinafter, the most preferred embodiments of the present invention will be described in detail with reference to the accompanying drawings so that those skilled in the art may easily implement the present invention.

1 is an overall perspective view of a hand sanitizer according to an embodiment of the present invention.

The hand sterilizer 100 has a housing part 110 formed under the front surface of the disinfection chamber 109 deeply inward, and the housing part 110 has a small and convenient size.

The housing 110 is formed at the rear of the upper surface to form the inlet 112 of the storage container to be described later, and the plug 114 for connecting the power switch (S / W) and the external power on the side and at the front The red and blue indicator lamps 116a and 116b, which will be described later, are mounted on the upper side of the disinfection room, respectively, and a notice board protruding in a semi-circular shape prominently in the eyes of the worker disinfecting the hand in the disinfection room 109 underneath. 118).

In addition, the back of the housing portion 110 is formed so that the lid not given a sign can be opened and closed by means of a screw or the like.

In addition, reference numeral 119, which is not described in the drawings, refers to a disinfecting water tray for disinfecting hands at the bottom of the disinfection room 109 and receiving falling disinfecting water to prevent leakage.

2 is a system diagram of the hand sanitizer shown in FIG.

The hand sterilizer 100 includes, besides the housing unit 110 described above, a power supply unit 120 mounted inside the housing unit 110, and a power supply unit 120 mounted on the housing unit 110. The sterilization driving unit 130 is operated by a power applied from the.

The power supply unit 120 installs two sensors 122 which are exposed toward the disinfecting hand in the interior of the disinfection room 109, and together with the operation of the sensor in an adjacent portion of the sensor 122. The selection switch 124 is formed to allow the operator to select the operation by selection.

In addition, the sensor 122 and the selection switch 124 are electrically connected to the input terminal of the signal processing plate 126, respectively, and the signal processing plate 126 may open and close the rear surface of the housing part 110. Equipped with a lid to make use of the space efficiently.

The signal processing board 126 outputs proper power in response to signals transmitted from the sensor 122 and the selection switch 124 in a state where the power switch S / W is 'on'. The display lamps 116a and 116b on the front surface of the housing part 110 are connected to the sterilization driver 130 on the other hand.

The indicator lamps 116a and 116b in green light inform the user that the hand sanitizer 100 is in normal operation, and in red light indicate that the supply of disinfectant water is required.

The sterilization driving unit 130 is mounted inside the housing part by opening the lid of the housing part 110 like the power supply part 120, and pump 132, the valve 134, and the UV sterilization lamp 200, respectively. The signal processing plate 126 of the power supply unit 120 is electrically connected to and mounted.

The pump 132 and the valve 134 are connected to the reservoir 136 in which the disinfectant is stored, respectively, by a hose h. In particular, the pump 132 is installed in the disinfection chamber 109 of the housing 124. The nozzles 138 and 138 'are also connected by a hose h.

The ultraviolet sterilization lamp 200 is installed in the disinfection room together with the nozzles 138 and 138 'and is operated by receiving power from the power supply unit 120 to perform strong sterilization.

3 is a view showing the mounting state of the sensor 122, the selection switch 124 and the nozzles (138, 138 ') and the ultraviolet sterilization lamp 200 of the hand sterilizer shown in FIG.

The sensor 122 may be mounted in two or more, preferably two or more places where the hand is always located when the hand is placed in the disinfection room 109 for disinfection in the ceiling 109 ' of the disinfection room 109. If one of them is broken, it works without any problem even if the other one detects normally.

The selector switch 124 is mounted to one side of the sensor 122, which, as described above, can be operated by the user without depending on the sensor 122, and when the sensors 122 are all broken down, 'ON' The nozzles 138 and 138 can be simply checked by selecting the 'OFF' state while the power is being supplied to allow the device to operate normally.

In addition, the nozzles 138 and 138 'are respectively installed toward the hands where the hands are always positioned when the hands are comfortably open for disinfection, and the nozzles may use various types such as a concentrated spray type. However, the present embodiment is preferably used in explosion-proof type so that the disinfectant water is evenly jetted all over the hand.

The ultraviolet sterilization lamp 200 is mounted to the ultraviolet light bulb 210 and the case 214 behind the disinfection room ceiling (109 ') and can be driven according to the signal transmitted from the signal processing plate 126. It is not shown, but by installing a separate adjustment knob by means according to the public will be able to adjust the driving time and intensity, as well as 'on', 'off' according to the user's selection.

4 is a view showing a mounting state of the sterilization drive unit 130 of the hand sterilizer shown in FIG.

The sterilization drive unit 130 is mounted on the inside of the lid opening of the housing 110, the reference numeral 139 shown in the drawing is projected inward while the disinfection chamber 109 is formed in the front of the housing 110 in the shape, the plate 140 is mounted on the inside of the upper side, and the pump 132 is mounted on the plate 140 on the left side and the valve 134 on the right side on the plate 140.

In addition, the storage container 136 is mounted while coming out from the place where the pump 132 and the valve 134 are mounted. The storage container 136 is to store the disinfecting water is formed with an unmarked stopper on the upper side is exposed to the outside through the inlet 112 of the housing 110, while the storage container 136 is As it is made of glass, it eliminates the possibility of self-infection due to disinfectant even after long use.

In addition, the reservoir 136 is connected to the inlet 132a of the pump and the hose h1, and the outlet 132b of the pump is connected to the inlet 134a of the valve by another hose h2, and each nozzle (138, 138 'and another hose h3, h4, the outlet 134b of the valve is connected to the reservoir 136 by another hose h5.

5 is an overall perspective view of a hand sterilizer according to a second embodiment of the present invention, in order to be able to disinfect work tools or tools in addition to hand disinfection in the disinfection room 119 without a separate sterilizer.

Accordingly, a grill 104 on which work tools and the like can be placed in the disinfection chamber 119 is placed on the support jaw 105 formed on both side walls of the disinfection chamber 19. Of course, the ceiling viewed by the grill 104 is equipped with a nozzle and ultraviolet sterilization lamp 200 so that work tools, etc. are primarily disinfected by disinfectant water sprayed from the nozzles 138 and 138 ', and secondary UV sterilization lamps (200) can be sterilized by ultraviolet light emitted from.

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In addition, the front side of the disinfection room 119 is installed so that the door 106 is closed from the bottom up, which seals the disinfection room when disinfecting the work tool with ultraviolet rays to prevent outside air from entering the disinfection room. It is. Reference numeral 107 is a known locking member to lock the door 106 when it is in a closed state to tightly seal the disinfection room.

According to a preferred embodiment of the present invention described above, when the operator puts his hand in the disinfection room 109 to disinfect the hand after the work in the power 'on' state, the sensor 122 detects it and converts it into an electrical signal The signal is sent to the signal processing board 126.

The signal processing plate 126 supplies power to the sterilization drive unit 130 according to the above signal to operate the pump 132. The disinfectant in the reservoir 136 is then pressurized through the inlet 132a of the pump and sent to the outlet 132b of the pump to separate the nozzles 138 and 138 'through the separate hoses h3 and h4. Sprayed).

When disinfection is finished and the hand is removed, there is no detection signal from the sensor 122, so the power is cut off and the pump 132 is stopped accordingly. At this time, the valve 134 is in an open state and the pump 132 through the hose h2.) Suck all the disinfectant water left in the and return it to the reservoir with a hose (h5). If there is no sterilizing water in the storage container 136, the sterilizing water cannot be sucked from the pump 132, and thus the signal processing unit 130 detects such a state and 'turns on' the red display lamp 116a to warn the supply of the sterilizing water. Let's do it.

In addition, when disinfecting the interior of the disinfection room, disinfecting the hands again with ultraviolet rays and disinfecting the work tools, UV sterilization is set at an appropriate intensity and time. Disinfecting efficiency is increased by placing work tools on it and closing the door to seal the disinfection room.

The hand sterilizer of the present invention described above, first, by installing a storage container, a pump and a valve on the upper side of the disinfection room to improve the spraying efficiency of the disinfectant water with a pump of the same capacity, and secondly, separate ultraviolet rays other than the nozzle inside the disinfection room. Disinfection and disinfection by ultraviolet light can be used to disinfect not only hands but also work tools such as work gloves. Third, it is possible to manually select in addition to disinfection by sensor so that hand disinfection can be done even if the sensor breaks down. Fourth, the disinfecting water storage container has a glass effect to eliminate the possibility of self-contamination or infection.

Since what has been described above is merely a mere example in all respects, the present invention should not be limitedly interpreted based on this. Therefore, modifications and equivalent embodiments that fall within the true spirit and scope of the present invention shall fall within the claims of the present invention.

Similar Documents

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(54) 손 소독기

요약

본 발명은 손 소독기에 관한 것으로, 특히 손을 소독시킬 수 있게 전면 아랫쪽에 안쪽으로 깊이 들어가면서 소독실을 형성하는 하우징부와; 상기 하우징부의 내측에 장착되며 상기 소독실의 천정중에 손이 진입하는 방향으로 센서를 두개 설치하고 아울러 이 센서가 장착된 일측에 선택으로 소독수를 분사시키는 선택스위치를 설치하며 상기한 센서 및 선택스위치와 전기적으로 연결되며 상기 하우징부의 뚜껑에 장착되는 신호처리판을 형성하며 상기 하우징부의 전방에 별도의 표시램프를 형성하여 이루어지는 전원공급부와; 상기 전원공급부로부터 전원을 인가받아 작동하며 상기 하우징부의 내부에 상기 소독실 형성부위의 상측에 펌프를 장착하고 이 펌프의 입구와 호스로 연결되며 소독수를 저장하는 유리재의 저장용기에 호스로 연결되며 상기 펌프의 출구와 호스로 연결되는 밸브를 장착하며 상기 펌프의 출구와 호스로 연결되는 노즐을 상기 하우징부의 소독실 천정에 손이 진입되는 방향에 장착되어 이루어지는 살균구동부로 구성되어, 작업한 손을 소독수로 더욱 완벽히 소독시킬 뿐만아니라 자외선으로 작업도구를 또한 소독시킬 수 있도록 함과 아울러 저장용기 및 소독실의 소독수 자체에 따른 오염요소를 제거하는 효과가 있다.

대표도
도 1

색인어

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손 소독기, 소독실, 하우징부, 전원공급부, 살균구동부

명세서

도면의 간단한 설명

도1은 본 발명의 제1실시예에 따른 손 소독기의 전체사시도,

도2는 도1에서 도시된 손 소독기의 시스템도,

도3은 도1에서 도시된 손 소독기의 센서, 선택스위치 및 노즐의 장착상태를 도시한 도면,

도4는 도1에서 도시된 손 소독기의 살균구동부의 장착상태를 도시한 도면,

도5는 본 발명의 제2실시예에 따른 손 소독기의 전체사시도,

도6는 선행기술인 일본 특허공개 평6-54772에 의한 손가락 소독기를 도시한 도면.

* 도면의 주요부분에 대한 부호의 설명 *

100 : 손 소독기 104 : 그릴

106 : 도어 109 : 소독실

110 : 하우징부 112 : 저장용기 주입구

114 : 플러그 116a,116b : 표시램프

118 : 알림반 119 : 소독수 받이

120 : 전원공급부 122 : 센서

124 : 선택스위치 126 : 신호처리판

130 : 살균구동부 132 : 펌프

134 : 밸브 136 : 저장용기

200 : 자외선살균등

발명의 상세한 설명

발명의 목적

발명이 속하는 기술 및 그 분야의 종래기술

본 발명은 손 소독기에 관한 것으로서, 특히 의약품 제조와 식품의 가공 · 조리 및 각종 연구실에 효율적으로 될 수 있는 작고 간편한 크기로 형성되며 소독이 필요한 손의 진입을 감지하여 소독수를 분사시켜 손의 구석구석을 완벽하게 소독시킬 수 있도록 할 뿐만아니라 소독수 자체의 오염원을 방지하고 소독후에 2차적인 오염을 방지하는 손 소독기에 관한 것이다.

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일반적으로, 사람은 손으로 모든 작업을 하기 때문에 특별한 위생관리가 필요한 산업장 즉, 식품 가공및 조리장이나 의약품 제조실 그리고 병원 등에서 작업에 들어가기 전에 손의 소독이 필요하고, 아울러 쓰레기 처리장 및 하수처리장 그리고 검역소, 각종 실험연구실에서 작업을 끝내고 작업장에서 나올 때에 또한 손을 소독하는 것이 필요하다.

그 뿐만 아니라 각 종 병균이 손에서 기인된다고 하므로 상기한 작업장 외에 가정에서도 가족의 건강을 지키기 위하여 주부나 가족들의 손을 정기적으로 소독하는 것이 바람직하고 더욱 가족 중에 환자가 있을 경우에는 더욱 필요하다.

종래에는 손을 소독하기 위하여 소독수를 용기에 붇고서 손을 씻는 식으로 소독하였는 데, 이러한 방식은 번거로울 뿐만 아니라 소독수의 낭비 또한 심하고 완전하게 손을 소독할 수 없었다.

따라서, 일본 특허공개 평6-54772호의 '손가락 소독기' 는 상기한 종래의 문제점을 해결한 것으로, 도6에 도시되어 있는 바와 같이 소독실(17)의 내부 천정에 소독수가 분사되도록 노즐(18)을 장착하였다.

상기한 소독실(17)은 하우징(16)의 상측에 형성되어 있으며, 그 아랫쪽에 수납실(11)을 형성하여 도시되어 있지는 않지만 소독수를 담는 저장용기와 펌프 및 밸브가 호스를 통해 연결되어 있다.

그리고, 상기 수납실(11)의 전면에 조작반(27)이 있어 전원스위치(23)를 포함하여 소독수의 양을 조절할 수 있는 노브(미부호)등을 형성하고 있고, 이 조작반(27)은 커버(26)로 열고 닫을 수 있도록 하고 있다.

한편, 상기 수납실(11)의 펌프 및 밸브와 연결된 호스는 후방통로(15)를 통해 소독실(17)의 상측 내부로 연장되어 노즐(18)과 연결되고, 이 노즐(18)의 중앙에 센서(20)가 형성되어 있어 소독을 위해 진입한 손을 감지하여 소독수를 분사시키게 된다.

이러한 선행기술은, 상기한 종래의 문제점을 해결하고 소독실에서 분사하는 소독수를 통해 손을 소독시킬 수 있도록 하여 손을 간편하게 소독시킬 수 있고 또한 전체적으로 소독시킬 수 있다는 장점을 가지고 있으나, 다음과 같은 문제점을 가지고 있다.

첫째로, 선행기술은 노즐이 소독실 천정에 있고 저장용기 및 펌프 그리고 밸브가 소독실 바닥의 아랫쪽에 있기 때문에 소독수를 천정으로 끌어올리고 그것도 노즐에서 분사될 수 있도록 하기 위해서 펌프의 송출압이 커야 하고 이에 따라 펌프의 용량을 증대시켜야 한다.

둘째로, 선행기술은 단지 소독수에 의한 손 소독을 하는 것이므로 소독수 자체가 오염되었을 경우 그 외의 대책이 마련되지 않고 또한 작업을 위한 도구를 소독시키기 위해서는 별도의 소독기가 있어야 한다.

셋째로 선행기술은 센서가 고장이 나거나 신호전달에 오류가 생기면 수리가 끝날 때까지 손소독을 할 수 없게 된다.

발명이 이루고자 하는 기술적 과제

본 발명은 상기한 문제점을 해결하기 위하여 발명된 것으로, 본 발명의 목적은 첫째로 소독실의 상측에 저장용기와 펌프 그리고 밸브 등을 설치하여 같은 용량의 펌프로 소독수의 분사효율을 좋게 하며, 둘째로 소독실 내부에 노즐외 별도의 자외선살균등을 구비하여 자외선에 의한 살균 및 소독도 함께 할 수 있으며, 셋째로 센서에 의한 소독 외에 수동으로 선택할 수 있도록 하여 센서가 고장나도 손 소독을 할 수 있도록 하는 손 소독기를 제공하는 데에 있다.

상기한 목적을 달성하기 위하여 본 발명은, 손을 소독시킬 수 있게 전면 아랫쪽에 안쪽으로 깊이 들어가면서 소독실을 형성하고 후면에 전체적인 뚜껑을 형성하여 스크류로 열고 닫을 수 있게 하는 하우징부와; 상기 하우징부의 내측에 장착되며 상기 소독실의 천정중에 손이 진입하는 방향으로 센서를 두개 설치하고 아울러 이 센서가 장착된 일측에 선택으로 소독수를 분사시키는 선택스위치를 설치하며 상기한 센서 및 선택스위치와 전기적으로 연결되며 상기 하우징부의 뚜껑에 장착되는 신호처리판을 형성하며 상기 하우징부의 전방에 빨간색과 파란색으로 별도의 표시램프를 형성하여 이루어지는 전원공급부와; 상기 전원공급부로부터 전원을 인가받아 작동하며 상기 하우징부의 내부에 상기 소독실 형성

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부위의 상측에 펌프를 장착하고, 이 펌프의 입구와 호스로 연결되며 소독수를 저장하고 유리로 형성된 저장용기를 장착하며, 상기 저장용기와 호스로 연결되며 상기 펌프의 출구와 호스로 연결되는 밸브를 장착하고, 상기 펌프의 출구와 호스로 연결되는 노즐을 상기 하우징부의 소독실 천정에 손이 진입되는 방향에 장착함과 아울러 자외선살균등을 장착하여 이루어지는 살균구동부로 구성되는 것을 특징으로 하는 손 소독기이다.

따라서 본 발명의 바람직한 실시예에 따르면, 작업자가 작업을 위해 손을 소독할 때에 소독실에 손을 넣으면 전원공급부의 센서가 이를 감지하여 신호처리판으로 보내면 이 신호처리판은 전원을 살균구동부의 펌프로 인가시킨다. 이때 펌프가 작동하여 저장용기에 있는 소독수를 흡입시켜 출구를 통해 각 노즐로 보내어 분사시키고, 또한 자외선살균등을 점등시켜 재차 소독을 한 후에 손의 소독이 끝나면 밸브가 열리면서 펌프에 남아있는 소독수를 모두 저장용기로 귀환시킨다.

발명의 구성 및 작용

이하, 본 발명에 속하는 통상의 지식을 가진 자가 용이하게 실시할 수 있도록 하기위하여 본 발명의 가장 바람직한 실시예를 첨부한 도면과 함께 더욱 상세히 설명한다.

도1은 본 발명의 일실시예에 따른 손 소독기의 전체사시도이다.

이 손 소독기(100)는 앞면의 아랫쪽에 소독실(109)이 안쪽으로 깊게 들어가 형성되는 하우징부(110)를 가지는 데, 이 하우징부(110)는 작고 간편한 크기로 되어 있다.

이러한 하우징부(110)는 윗쪽면의 후방에 나중에 설명할 저장용기의 주입구(112)를 형성하고 측면에 전원스위치(S/W)와 외부전원을 연결하는 플러그(114)를 형성하고 아울러 앞면에는 상기 소독실의 윗쪽에 나중에 설명할 빨간색과 파란색의 표시램프(116a,116b)를 각각 장착하며, 그 아랫쪽에 소독실(109)에서 손을 소독하고 있는 작업자의 눈에 잘띄게 반원형으로 돌출된 알림반(118)을 형성한다.

또한 상기 하우징부(110)의 뒷면은 부호를 부여하지 않은 뚜껑이 스크류등의 수단으로 열고 닫을 수 있도록 형성되어 있다.

그리고, 도면에서 설명하지 않은 부호 119는 상기 소독실(109)의 바닥에서 손을 소독하고 떨어지는 소독수를 받아 외부로 누출되지 않도록 하는 소독수 받이를 칭한다.

도2는 도1에서 도시된 손 소독기의 시스템도이다.

이 손 소독기(100)는, 상기에서 설명한 하우징부(110)외에, 이 하우징부(110)의 내부에 장착되는 전원공급부(120), 그리고 상기 하우징부(110)에 장착되면서 전원공급부(120)로부터 인가되는 전원으로 작동되는 살균구동부(130)를 구성하고 있다.

상기 전원공급부(120)는 상기의 소독실(109)의 내부에서 소독하는 손을 향해 노출되는 두개의 센서(122)를 설치하고, 이와 함께 상기 센서(122)의 인접한 부분에 센서에 의한 작동과 임의 선택에 의한 작동을 작업자가 선택할 수 있게 하는 선택스위치(124)를 형성시킨다.

그리고, 상기 센서(122)와 선택스위치(124)는 각각 신호처리판(126)의 입력단과 전기적으로 연결되는 데, 이 신호처리판(126)은 상기 하우징부(110)의 후면을 열고 닫을 수 있도록 하는 뚜껑에 장착되어 공간을 효율적으로 사용하고 있다.

이러한 신호처리판(126)은 전원스위치(S/W)가 '온' 된 상태에서 상기 센서(122)와 선택스위치(124)로부터 전해지는 신호에 따라 적정전원을 출력하는 데, 출력단에 한편으로는 상기 하우징부(110)의 전면에 있는 표시램프(116a,116b)를, 다른 한편으로는 상기 살균구동부(130)를 연결하고 있다.

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상기 표시램프(116a,116b)는 초록색 빛으로 사용자에게 손 소독기(100)의 정상작동 중에 있는 것을 알려주고, 붉은색 빛으로 소독수의 공급이 필요하다는 것을 알려준다.

상기 살균구동부(130)는 상기 전원공급부(120)와 마찬가지로 상기 하우징부(110)의 뚜껑을 열고 하우징부 내부에 장착되며, 펌프(132)와 밸브(134) 그리고 자외선살균등(200)을 각각 상기 전원공급부(120)의 신호처리판(126)에 전기적으로 연결시켜 장착하고 있다.

상기 펌프(132)와 밸브(134)는 각각 소독수가 저장된 저장용기(136)에 호스(h)로 연결되어 있는 데, 특히 펌프(132)는 상기 하우징부(124)의 소독실(109)에 설치된 노즐(138,138')과 역시 호스(h)로 연결하고 있다.

상기 자외선살균등(200)은 상기 노즐(138,138')와 함께 소독실 내부에 설치되어 상기 전원공급부(120)로부터 전원을 인가받아 동작하여 강력한 살균작용을 한다.

도3은 도1에서 도시된 손 소독기의 센서(122), 선택스위치(124) 및 노즐(138,138') 그리고 자외선살균등(200)의 장착상태를 도시한 도면이다.

상기 센서(122)는 소독실(109)의 천정(109')중에서 소독을 위해 손을 소독실(109)에 넣었을 때에 손이 항상 위치하는 곳에 둘 또는 그 이상, 바람직하게는 둘로 장착되는 것으로 센서(122)중에 하나가 고장나면 다른 하나가 정상적으로 감지기능을 하였을 때에도 아무런 문제없이 작동하도록 한 것이다.

이 센서(122)의 한쪽으로 선택스위치(124)가 장착되는 데, 이것은 상기한 바와 같이 사용자가 선택으로 센서(122)에 의하지 않고 작동시킬 수 있는 것으로, 센서(122)가 모두 고장날 때에 'ON' 상태에 놓아 정상적으로 작동할 수 있도록 하거나 전원이 공급되는 중에 'OFF' 상태를 선택하여 간단히 노즐(138,138')을 간단히 점검할 수 있도록 한 것이다.

그리고, 상기 노즐(138,138')은 소독을 위해 손을 편안하게 벌릴 때에 두 손이 항상 위치하는 곳에서 이 손을 향하여 각각 설치되는 데, 이 노즐은 집중분사형등의 여러가지 형(type)을 사용할 수 있으나 본 실시예는 바람직하게 방폭형으로 사용하여 손 전체에 골고루 소독수가 제트(jet)되도록 하였다.

상기 자외선살균등(200)은, 소독실천정(109') 후방에 자외선전구(210)와 케이스(214)로 장착되어 있어서 상기 신호처리판(126)으로부터 전해지는 신호에 따라 구동할 수 있는 데, 그것은 도시하지는 않았지만 공지에 따른 수단으로 별도의 조절노브를 설치하여 사용자의 선택에 따라 '온' · '오프' 는 물론 구동시간과 세기를 조절할 수 있을 것이다.

도4는 도1에서 도시된 손 소독기의 살균구동부(130)의 장착상태를 도시한 도면이다.

이 살균구동부(130)는 상기 하우징부(110)의 뚜껑을 열고 그 안쪽에 장착되는 데, 도면에서 보여지는 부호 139는 하우징부(110)의 전면에서 소독실(109)가 형성되면서 안쪽으로 돌출된 형상으로, 그 상측의 안쪽으로 플레이트(140)가 장착되고, 이 플레이트(140)위에 도면에서 왼쪽에 펌프(132)가 장착되고 오른쪽에는 밸브(134)가 장착되어 있다.

그리고, 상기 펌프(132)와 밸브(134)가 장착된 곳에서 바깥쪽으로 나오면서 저장용기(136)가 장착되어 있다. 이 저장용기(136)는 소독수를 저장하는 것으로 그 상측에 부호를 부여하지 않은 마개가 형성되어 상기 하우징(110)의 주입구(112)를 통해 외부에 노출되도록 되어 있는 한편, 저장용기(136)는 유리(glass)로 형성됨에 따라 오랜 기간동안 사용하여도 소독수에 따른 자체 감염의 가능성을 없앴다.

또한 상기 저장용기(136)는 펌프의 입구(132a)와 호스(h1)로 연결되고, 이 펌프의 출구(132b)는 다른 호스(h2)로 밸브의 입구(134a)와 연결되면서 아울러 각 노즐(138,138')과 또 다른 호스(h3,h4)로 연결되며,상기 밸브의 출구(134b)는 다른 호스(h5)로 상기 저장용기(136)에 연결된다.

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도5는 본 발명의 제2실시예에 따른 손 소독기의 전체사시도로서, 소독실(119)의 내부에서 손소독 외에 작업도구나 공구 등을 별도의 소독기없이 소독할 수 있도록 하는 것이다.

따라서, 소독실(119)내부에 작업도구 등을 올려놓을 수 있는 그릴(104)이 소독실(19)의 양측벽에 형성된 지지턱(105)위에 놓여져 있다. 물론, 이 그릴(104)이 바라보는 천정에는 노즐과 자외선살균등(200)이 장착되어 있어서 작업도구 등을 일차적로 노즐(138,138')로부터 분사되는 소독수에 의한 소독과 더불어 이차적으로 자외선살균등(200)으로부터 방출되는 자외선으로 살균시키게 할 수 있다.

또한, 상기 소독실(119)의 정면에는 도어(106)가 아래에서 위로 닫히도록 설치되어 있는 데, 이것은 상기 작업도구 등을 자외선으로 소독시킬 때에 소독실을 밀폐시켜 외부의 공기가 소독실 내부로 들어오는 것을 방지하는 것이다. 미설명부호 107은 공지의 록킹부재로 상기 도어(106)가 닫힘상태에 있을 때 이를 록킹시켜 소독실을 견고하게 밀폐시키도록 한다.

상술한 본 발명의 바람직한 실시예에 따르면, 전원이 '온' 된 상태에서 작업자가 작업을 마치고 손을 소독하려고 소독실(109)에 손을 넣으면 센서(122)가 이를 감지하고 전기적인 신호로 변환시켜 신호처리판(126)으로 보낸다.

이 신호처리판(126)은 상기한 신호에 따라 살균 구동부(130)에 전원을 공급하여 펌프(132)를 작동시킨다. 그러면, 저장용기(136)속에 있는 소독수가 호스(h1)를 타고 펌프의 입구(132a)를 통해 가압되어 펌프의 출구(132b)로 보내져서 별도의 호스(h3,h4)를 통해 노즐(138,138')로 분사된다.

소독이 끝나고 손을 빼면 센서(122)에서 감지신호가 없으므로 전원이 차단되고 이에 따라 펌프(132)는 멈추게 되는 데, 이때에 밸브(134)는 오픈상태에 있어 호스(h2)를 통해 펌프(132)에 남은 소독수를 모두 빨아들여 호스(h5)로 저장용기로 귀환시킨다. 만약, 저장용기(136)에 소독수가 없으면 펌프(132)에서 소독수를 빨아 들일 수 없으므로 신호처리부(130)는 이러한 상태를 감지하여 빨간색의 표시램프(116a)를 '온' 시켜 소독수의 공급을 주의시킨다.

아울러, 소독실 내부의 자체 소독이나 손을 자외선에 의한 재차 소독 그리고 작업도구를 소독할 때에 자외선살균등을 적정한 세기와 시간을 설정하게 되는 데, 특히 작업도구를 소독할 때에는 소독실내부에 그릴을 설치하여 그 위에 작업도구를 놓고 도어를 닫아 소독실을 밀폐시키면 소독효율이 증대된다.

발명의 효과

이상에서 상술한 본 발명의 손 소독기는, 첫째로 소독실의 상측에 저장용기와 펌프 그리고 밸브 등을 설치하여 같은 용량의 펌프로 소독수의 분사효율을 좋게 하며, 둘째로 소독실 내부에 노즐외 별도의 자외선살균등을 구비하여 자외선에 의한 살균 및 소독과 함께 손 뿐만아니라 작업장갑 등의 작업도구를 소독시킬 수 있으며, 셋째로 센서에 의한 소독 외에 수동으로 선택할 수 있도록 하여 센서가 고장나도 손 소독을 할 수 있도록 하고, 넷째로 소독수 저장용기를 유리로 하여 자체 오염 내지는 감염의 가능성을 없애는 효과가 있다.

이상에서 서술된 것은 모든 점에서 단순한 예시에 불과한 것이기 때문에, 이를 바탕으로 본 발명을 한정적으로 해석해서는 안될 것이다. 그러므로, 본 발명의 진정한 기술적 사상 및 범위 내에 존재하는 변형예 및 균등한 실시예는 모두 본 발명의 청구 범위에 속하는 것이다.

(57) 청구의 범위

청구항 1.

손을 소독시킬 수 있게 전면 아랫쪽에 안쪽으로 깊이 들어가면서 소독실이 형성되고 그 윗쪽으로 반원형으로 돌출된 알림반(118)을 형성하며 후면에 전체적인 뚜껑을 형성하여 스크류로 열고 닫을 수 있게 하는 하우징부와;

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상기 하우징부의 내측에 장착되며 상기 소독실의 천정중에 손이 진입하는 방향으로 센서가 둘 또는 그 이상으로 설치되고 아울러 이 센서가 장착된 일측에 선택적으로 소독수를 분사시키는 선택스위치가 설치되며 상기한 센서 및 선택스위치와 전기적으로 연결되며 상기 하우징부의 뚜껑에 장착되는 신호처리판이 형성되고 상기 하우징부의 전방에 빨간색과 파란색으로 별도의 표시램프이 형성되어 이루어지는 전원공급부와;

상기 전원공급부로부터 전원을 인가받아 작동하며 상기 하우징부의 내부에 상기 소독실 형성부위의 상측에 펌프가 장착되고, 이 펌프의 입구에 호스로 연결되며 유리로 형성된 저장용기가 장착되며, 상기 저장용기와 호스로 연결되며 상기 펌프의 출구와 호스로 연결되는 밸브가 장착되고, 상기 펌프의 출구와 호스로 연결되는 노즐이 상기 하우징부의 소독실 천정에 손이 진입되는 방향에 장착됨과 아울러 , 이 노즐이 장착된 소독실 천정에 자외선살균등이 상기 전원공급부의 신호처리판과 전기적으로 연결되어 장착되어 이루어지는 살균구동부;

로 구성되는 것을 특징으로 하는 손 소독기.

청구항 2.

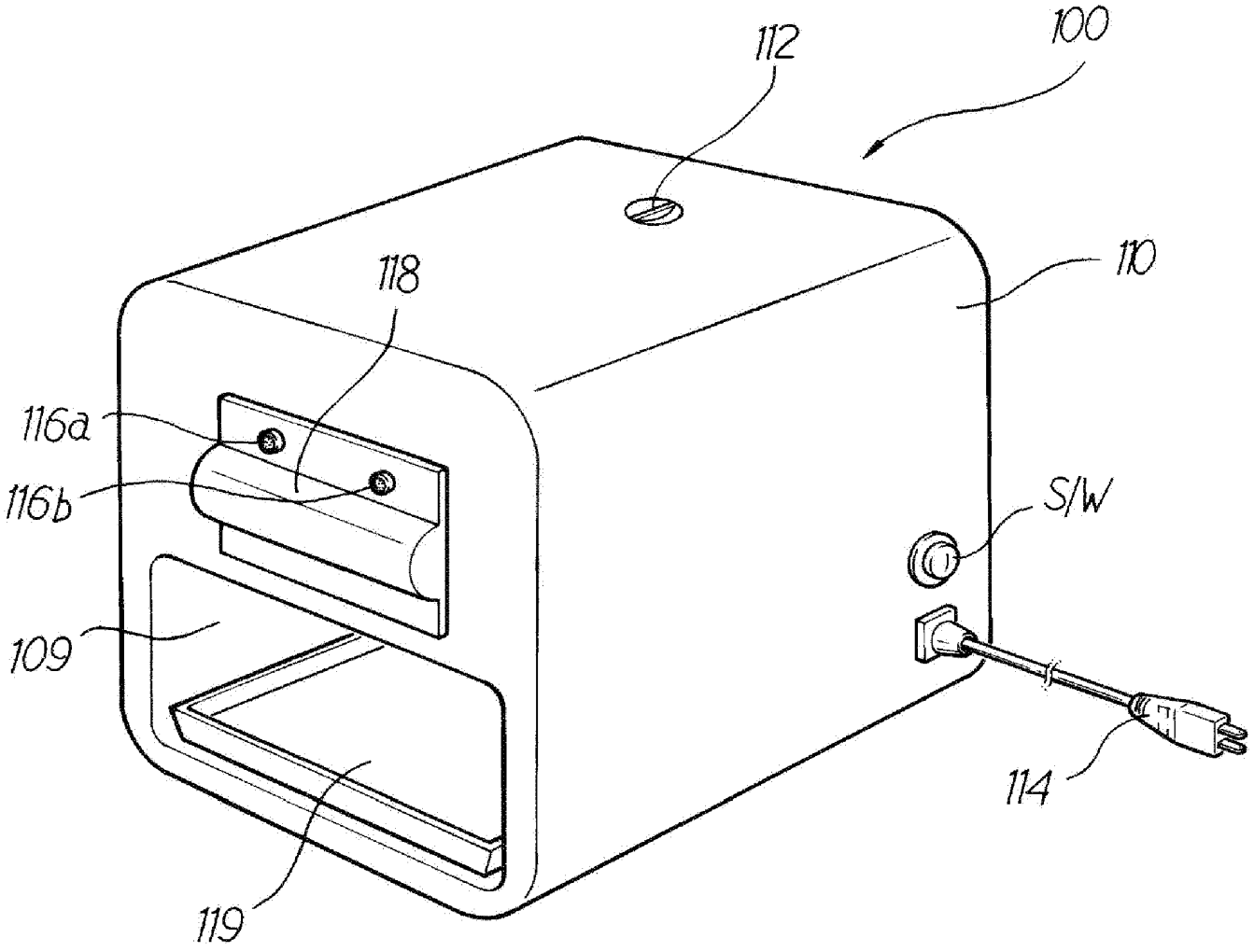
제1항에 있어서, 상기 하우징부의 소독실은 내부에 그릴을 설치하고 그 외부에 도어를 형성하는 것을 특징으로 하는 손 소독기.

도면

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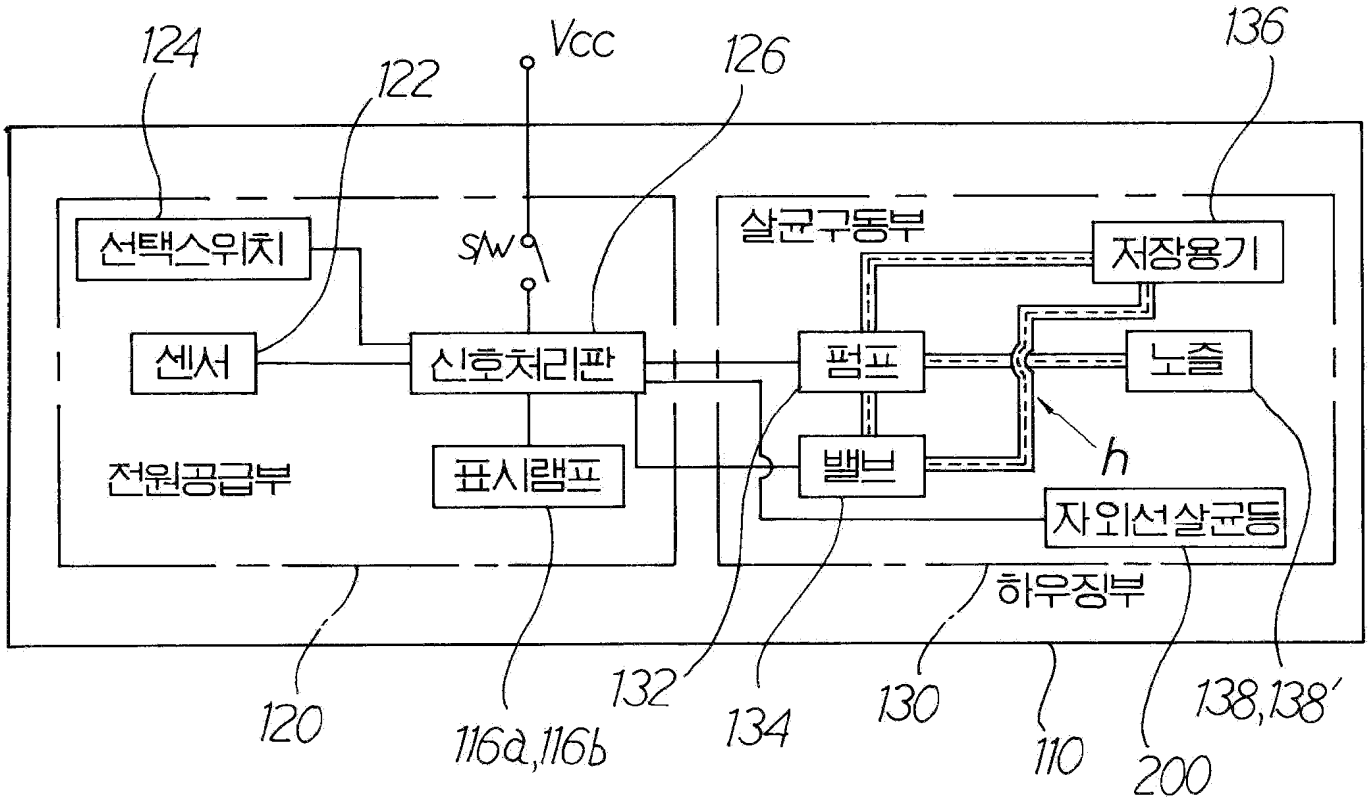
도면 1



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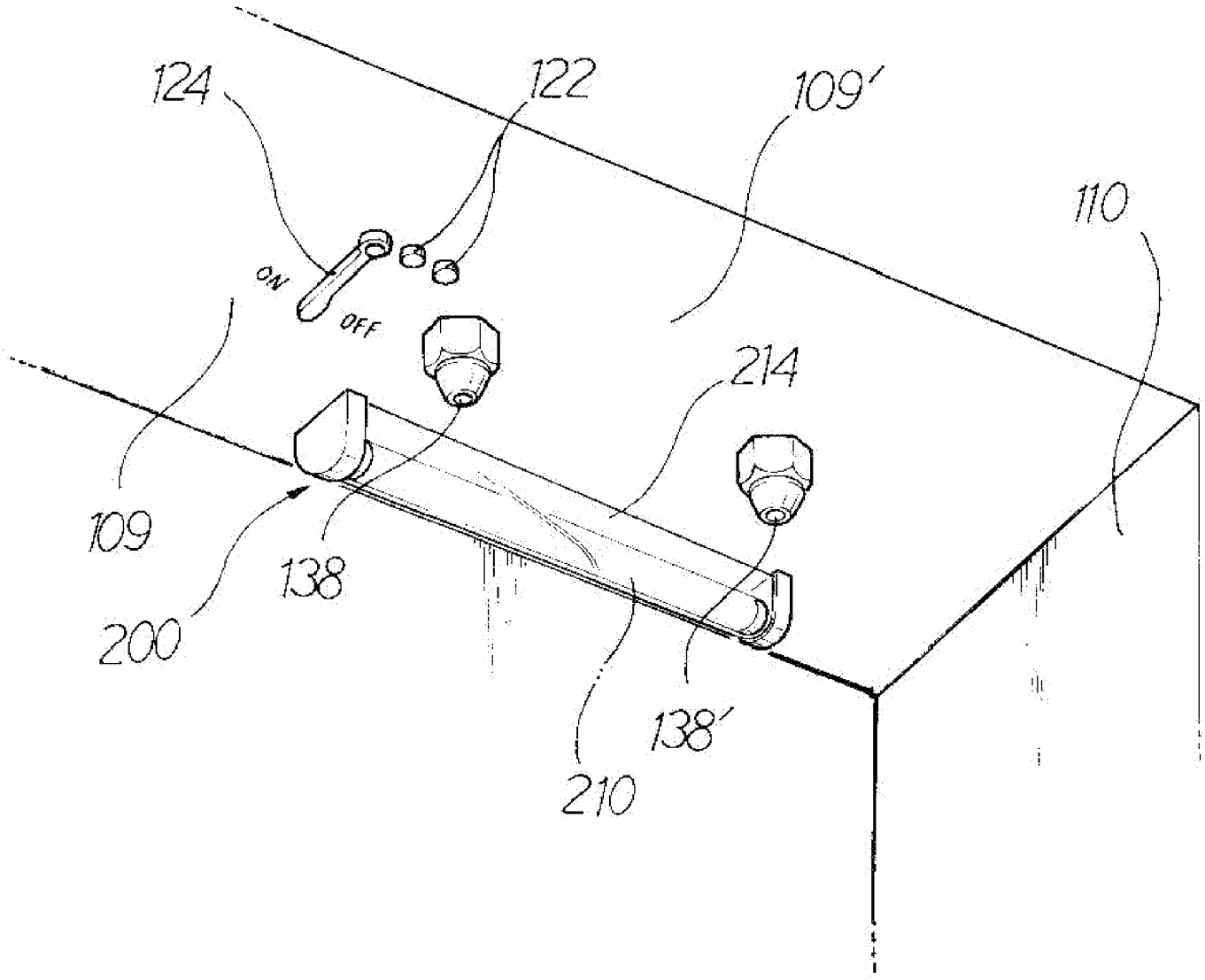
도면 2



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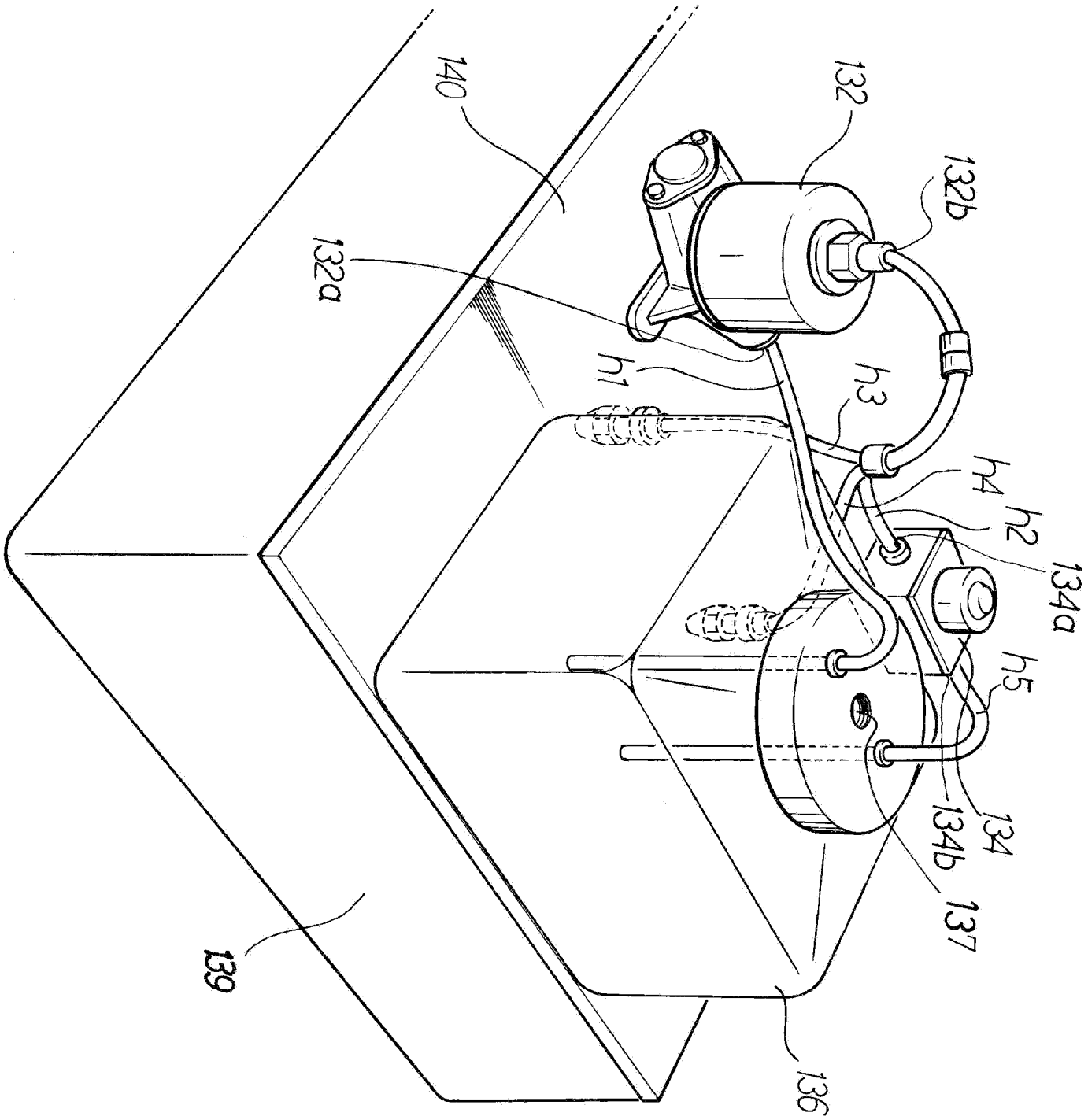
도면 3



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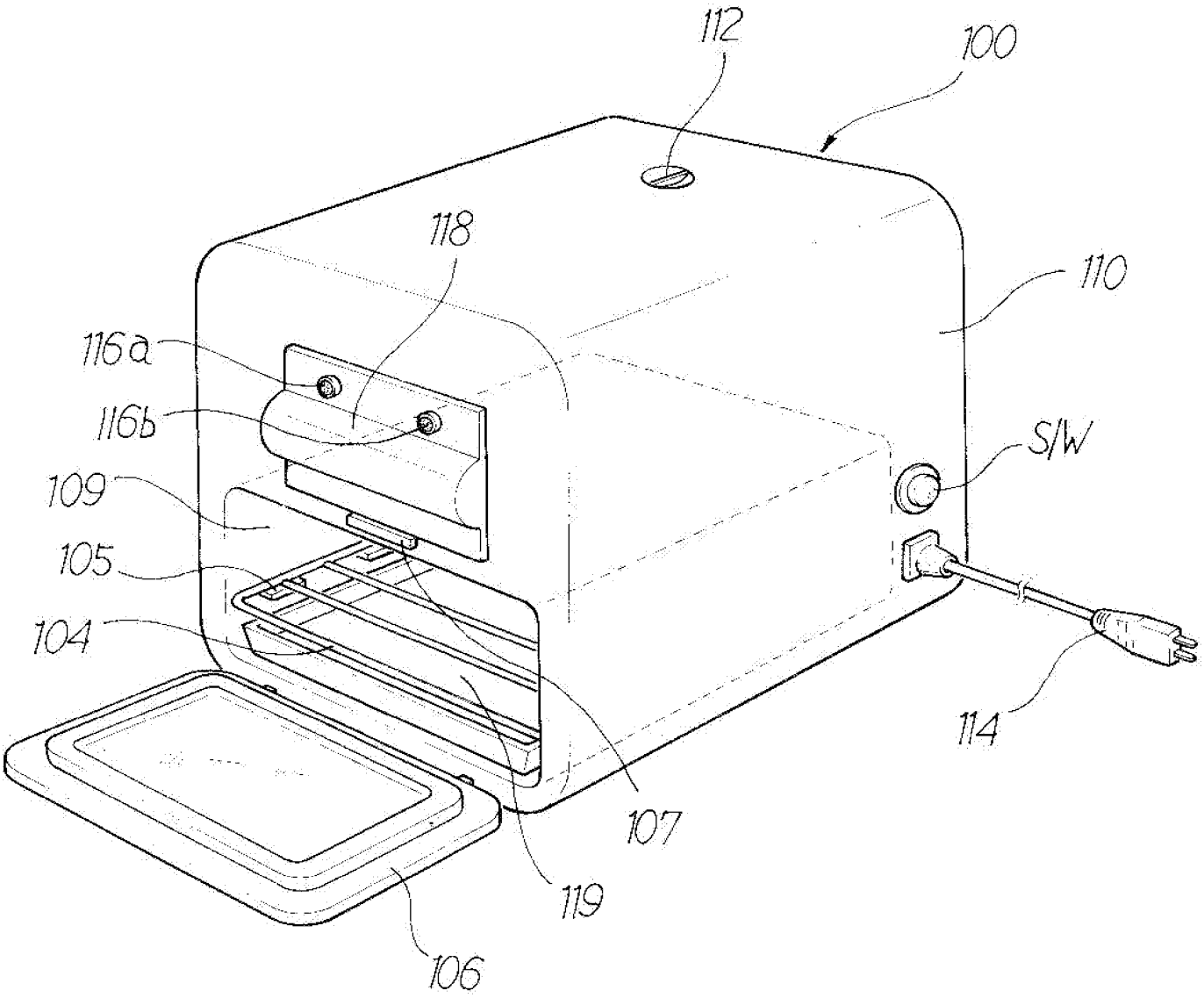
도면 4



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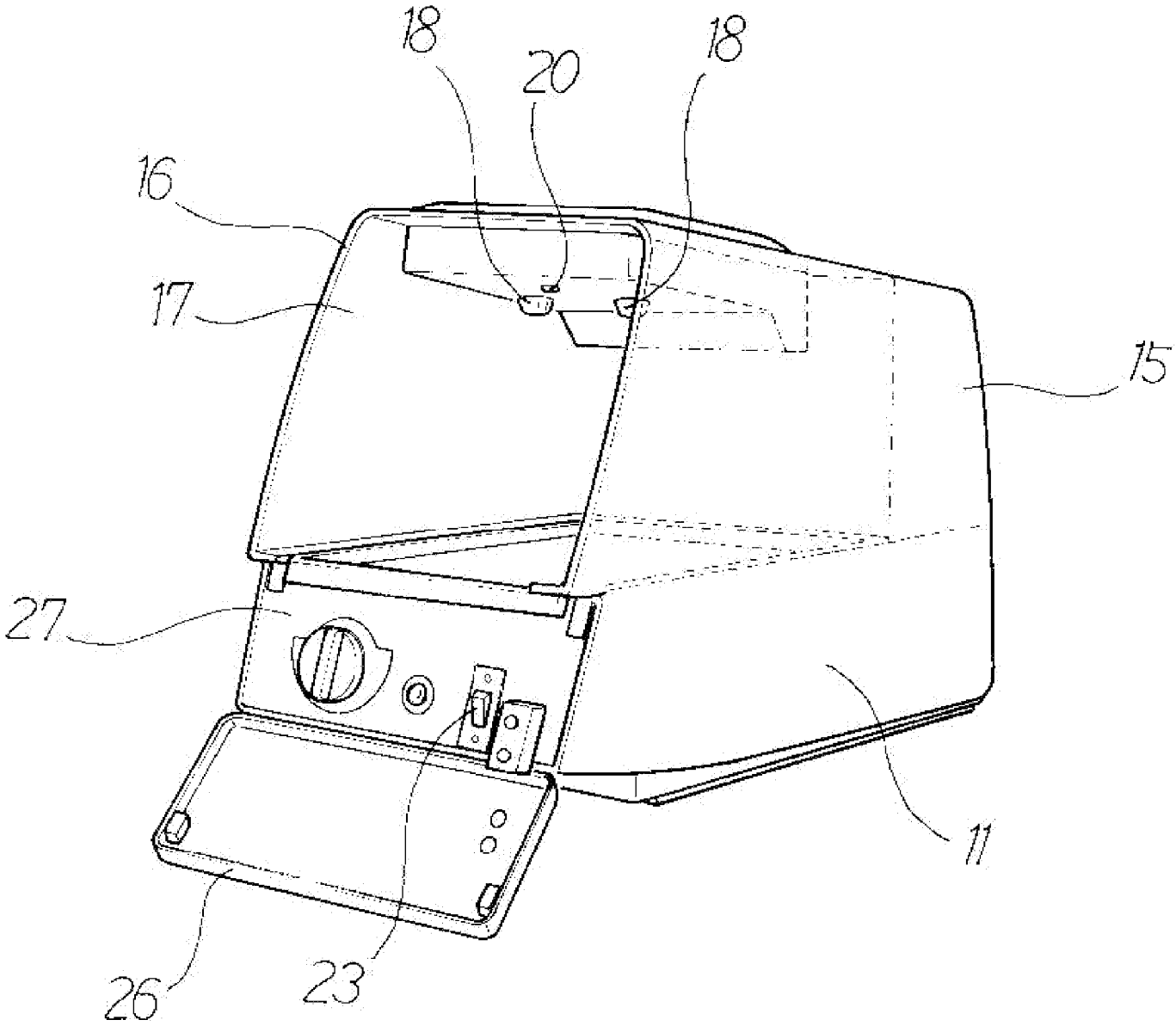
도면 5



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도면 8



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Espacenet

Bibliographic data: KR20030033475 (A) — 2003-05-01

PORTABLE PHONE CHARGER EQUIPPED WITH ULTRAVIOLET STERILIZATION DEVICE

Inventor(s):	OH JONG HUN [KR] +
Applicant(s):	SK TELETEC CO LTD [KR] condaryApplicants').style.display= ((document.getElementById ('secondaryApplicants').style.display)? '':'none')">+
Classification:	**- international:** *H02J7/00;* (IPC1-7): H02J7/00 **- European:**
Application number:	KR20010065266 20011023
Priority number (s):	KR20010065266 20011023

Abstract of KR20030033475 (A)

PURPOSE: A portable phone charger is provided to automatically sterilize the transmitting unit of the portable phone whenever the portable phone is received in the charger. CONSTITUTION: A portable phone charger(100) comprises a receptacle unit formed into a slot shape, and which receives a portable phone(200) mounted with a battery so as to charge the battery; one or more charging lamps(112) which are turned on when the portable phone is received in the receptacle unit so as to indicate a battery charging state; and one or more ultraviolet lamps(114) arranged within the receptacle unit where a transmitter(210) of the portable phone is located when the portable phone mounted with the battery is received in the receptacle unit, so as to emit ultraviolet light for sterilization. The ultraviolet lamp is connected in parallel to the charging lamp in such a manner that the ultraviolet lamp is automatically turned on when the charging lamp is turned on.

Last updated: 14.03.2012 Worldwide Database 5.7.36; 92p

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(51) 。Int. Cl. [7]
H02J 7/00

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(54) 자외선 살균장치를 구비한 휴대폰 충전기

요약

본 발명은 자외선 살균장치를 이용하여 휴대폰의 송신부를 소독 및 살균하는 휴대폰 충전기에 관한 것이다.

휴대폰에 장착된 배터리를 충전시키기 위하여 휴대폰을 안착시킬 수 있도록 슬롯 형상으로 형성된 안착부를 구비하는 휴대폰 충전기에 있어서, 휴대폰을 안착부에 안착시켰을 때 송신부가 위치되는 부분의 안착부 내부에 자외선 램프를 구비하고 휴대폰이 충전기의 안착부에 안착되었을 경우에만 자외선 램프가 점등되도록 하는 회로 구성을 추가로 구비한다.

본 발명에 의한 자외선 살균장치를 구비한 휴대폰 충전기를 이용하면, 각종 세균에 오염되기 쉬운 송신부를 별도의 살균장치 없이 소독 및 살균할 수 있으며, 휴대폰을 충전기에 안착시킬 때마다 자동으로 상기 송신부가 소독 및 살균되므로 사용자의 별도의 주의나 행위 없이도 주기적으로 송신부를 소독 및 살균할 수 있다.

대표도

도 3

색인어

휴대폰 충전기, 자외선 램프, 소독, 살균

명세서

도면의 간단한 설명

도 1은 본 발명에 의한 자외선 살균장치를 구비한 휴대폰 충전기에 휴대폰이 안착되는 형상을 도시한다.

도 2는 휴대폰이 안착되지 않은 본 발명에 의한 자외선 살균장치를 구비한 휴대폰 충전기의 측면 단면도이다.

도 3은 도 2의 상태에서 휴대폰을 안착시켰을 때의 형상을 도시한다.

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* 도면의 주요 부분에 대한 부호의 설명 *

100 : 충전기 110 : 안착부

112 : 충전램프 114 : 자외선램프

116 : 충전단자 200 : 휴대폰

210 : 송신부 220 : 배터리단자

발명의 상세한 설명

발명의 목적

발명이 속하는 기술 및 그 분야의 종래기술

본 발명은 자외선 살균장치를 구비한 휴대폰 충전기에 관한 것으로 더욱 상 세하게는, 배터리 충전 시 휴대폰을 안착시키는 충전기 안착부 내부에 자외선 살균램프를 설치하고 충전기 안착부에 휴대폰 안착여부를 감지하여 자외선 램프의 점멸을 제어할 수 있게 함으로써, 휴대폰이 충전기 안착부에 안착되었을 때 휴대폰의 송신부를 살균 소독하는 기능을 수행할 수 있게 하는 휴대폰 충전기에 관한 것이다.

일반적으로 휴대폰에서 대화자의 음성신호를 받아들여 기기 내부로 전달하는 기능을 하는 송신부는 그 특성상 통화자가 말을 하거나 숨을 내쉴 때에 발산되는 통화자의 타액에 의해 오염이 되고 휴대폰 자체 내에서 발생하는 열에 의해 일정온도를 유지하게 되므로, 송신부는 습하고 온난한 세균이 번식하기 좋은 조건의 상태가 된다. 보편적으로 휴대폰은 특정 케이스에 보관되기보다는 사용자의 편의에 의해 주머니, 가방, 차량내부 등과 같이 다양한 장소에 보관되므로 각 보관장소에 서식하는 많은 종류의 세균들과 접촉되기 쉽고, 항상 공기 중에 노출되어 있어 공기 중에 부유하고있는 세균의 유입이 용이하므로 상기와 같이 오염된 송신부에는 각종 세균이 번성하게 되고 이에 따른 악취가 발생한다. 또한, 개인의 휴대폰이라 할지라도 여러 명이 돌려가며 통화를 하는 경우가 종종 있기 때문에 어느 한 사람이 보유하고 있는 바이러스가 휴대폰의 송신부를 통해 불특정 다수의 사람에게 전파될 수 있다는 우려도 있다.

따라서 주기적으로 휴대폰의 송신부를 소독 및 살균을 해야 하는 필요성을 가지게 되는데, 휴대폰은 분해가 금지되어 있으므로 휴대폰을 분해하여 내부를 소독할 수도 없고 휴대폰의 내부를 소독하고 살균할 수 있는 별도의 살균장치가 개발 되어있지도 않은 상태이기 때문에, 사용자는 휴대폰의 외관만을 세척할 수 있을 뿐, 휴대폰의 송신부 내부를 소독 및 살균할 수 있는 방법이 없다는 문제점이 있다.

발명이 이루고자 하는 기술적 과제

본 발명은 상기 전술한 문제점을 해소하고자 안출된 것으로서, 충전기 안착부 내부에 자외선 살균램프를 설치하고 충전기 안착부에 휴대폰 안착여부를 감지하여 자외선 램프의 점멸을 제어할 수 있게 함으로써, 휴대폰이 충전기 안착부에 안착되었을 때 휴대폰의 송신부를 자외선으로 살균 소독할 수 있는 휴대폰 충전기를 제공하는데 목적이 있다.

발명의 구성 및 작용

전술한 목적을 달성하기 위한 본 발명에 의한 자외선 살균장치를 구비한 휴대폰 충전기는 휴대폰에 장착된 배터리를 충전시키기 위하여 휴대폰을 안착시킬 수 있도록 슬롯 형상으로 형성된 안착부를 구비하는 휴대폰 충전기에 있어서, 휴대폰을 안착부에 안착시켰을 때 송신부가 위치되는 부분의 안착부 내부에 자외선 램프를 구비하는 것을 특징으로 한다.

휴대폰의 송신부에 번식하는 세균을 살균하는 방법에는 여러 가지 방법이 있으나, 본 발명에 의한 충전기에는 자외선을 이용한 살균장치를 구비하도록 한다.

100㎚~ 400㎚의 파장 범위를 갖는 자외선은, 100㎚~ 280㎚의 파장범위를 갖는 UV- C(단파), 280㎚~ 315㎚의 파장범위를 갖는 UV- B(중파), 315㎚~ 400㎚를 UV- A(장파)로 분류되는데, 이 중에서 100㎚~ 280㎚의 파장범위를

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갖는 UV-C(단파)는 각종 세균을 살균하고 소독하는 살균력을 가지고 있으므로 여러 종류의 다양한 살균장치에 사용되고 있다. 이러한 자외선을 인공적으로 가장 효율적으로 만드는 수단으로서 자외선 램프가 널리 이용되고 있으며, 상기 자외선 램프는 UV-C(단파)의 자외선 중에서 살균력이 가장 강한 253.7㎚의 파장을 갖는 자외선을 풍부하게 발생시킨다. 파장이 253.7㎚인 자외선은 큰 살균력을 가지고 있어서 1㎠당 100㎼의 강도를 가진 자외선을 1분간 쪼이게 되면 대장균, 디프테리아균, 이질균 등은 99%가 죽게된다. 자외선 살균램프는 점등시키는 것만으로 살균할 수 있으므로 사용방법이 간단하고, 설치비와 유지비에 있어서도 싸고 경제적이며, 살균효과가 높으면서도 균에 특성을 주지 않고 피조사물에도 거의 변화를 주지 않기 때문에, 보건위생을 위해 공기 · 물의 살균, 기물 · 식품의 소독이나 보존, 균에 의한 피부병의 치료 등 광범위하게 쓰이고 있다.

이러한 자외선을 이용하면, 살균장치를 구비하기 위해서 별도의 부속기기로 만들 필요 없이 휴대폰 충전기에 자외선 램프만을 추가로 구비하도록 함으로써 보다 용이하게 휴대폰의 송신부에 번식하는 세균을 살균할 수 있다. 또한, 상기 자외선 램프는, 살균 및 소독 범위가 휴대폰의 송신부로 한정되므로 용량이 작은 것으로도 활용이 가능하며, 송신부의 살균효율을 높이기 위하여 휴대폰을 안착부에 안착시켰을 때 송신부가 위치되는 부분에 설치되도록 한다.

또한, 자외선을 직접 육안으로 보거나 피부에 쪼이게되면 인체에 유해하므로, 본 발명에 의한 자외선 살균장치를 구비한 휴대폰 충전기는 휴대폰이 충전기의 안착부에 안착되지 않았을 경우에는 자외선 램프를 소등하여 자외선이 발생하지 않도록 하고, 휴대폰이 안착부에 안착되었을 때에만 자외선 램프를 자동으로 점등하여 휴대폰의 송신부가 소독 및 멸균되도록 상기 자외선 램프의 점멸을 제어할 수 있는 구조를 갖는다. 상기 자외선 램프의 점멸 제어회로는, 휴대폰이 충전기의 안착부에 안착되었을 경우에만 점등되는 충전램프의 점멸회로와 병렬로 연결되어있어, 상기 충전램프가 점등될 때 상기 자외선램프도 함께 점등되도록 한다.

이하에서는 첨부되는 도면을 참고로 본 발명의 실시예를 상세하게 설명한다.

도 1은 본 발명에 의한 자외선 살균장치를 구비한 휴대폰 충전기에 휴대폰이 안착되는 형상을 도시한다.

도 1에서 보는 바와 같이 본 발명에 의한 자외선 살균장치를 구비한 휴대폰 충전기(100)는, 본체 전면 하단에 마이크를 포함한 송신부(210)를 구비하고 본체 하단면에 휴대폰에 장착된 배터리를 충전시키기 위한 배터리 단자(220)를 구비하는 휴대폰(200)을 안착시킬 수 있도록, 상단부에 슬롯 형상으로 형성된 안착부(110)를 구비하고, 상단 전면에는 상기 휴대폰(200)이 충전기의 안착부(110)에 안착되었을 경우에만 점등되며 휴대폰 배터리의 충전 여부를 표시하는 하나 이상의 충전램프(112)를 구비하는 휴대폰 충전기(100)에 있어서, 상기 안착부(110) 내부에 하나 이상의 자외선램프(미도시)를 추가로 구비하는 것을 특징으로 한다.

도 2는 휴대폰이 안착되지 않은 본 발명에 의한 자외선 살균장치를 구비한 휴대폰 충전기의 측면 단면도이다.

도 2에서 보는 바와 같이, 본 발명에 의한 자외선 살균장치를 구비한 휴대폰 충전기는, 안착부(110)의 바닥면을 관통하여 위로 돌출 되어 있으며 휴대폰(200)이 충전기(100)의 안착부(110)에 안착되었을 때 상기 휴대폰(200)의 배터리 단자(220)와 접촉하여 충전전류를 인가해 주는 충전단자(116)와, 휴대폰(200) 안착 시 송신부(210)가 위치되는 부분의 전면에 구비되어 있으며 상기 휴대폰(200)이 안착되면 점등되어 상기 휴대폰(200)의 송신부(210)를 소독 및 살균하는 자외선램프(114)를 포함한다.

상기 자외선 램프(114)는, 휴대폰(200) 안착 시 상기 휴대폰(200)에 의한 손상을 입지 않도록 상기 휴대폰(200)의 안착범위를 도피하여 설치되며, 상기 휴대폰(200)이 안착부(110)에 안착되면 자동으로 점등되어 휴대폰(200)의 송신부(210)를 소독 및 멸균할 수 있도록 제어회로에 의해 점멸이 제어된다. 상기 제어회로는, 상기 휴대폰(200)이 상기 충전기(100)의 안착부(110)에 안착되었을 경우에만 점등되는 충전램프(112)의 점멸회로와 병렬로 연결되어있어 상기 충전램프(112)가 점등되면 상기 자외선램프(114)도 함께 점등되도록 한다.

도 3은 도 2의 상태에서 휴대폰을 안착시켰을 때의 형상을 도시한다.

충전기(100)의 안착부(110)에 휴대폰(200)을 안착시키면, 충전전류를 인가하는 충전단자(116)에 배터리단자(220)가 닿게되므로 배터리가 충전이 실시되고, 상기 안착부(110)로의 상기 휴대폰(200) 안착을 감지하여 충전램프(112)가 점등되며, 상기 충전램프(112)의 점멸회로와 병렬로 연결되어있는 자외선램프(114)에도 전원이 인가되어 상기 자외선램프(114)는 자외선을 발광하게된다. 또한, 상기 휴대폰(200)이 안착부(110)에 안착되면 상기 휴대폰(200)의 전면 하단에 위치한 송신부(210)는 자외선램프(114)와 서로 마주보도록 위치되고, 상기 송신부(210)는 상 기 자외선램프(114)로부터 발광되는 자외선에 의해 소독 및 살균된다.

본 발명의 기술사상은 상기 바람직한 실시예에 따라 구체적으로 기술되었으나, 상기한 실시예는 그 설명을 위한 것이며, 그 제한을 위한 것이 아님을 주의하여야한다. 또한, 본 발명의 기술분야의 통상의 전문가라면 본 발명의 기술사상의 범위에서 다양한 실시예가 가능함을 이해할 수 있을 것이다.

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발명의 효과

본 발명에 의한 자외선 살균장치를 구비한 휴대폰 충전기를 이용하면, 각종 세균에 오염되기 쉬운 송신부를 별도의 살균장치 없이 소독 및 살균할 수 있으며, 휴대폰을 충전기에 안착시킬 때마다 자동으로 상기 송신부가 소독 및 살균되므로 사용자의 별도의 주의나 행위 없이도 주기적으로 송신부를 소독 및 살균할 수 있다.

(57) 청구의 범위

청구항 1.
휴대폰에 장착된 배터리를 충전시키기 위하여 배터리가 장착된 휴대폰을 안착시킬 수 있도록 슬롯 형상으로 형성된 안착부와, 상기 배터리가 장착된 휴대폰이 상기 안착부에 안착되었을 때 점등되며 배터리의 충전 여부를 표시하는 하나 이상의 충전램프를 포함하는 휴대폰 충전기에 있어서,

상기 배터리가 장착된 휴대폰을 상기 안착부에 안착시켰을 때 휴대폰의 송신부가 위치되는 부분의 안착부 내부에 살균력을 갖는 자외선을 발광하는 하나 이상의 자외선 램프를 구비하는 것을 특징으로 하는 자외선 살균장치를 구비한 휴대폰 충전기.

청구항 2.
제 1 항에 있어서,

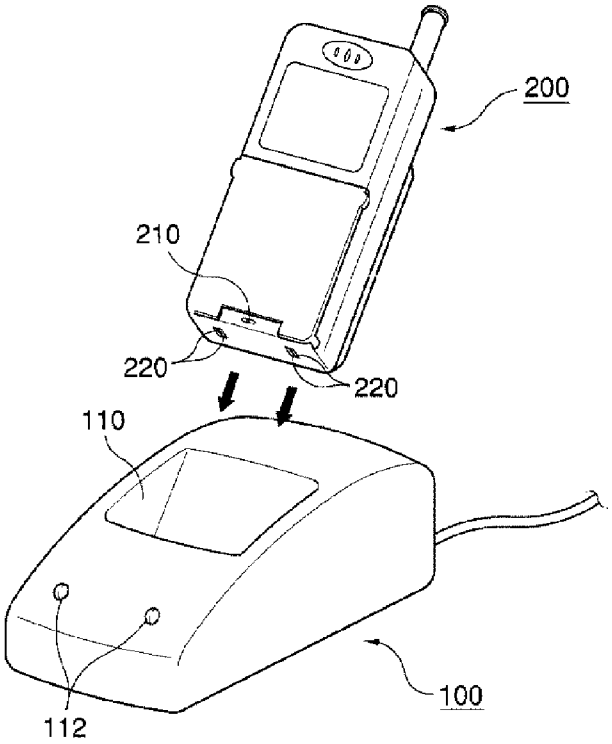
상기 자외선 램프는,

상기 안착부에 상기 휴대폰이 안착되어 상기 충전램프가 점등될 때 자동으로 점등되도록 충전램프와 병렬로 연결되는 것을 특징으로 하는 자외선 살균장치를 구비한 휴대폰 충전기.

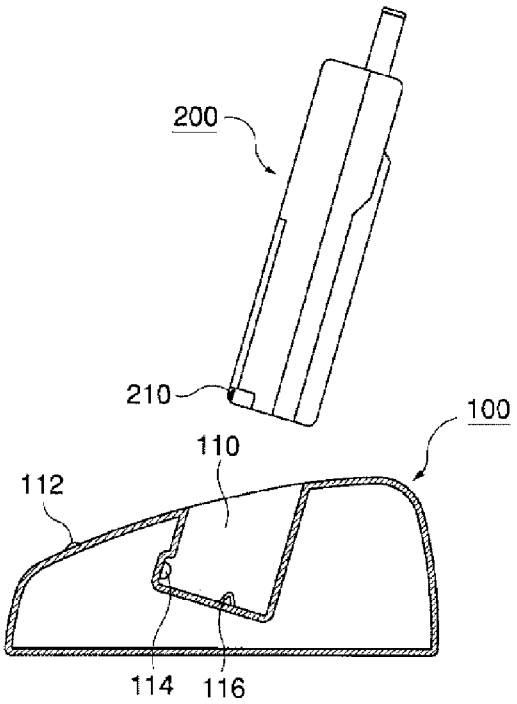
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도면1

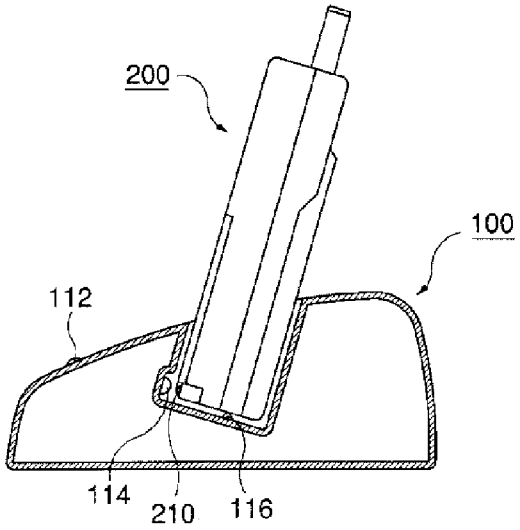


도면2



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도면3



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APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
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Title of Invention

SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT

Application Information

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CONFIRMATION #	7738	FILED BY	Kateryna Ilchyshyn
PATENT CENTER #	69270724	FILING DATE	08/14/2024
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Documents

TOTAL DOCUMENTS: 25

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
IDS AGD0100.7.pdf	10	Information Disclosure Statement (IDS) Form (SB08)	1276 KB
Statement of Relevance AGD0100.7.pdf	3	Transmittal Letter	81 KB
CN101951004A.pdf	6	Foreign Reference	820 KB
CN2236317Y.pdf	14	Foreign Reference	1193 KB
CN1269602A.pdf	15	Foreign Reference	2099 KB
KR200410373Y1.pdf	10	Foreign Reference	1240 KB
KR200439969Y1.pdf	15	Foreign Reference	1426 KB
KR20030033475A.pdf	7	Foreign Reference	915 KB

KR20110024651A.pdf	4	Foreign Reference	697 KB
KR20060012144A.pdf	11	Foreign Reference	1002 KB
KR20060115457A.pdf	15	Foreign Reference	1297 KB
WO2004080494A1.pdf	35	Foreign Reference	2053 KB
WO2007010255A1.pdf	18	Foreign Reference	1278 KB
WO2007036130A1.pdf	18	Foreign Reference	1260 KB
WO2006022466A1.pdf	28	Foreign Reference	1712 KB
WO2006075894A1.pdf	24	Foreign Reference	1749 KB
JPH07265394A.pdf	10	Foreign Reference	1179 KB
JP2012216299A.pdf	20	Foreign Reference	2310 KB
KR100956373B1.pdf	29	Foreign Reference	1865 KB
WO2008040316A1.pdf	48	Foreign Reference	5295 KB
KR200371154Y1.pdf	15	Foreign Reference	2781 KB
KR20010053840A.pdf	18	Foreign Reference	4516 KB
KR200357216Y1.pdf	13	Foreign Reference	2851 KB
KR200375295Y1.pdf	12	Foreign Reference	5476 KB
KR200338371Y1.pdf	15	Foreign Reference	2443 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
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ABSTRACT KR200371154Y1

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The present invention relates to a toothbrush sterilizer/mobile phone sterilizer which can perform a toothbrush sterilization function and a mobile phone charging and sterilization function separately or simultaneously, and comprises: a case in which an ultraviolet lamp which generates ultraviolet rays is installed inside, a reflector which reflects light in a forward direction is installed on the rear of the ultraviolet lamp, rings are formed on each of the upper two sides, and supporting protrusions are formed on each of the lower two sides, a detachable toothbrush holder in which both ends of a semicircular band-shaped main body are removably installed on the outer periphery of the ultraviolet lamp by being hung on each of the rings, and a plurality of toothbrush holders are formed radially on the exterior of the main body. The present invention relates to a mobile phone holder, which is detachably installed inside the case by forming support grooves corresponding to the protrusions on both sides of the lower portion and a mobile phone mounting portion in the center so that the support grooves are fitted into the protrusions. In this way, a toothbrush sterilization function and a mobile phone sterilization function can be implemented simultaneously, and the toothbrush sterilization function or the mobile phone sterilization function can be implemented individually depending on the user's choice. In addition, the mobile phone holder has a mobile phone charging function, so that the mobile phone can be sterilized and charged at the same time. In addition, the mobile phone holder can change the positions of its support walls and terminal pins, so that it can be universally used for all types of mobile phones.

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Patents KR200371154

Apparatus to disinfect tooth brush combined with charger for cellular phone

Abstract

The present invention relates to a toothbrush sterilization device and a toothbrush sterilizer for a mobile phone sterilizer that allows the charging and sterilizing function of a mobile phone to be performed individually or simultaneously. An ultraviolet lamp for generating ultraviolet light is installed inside the rear of the ultraviolet lamp. Reflecting plate is installed to reflect the light in the front direction, the upper ring is formed on both sides, respectively, the lower both sides and the case each formed with a support projection; Removable toothbrush holders having both ends of the semi-circular band-shaped body attached to each ring and detachably installed on the outer circumference of the ultraviolet lamp, wherein a plurality of toothbrush holders are formed radially on the outside of the body; Support grooves corresponding to the protrusions are formed on both sides of the lower side, and a mobile phone seating portion is formed in the center portion, and the support groove is inserted into the protrusions so that the support groove is detachably installed inside the case. It is possible to implement mobile phone sterilization function at the same time, and to implement toothbrush sterilization function or mobile phone sterilization function individually according to the user's choice.The mobile phone holder has mobile phone charging function so that it can be charged and sterilized at the same time. The holder can be used for all mobile phones of all kinds because the position of the support wall and the terminal pin can be changed.

Classifications

⊛ A46B17/065 Sterilising brushes; products integral with the brush for sterilising, e.g. tablets, rinse, disinfectant

View 7 more classifications

KR200371154Y1
South Korea

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Other languages: Korean

Inventor: 안용규

Worldwide applications

2004 KR

Application KR20-2004-0027493U events

2004-09-24 Application filed by 안용규

2004-09-24 Priority to KR20-2004-0027493U

2004-12-24 Application granted

2004-12-24 Publication of KR200371154Y1

Info: Cited by (2), Legal events, Similar documents, Priority and Related Applications

External links: Espacenet, Global Dossier, Discuss

Claims (6)

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1. An ultraviolet lamp 101 for generating ultraviolet rays is installed therein, and a reflecting plate 102 for reflecting light in the vertical direction is provided on a rear surface of the ultraviolet lamp 101, and a ring 104 is disposed on both upper sides thereof. A case 100 formed at both sides of the lower support protrusions 105;

   Both ends of the semi-circular band-shaped main body 201 are hooked to the respective hooks 104 and are detachably installed on the outer circumference of the ultraviolet lamp 101. A plurality of toothbrush holders 202 are provided outside the main body 201. Removable toothbrush holder 200 formed radially; And

   The support grooves 301 corresponding to the protrusions 105 are formed at both lower sides thereof, and a mobile phone seating unit 302 is formed at the center thereof, so that the support grooves 301 are fitted to the protrusions 105. Mobile phone sterilizer combined toothbrush sterilizer, characterized in that it comprises a mobile phone holder 300 detachably installed inside (100).

   2. The method of claim 1,

      The one side protrusion 105 is formed with electrodes 106 electrically connected to the charging circuit provided in the case 100, respectively.

      Inside the support groove 301 corresponding to the one side protrusion 105, an electrode 303 connected to the electrode 106 of the protrusion 105 is formed, respectively.

      Mobile phone sterilizer combined toothbrush sterilizer, characterized in that the terminal pins 304 which are electrically connected to the electrode 303 is formed on the mobile terminal contact portion of the mobile phone mounting portion 302, respectively.

   3. The method according to claim 1 or 2,

      The mobile phone holder 300,

      Support wall 305 for supporting both side walls of the mobile phone (H) is configured to be able to slide left and right in a limited area.

      Mobile terminal sterilizer combined toothbrush sterilizer, characterized in that each terminal pin 304 is configured to be slidable in the left and right direction within a limited area.

4. An ultraviolet lamp 101 for generating ultraviolet rays is installed therein, and a reflecting plate 102 for reflecting light in the front direction is installed on a rear surface of the ultraviolet lamp 101, and rings 104 are formed on both upper sides thereof. A case 100 having a mobile phone support groove 310 formed therein; And

   Both ends of the semi-circular band-shaped main body 201 are hooked to the respective hooks 104 and are detachably installed on the outer circumference of the ultraviolet lamp 101. A plurality of toothbrush holders 202 are provided outside the main body 201. Mobile phone sterilizer combined toothbrush sterilizer, characterized in that it comprises a removable toothbrush holder 200 formed radially.

   5. The method of claim 4, wherein

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Mobile phone sterilizer combined toothbrush sterilization, characterized in that the bottom of the mobile phone support groove 310 is formed by protruding the mobile phone connector 311 having a shape corresponding to the mobile phone port while being electrically connected to the charging circuit inside the case 100. Device.

6. The method according to claim 1 or 4,

A power socket 108 is formed at one lower side of the case 100,

A plug 312 inserted into the power socket 108 is formed at one end, and a mobile phone charging lead 314 having a mobile phone connector 313 corresponding to the mobile phone port is detachably provided at the other end. Cell phone sterilizer toothbrush sterilizer.

Description

Toothbrush Sterilizer for Mobile Phone Sterilizer (Apparatus to disinfect tooth brush combined with charger for cellular phone)

The present invention relates to a toothbrush sterilizer combined with a mobile phone sterilizer, and more particularly to the toothbrush sterilization function, and the charging and sterilizing function of the mobile phone can be made individually or simultaneously.

As is well known, toothbrush sterilizers are used to sanitize toothbrushes by disinfecting and disinfecting the bacteria remaining in the used toothbrushes, and employing an ultraviolet lamp for sterilization to perform sterilization by ultraviolet rays generated therefrom. In general, an anion generator can be used to purify the air.

However, the toothbrush sterilizer according to the prior art merely performs the function of sterilizing the toothbrush used, it can be said that its functionality is limited.

On the other hand, the number of mobile phones has exploded every year because of its mobility and ease of use, and the number of mobile phones has already reached 36 million in Korea.

These mobile phones are very likely to be contaminated by germs because they are always carried by the user, and when the phone calls through them, they are in close contact with the ears and mouth. There was a serious concern that could cause it.

The present invention has been made in view of this point, it is to provide a detachable mobile phone holder inside the toothbrush sterilizer using the ultraviolet lamp to sterilize the mobile phone by the ultraviolet radiation emitted from the ultraviolet lamp.

In another aspect, the toothbrush sterilizer is formed with a protrusion having an electrode, the mobile phone holder is provided with an electrode inside the support groove while forming a support groove corresponding to the protrusion, the mobile phone mounting portion of the mobile phone holder is electrically connected to the electrode Each terminal pin is formed so that charging can be performed simultaneously with sterilization of the mobile phone.

1 is an exploded perspective view of a mobile phone sterilizer combined toothbrush sterilizer according to the present invention.

Figure 2 is a detailed view of the mobile phone holder and the protrusion according to the present invention.

3 is a cross-sectional view of a mobile phone holder according to the present invention.

Figure 4 is another embodiment of the present invention.

*** Explanation of symbols for the main parts of the drawing ***

100: case 101: UV lamp 102: reflector

103: lid 104: ring 105: protrusion

106303: electrode 107: door 108: power socket

200: toothbrush holder 201: body 202: toothbrush hanger

300: mobile phone holder 301: support groove 302: mobile phone mounting portion

304: terminal pin 305: support wall 306, 308: guide groove

307: guide protrusion 309: handle 310: mobile phone support groove

311, 313: Mobile phone connector 312: Plug 314: Lead wire

Hereinafter, the present invention will be described in detail with reference to the embodiments presented.

1 is an exploded perspective view of a mobile phone sterilizer combined toothbrush sterilizer according to the present invention, Figure 2 is a detailed view of the mobile phone holder and the projection according to the present invention, Figure 3 is a cross-sectional view of the mobile phone holder according to the present invention.

As shown, the mobile phone sterilizer combined toothbrush sterilizer according to the present invention, like the general toothbrush sterilizer, the ultraviolet lamp 101 is installed in the vertical direction or left and right directions in the inner center of the case 100, the ultraviolet lamp 101 In the rear of the) is formed a reflector plate 102 for reflecting the ultraviolet rays emitted from the ultraviolet lamp 101 in the vertical direction and the front side, although not shown may be configured an anion generator inside the upper lid 103. .

In the case 100, the removable toothbrush holder 200 and the removable mobile phone holder 300 are selectively installed. Both sides of the upper part of the case 100, the ring 104 is formed, the toothbrush holder (200 is a plurality of toothbrush holder 202 is formed radially on the outside of the semi-circular band-shaped body 201, both ends are selectively caught in each ring 104, removable inside the case 100 The support protrusions 105 are formed on both lower sides of the case 100, and the mobile phone holder 300 has support grooves 301 corresponding to the protrusions 105 on both lower sides thereof. The mobile phone seating part 302 is formed in the center part, and the support groove 301 is selectively inserted into the protrusion part 105 so as to be detachably installed in the case 100.

In this case, the mobile phone holder 300 may have a charging function. For this purpose, one of the protrusions 105 provided in the case 100 includes a charging circuit (not shown) provided inside the case 100. Electrodes 106 electrically connected to each other) are formed, and an electrode 303 connected to the electrodes 106 of the protrusions 105 is formed inside the support groove 301 corresponding to the one side protrusion 105. The terminal pins 304 electrically connected to the electrodes 303 are formed on the mobile terminal contact portions of the mobile phone seating part 302.

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In addition, the mobile phone holder 300 can be slid left and right in a limited area of the support wall 305 for supporting both side walls of the mobile phone (H) so that it can be used universally in different types of mobile phones (H). In addition, the terminal pin 304 is also provided with two to be configured to slide in the left and right direction within a limited area, the mobile phone holder 300 and the support wall 305 or the mobile phone holder 300 and each terminal pin The sliding structure of 304 may be applied to any of the corresponding configurations, such as guide groove-guide protrusions and guide rail-guide protrusions. In the drawing, guide grooves 306 are formed on both sides of the mobile phone holder 300, and each support wall 305 is formed with guide protrusions 307 fitted to the guide grooves 306 to guide the support walls 305, respectively. The projection 307 is configured to slide in the left and right direction along the guide groove 306, the guide groove 308 is formed in the left and right directions below the mobile phone seating portion 302 of the mobile phone holder 300, each terminal The pin 304 is connected to the handle 309 located outside the guide groove 308 is shown as an example that can be configured to slide in the left and right directions.

In addition, one end is provided with a plug 312 is inserted into the power socket 108, the other end is detachably provided with a mobile phone charging lead 314 formed with a mobile phone connector 313 corresponding to the mobile phone port. The lower side of the case 100 may be configured to form a power socket 108 so that the lead wire 314 can be selectively detached, in this case through the mobile phone holder 300 and the lead wire 314 as shown. Two mobile phones (H) can be charged and sterilized at the same time, and although not shown, even if the mobile phone holder 300 is configured to only mount the mobile phone without a charging function, the power is supplied to the mobile phone (H) through the lead wire 314. It can also be responsible for the charging function.

Reference numeral 107 in the drawing represents a door.

Electric toothbrush sterilizer combined toothbrush sterilizer according to the present invention configured as described above acts as follows.

First, the toothbrush holder 200 is fixed to the hook 104 inside the case 100, and the toothbrush holder 202 of the toothbrush holder 200 is mounted with a toothbrush (not shown). When the power supply is closed, the UV lamp 101 is turned on by the control signal of the microprocessor (not shown) to sterilize and disinfect the toothbrush mounted on the toothbrush holder 200 inside the case 100. When 107 is opened, all operations are stopped and the first state is electrically maintained. The UV lamp 101 is turned on for a predetermined time and then turned off for a predetermined time by a program of a microprocessor. Will be performed.

In this process, the reflection plate 102 reflects the light of the ultraviolet lamp 101 to the front to further increase the effect of ultraviolet rays. In the case of using the heat generated from the transistor by mounting a transistor on the rear surface of the reflection plate 102 or in the case of using the heat generated from the heat generating film by coating the heat generating film on the rear surface of the reflector plate 102 or using a PTC heater, a function of drying the toothbrush without a separate fan or a general heater may be realized.

When sterilizing and charging the mobile phone H, first, the mobile phone H is seated on the mobile phone holder 300, and the support groove 301 portion of the lower part of the mobile phone holder 300 is projected to the inside of the case 100. After inserting and fixing it, the door 107 is closed and the power is applied. Then, the UV lamp 101 is turned on for a predetermined time and turned off for a certain time in the same manner as the sterilization process of the toothbrush. While repeating can be sterilized bacteria remaining in the mobile phone (H).

At this time, when the sterilization of the mobile phone is carried out together with the charging can be obtained at the same time the effect of the sterilization and charging of the mobile phone (H), for this purpose in one of the protrusions 105 of the protrusions 105 provided in the case 100 in the 105, an electrode 106 electrically connected to a charging circuit (not shown) provided in the case 100 is formed, respectively, and inside the support groove 301 of the mobile phone holder 300 corresponding to one protrusion 105. The electrode 303 is formed to be connected to the electrode 106 of the protrusion 105, respectively, and the terminal pin 304 electrically connected to the electrode 303 is formed on the contact point of the mobile phone terminal of the mobile phone seating portion 302, respectively. As a result, each of the support grooves 301 of the mobile phone holder 300 is fitted into the protrusion 105 of the case 100, and at the same time, the electrodes 106 and 303 are connected to each other to be in electrical communication. Terminal pin 304 formed on the mobile phone seating portion 302 of the holder 300 is that since the terminal of the cellular phone (H) connected at the same time as the sterilization of the cellular phone (H) can be achieved the effect of the charge.

By the way, since the mobile phone (H) is different in width by each manufacturer and each model, the number and location of the terminals are different, in order to use the mobile phone holder 300 universally in the present invention to support both side walls of the mobile phone (H) The support wall 305 is configured to be slidable in the left and right direction within the restricted area, and the terminal pin 304 is provided with two, and is configured to be slidable in the left and right direction in the restricted area. When seated on the mobile phone holder 300, the two support walls 305 can be adjusted to be in close contact with the target mobile phone H, thereby allowing the mobile phone H to be stably seated, and the mobile phone H to be stably seated. In this state, the position of the terminal pin 304 can be adjusted through the handle 309 according to the terminal of the mobile phone H, so that any type of mobile phone H can be charged. In this case, although not shown, when the position of the terminal pin 304 is adjusted to be able to be charged, it is preferable to indicate to the outside that the terminal of the mobile phone H and the terminal pin 304 are adjusted to a position capable of charging through the LED. Do.

Meanwhile, when the plug 312 of the lead wire 314 is inserted into the power socket 108 inside the case 100 and the port of the mobile phone is inserted into the mobile phone connector 313 on the opposite side, power is applied to the mobile phone to perform the charging function. In this case, it is possible to charge and sterilize two mobile phones (H) at the same time through the mobile phone holder 300 and the lead wire 314, the mobile phone holder 300 can only be mounted on the mobile phone without the charging function When configured to apply power to the mobile phone (H) through the lead wire 314, in this state by mounting the mobile phone to the mobile phone holder 300 can obtain the effect of charging and sterilization.

As such, the toothbrush sterilizer combined use mobile phone sterilizer according to the present invention is because the toothbrush holder 200 for toothbrush sterilization and the mobile phone holder 300 for mobile phone sterilization are all detachable, but can be used at the same time, but the toothbrush It is mainly used in bathrooms or washrooms, the cell phone (H) is weak to moisture, so any one can be removed according to the user's desired purpose and implement only toothbrush sterilization function or cell phone sterilization function individually.

4 is another embodiment of the present invention, the mobile phone support grove 310 is formed in the case 100, the bottom of the mobile phone support groove 310, the charging circuit (not shown) inside the case 100 and the electrical It is configured to protrude and form a mobile phone connector 311 having a shape corresponding to the port of the mobile phone (H), so that the port is connected to the mobile phone support groove 310 while the port is connected to the mobile phone connector (311) to be able to obtain the effect of the sterilization and charging of the mobile phone (H) at the same time, even in this case, the toothbrush holder 200 can be detachably configured to implement the toothbrush sterilization function and mobile phone sterilization function at the same time Of course, toothbrush sterilization function or mobile phone sterilization function can be implemented individually.

Even in this case, a plug 312 is inserted into the power socket 108 at one end thereof, and a mobile phone charging lead 314 having a mobile phone connector 313 corresponding to the mobile phone port is detachably provided at the other end thereof. On the lower side of the case 100, a power socket 108 may be formed to allow the lead wire 314 to be selectively detached, and the effect thereof may also be implemented in the present invention in the same manner as in the embodiment.

As described above, since the present invention has a removable toothbrush holder and a removable mobile phone holder inside the case that emits ultraviolet rays, the toothbrush sterilization function and the mobile phone sterilization function can be simultaneously implemented, as well as the toothbrush sterilization function according to the user's choice. Alternatively, the cell phone sterilization function can be implemented individually, and the cell phone holder has a cell phone charging

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Cited By (2) that it can be recharged at the same time as the cell phone sterilization, and the cell phone holder can change the position of the supporting wall and the terminal pin. There is a very useful effect that can be used universally in all mobile phones of different numbers and locations.

Publication number	Priority date	Publication date	Assignee	Title
KR100956660B1	2010-01-05	2010-04-02	홍석태	Multipurpose office supplies custody
KR200465161Y1	2011-01-20	2013-02-05	신동현	Cradle for portable terminal with sterilization device

Family To Family Citations

* Cited by examiner, † Cited by third party, ‡ Family to family citation

Similar Documents

Publication	Publication Date	Title
US9000680B2	2015-04-14	Ultraviolet disinfection case
US8203312B2	2012-06-19	Sterilization apparatus
US5487877A	1996-01-30	Restroom organizer and sterilizing apparatus
US6758353B2	2004-06-22	Portable toothbrush case with UV lamp
CA2127578C	1999-11-06	Sanitizer for bathroom articles
ES2216681T3	2004-11-16	Apparatus for conditioning a humidity sensitive article.
US9795704B2	2017-10-24	Ophthalmic lens disinfecting base
JP4356378B2	2009-11-11	Method and apparatus for sterilizing small articles
CN104918593A	2015-09-16	Light therapy skin device
US8486197B2	2013-07-09	Sanitizer for portable electronic devices
US2592131A	1952-04-08	Toothbrush sterilizer
KR100866383B1	2008-10-31	A desktop books sterilizer
CA2803284C	2019-02-12	Contact lens storage case surface disinfection
ES2564564T3	2016-03-23	Volatile material dispensing system
US20140166900A1	2014-06-19	Dental device having an integrated sanitation chamber
US7547893B1	2009-06-16	Infant stimulation and environment sterilizing device
US4740706A	1988-04-26	Sanitizer for bathroom articles
US20020146343A1	2002-10-10	Method and apparatus for rapidly sterilizing small objects
CA2316086C	2004-11-02	Writing implement sterilization apparatus
CN202207330U	2012-05-02	Mobile phone sterilizer
EP0925793A2	1999-06-30	Portable sterilizing apparatus
US20030196687A1	2003-10-23	Methods and apparatus for cleaning a hearing aid device
US7202484B1	2007-04-10	Infant stimulation and environment sterilizing device
US20040155201A1	2004-08-12	Toothbrush sanitizer
US8142624B2	2012-03-27	Portable contact lens cleansing apparatus and cleaning method of contact lens

Priority And Related Applications

Priority Applications (1)

Application	Priority date	Filing date	Title
KR20-2004-0027453U	2004-09-24	2004-09-24	Apparatus to disinfect tooth brush combined with charger for cellular phone

Applications Claiming Priority (1)

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Application	Filing date	Title
KR20-2004-0027693U	2004-09-24	Apparatus to disinfect tooth brush combined with charger for cellular phone

Legal Events

Date	Code	Title	Description
2004-12-15	REGI	Registration of establishment	
2005-01-13	T201	Request for technology evaluation of utility model	
2006-02-02	T701	Written decision to grant on technology evaluation	
2006-02-08	G701	Publication of correction	
2008-06-05	FPAY	Annual fee payment	Payment date: 20080605 Year of fee payment: 4
2008-12-16	LAPS	Lapse due to unpaid annual fee	

Concepts

machine-extracted

Download Filter table

Name	Image	Sections	Count	Query match
cellular		title,description	4	0.000
Sambucus nigra		claims,abstract,description	53	0.000
sterilising		claims,abstract,description	32	0.000
corresponding		claims,abstract,description	13	0.000

Show all concepts from the description section

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(19)대한민국특허청(KR)
(12) 등록실용신안공보(Y1)

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기초적요건 심사관 : 이동욱

(54)휴대폰 살균기 겸용 칫솔 살균장치

요약

본 고안은 칫솔 살균기능과, 휴대폰의 충전 및 살균 기능이 개별적으로 또는 동시에 이루어질 수 있도록 한 휴대폰 살균기 겸용 칫솔 살균장치에 관한 것으로, 내부에 자외선을 발생시키는 자외선 램프가 설치되고, 자외선 램프의 후면에는 빛을 전면방향으로 반사해주는 반사판이 설치되며, 상부 양측에는 고리가 각각 형성되고, 하부 양측에는 지지용 돌출부가 각각 형성된 케이스와; 반원형의 띠형상으로 된 본체의 양단부가 각 고리에 걸려 자외선 램프의 외주에 착탈식으로 설치되고, 본체의 외부에는 다수의 칫솔걸이가 방사상으로 각각 형성된 착탈식 칫솔 거치대와; 하부 양측에는 돌출부에 대응되는 지지홈이 형성되고, 중앙부에는 휴대폰 안착부가 형성되어 돌출부에 지지홈이 끼워지는 것에 의해 케이스 내부에 착탈가능하게 설치되는 휴대폰 홀더로 구성된 것이며, 이와 같이 하면 칫솔 살균기능과 휴대폰 살균기능을 동시에 구현할 수 있음은 물론 사용자의 선택에 따라 칫솔 살균기능 또는 휴대폰 살균기능을 개별적으로 구현할 수 있고, 휴대폰 홀더에는 휴대폰 충전기능을 가지고 있어 휴대폰의 살균과 동시에 충전이 가능해지며, 또한 휴대폰 홀더는 그 지지벽과 단자핀의 위치를 가변할 수 있어 모든 기종의 휴대폰에 범용적으로 사용할 수 있는 것이다.

대표도

도 1

명세서

도면의 간단한 설명

도 1은 본 고안에 따른 휴대폰 살균기 겸용 칫솔 살균장치의 분해사시도.

도 2는 본 고안에 따른 휴대폰 홀더와 돌출부의 상세도.

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도 3은 본 고안에 따른 휴대폰 홀더의 단면도.

도 4는 본 고안의 다른 실시예시도.

*** 도면의 주요 부분에 대한 부호의 설명 ***

100 : 케이스 101 : 자외선 램프 102 : 반사판

103 : 뚜껑 104 : 고리 105 : 돌출부

106,303 : 전극 107 : 도어 108 : 전원 소켓

200 : 칫솔 거치대 201 : 본체 202 : 칫솔걸이

300 : 휴대폰 홀더 301 : 지지홈 302 : 휴대폰 안착부

304 : 단자핀 305 : 지지벽 306,308 : 가이드홈

307 : 가이드돌기 309 : 손잡이 310 : 휴대폰 지지홈

311, 313 : 휴대폰 커넥터 312 : 플러그 314 : 리드선

고안의 상세한 설명

고안의 목적

고안이 속하는 기술 및 그 분야의 종래기술

본 고안은 휴대폰 살균기 겸용 칫솔 살균장치에 관한 것으로, 더욱 상세하게는 칫솔 살균기능과, 휴대폰의 충전 및 살균 기능이 개별적으로 또는 동시에 이루어질 수 있도록 한 것이다.

주지하다시피, 칫솔 살균기는 사용한 칫솔에 잔존하고 있는 세균을 살균 및 소독처리함으로써 칫솔을 위생적으로 사용할 수 있게 하는 것으로, 살균을 위해 자외선 램프를 채용하여 이로부터 발생되는 자외선에 의해 살균을 수행하는 것이 보통이며, 음이온 발생장치를 채용하여 공기를 정화할 수 있게 하는 것도 있다.

그러나, 이러한 종래 기술에 따른 칫솔 살균기는 단순히 사용하고 난 칫솔을 살균하는 기능만을 수행하는 것 뿐이어서 그 기능성에 한계가 있다고 할 수 있다.

한편, 휴대폰은 그 이동성과 사용상 편의성 때문에 보급대수가 매년 폭발적으로 증가하고 있으며, 국내에서는 이미 3,500만대 이상의 휴대폰 보급대수를 기록하고 있을 정도이다.

이러한 휴대폰은 사용자가 항상 휴대하고 다니게 되므로 세균에 오염될 확률이 매우 높으며, 휴대폰을 통해 통화할 때에는 귀와 입에 밀착시키게 되므로 휴대폰에 잔존하는 세균이 사용자의 귀 또는 입을 통해 인체내에 침투하여 각종 세균감염을 일으킬 수 있는 심각한 우려가 있었다.

고안이 이루고자 하는 기술적 과제

본 고안은 이러한 점에 착안하여 안출한 것으로, 자외선램프를 이용한 칫솔살균기의 내부에 휴대폰 홀더를 착탈가능하게 구비하여 자외선램프로부터 방사되는 자외선에 의해 휴대폰을 살균할 수 있도록 하는 것이다.

다른 견지로는, 칫솔 살균기 내부에 전극을 갖는 돌출부를 형성하고, 휴대폰 홀더에는 돌출부에 대응되는 지지홈을 형성하면서 지지홈 안쪽에 전극을 구비하며, 휴대폰 홀더의 휴대폰 안착부위에는 전극과 전기적으로 연결된 단자핀을 각각 형성하여 휴대폰의 살균과 동시에 충전을 수행할 수 있도록 하는 것이다.

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고안의 구성 및 작용

이하, 본 고안을 제시되는 실시예와 첨부된 도면에 따라 상세히 설명한다.

도 1은 본 고안에 따른 휴대폰 살균기 겸용 칫솔 살균장치의 분해사시도이고, 도 2는 본 고안에 따른 휴대폰 홀더와 돌출부의 상세도이며, 도 3은 본 고안에 따른 휴대폰 홀더의 단면도이다.

도시된 바와 같이, 본 고안에 따른 휴대폰 살균기 겸용 칫솔 살균장치는 일반적인 칫솔 살균장치와 마찬가지로, 케이스(100)의 내부 중앙에 상하방향 또는 좌우방향으로 자외선 램프(101)가 설치되고, 자외선 램프(101)의 후위에는 자외선 램프(101)로부터 발산된 자외선을 전면과 상하방향으로 반사시켜주는 반사판(102)이 위치되어 이루어지며, 도시하지는 않았지만 상부의 뚜껑(103) 내부에 음이온발생기를 구성할 수도 있다.

이러한 케이스(100)의 내부에는 착탈식의 칫솔 거치대(200)와 착탈식의 휴대폰 홀더(300)가 선택적으로 설치되는바, 케이스(100)의 상부 양측에는 고리(104)가 각각 형성되며, 칫솔 거치대(200)는 반원형의 띠형상으로 된 본체(201)의 외측에 방사상으로 다수의 칫솔걸이(202)가 형성되어 그 양단부가 각 고리(104)에 선택적 으로 걸리는 것에 의해 케이스(100)의 내부에 착탈식으로 설치되고, 또한 케이스(100)의 하부 양측에는 지지용 돌출부(105)가 각각 형성되며, 휴대폰 홀더(300)는 그 하부 양측에 돌출부(105)에 대응되는 지지홈(301)이 형성되고, 중앙부에는 휴대폰 안착부(302)가 형성되어 돌출부(105)에 지지홈(301)이 선택적으로 끼워지는 것에 의해 케이스(100) 내부에 착탈식으로 설치된다.

이때, 휴대폰 홀더(300)는 충전기능을 구비할 수도 있는 것이며, 이를 위해 케이스(100) 내부에 구비되는 돌출부(105) 중 일측 돌출부(105)에는 케이스(100) 내부에 구비된 충전회로(미도시)와 전기적으로 연결된 전극(106)이 각각 형성되고, 일측 돌출부(105)에 대응되는 지지홈(301) 안쪽에는 돌출부(105)의 전극(106)과 접속되는 전극(303)이 각각 형성되며, 휴대폰 안착부(302)의 휴대폰 단자 접촉부위에는 전극(303)과 전기적으로 연결된 단자핀(304)이 각각 형성된다.

또한, 휴대폰 홀더(300)는 기종이 다른 다종의 휴대폰(H)에 범용적으로 사용할 수 있도록 휴대폰(H)의 양측벽을 지지하는 지지벽(305)이 제한된 영역내에서 좌우방향으로 슬라이딩될 수 있게 구성되고, 단자핀(304) 역시 2개가 구비되어 제한된 영역내에서 좌우방향으로 슬라이딩될 수 있게 구성되는 것으로, 휴대폰 홀더(300)와 지지벽(305) 또는 휴대폰 홀더(300)와 각 단자핀(304)의 슬라이딩 구조는 가이드홈-가이드돌기, 가이드레일-가이드돌기과 같이 대응이 되는 구성이면 어떤 것이든 적용 가능하다. 도면상에는 휴대폰 홀더(300)의 양쪽에 가이드홈(306)을 형성하고, 각 지지벽(305)에는 가이드홈(306)에 끼워지는 가이드돌기(307)를 각각 형성하여 지지벽(305)의 가이드돌기(307)가 가이드홈(306)을 따라 좌우방향으로 슬라 이딩될 수 있게 구성되며, 휴대폰 홀더(300)의 휴대폰 안착부(302) 아래쪽에는 좌우방향으로 가이드홈(308)이 형성되고, 각 단자핀(304)은 가이드홈(308) 외측에 위치한 손잡이(309)에 연결되어 좌우방향으로 슬라이딩될 수 있게 구성된 것을 예로 하여 도시하였다.

아울러, 일측단부에는 전원 소켓(108)에 삽입되는 플러그(312)가 형성되고, 타측단부에는 휴대폰 포트에 대응되는 휴대폰 커넥터(313)가 형성된 휴대폰 충전용 리드선(314)을 착탈가능하게 구비하고, 케이스(100)의 하부일측에는 전원 소켓(108)을 형성하여 리드선(314)이 선택적으로 착탈될 수 있게 구성할 수도 있으며, 이런 경우 도시된 바와 같이 휴대폰 홀더(300)와 리드선(314)을 통해 2대의 휴대폰(H)을 동시에 충전, 살균할 수 있고, 도시하지는 않았지만 휴대폰 홀더(300)가 충전기능없이 휴대폰의 거치만 가능하도록 구성된 경우에도 리드선(314)을 통해 휴대폰(H)에 전원을 인가하여 충전기능을 담당할 수도 있다.

도면상의 미설명 부호 107은 도어를 나타낸다.

이와 같이 구성된 본 고안에 따른 전동칫솔 살균기 겸용 칫솔 살균장치는 다음과 같은 작용을 한다.

먼저, 케이스(100) 내부의 고리(104)에 칫솔 거치대(200)를 걸어 고정하고, 칫솔 걸이대(200)의 칫솔걸이(202)에 칫솔(미도시)을 각각 거치시킨 상태에서 도어(107)를 닫고 전원을 공급하면 마이크로 프로세서(미도시)의 제어 신호에 의해 자외선 램프(101)가 점등되어 케이스(100) 내부의 칫솔 거치대(200)에 거치되어 있는 칫솔을 살균 및 소독 처리하게 되고, 도어(107)를 열게되면 모든 동작이 중지되면 서 전기적으로는 최초의 상태를 유지하게 되며, 마이크로 프로세서의 프로그램에 의해 자외선 램프(101)를 일정시간 동안은 점등시켰다가 일정시간 동안은 소등하는 동작을 반복적으로 수행하게 된다.

이러한 과정에서 반사판(102)은 자외선 램프(101)의 불빛을 전방으로 반사시켜 자외선에 의한 효과를 더욱 높여주는 것으로, 반사판(102)의 후면에 트랜지스터를 취부하여 트랜지스터로부터 발생되는 열을 이용하는 경우나, 반사판(102)의 후면에 발열필름을 피복하여 이 발열필름으로부터 발생되는 열을 이용하는 경우나, PTC히터를 사용하는 경우에는 별도의 팬이나 일반히터 없이도 칫솔을 건조하는 기능까지 구현할 수 있다.

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휴대폰(H)을 살균 및 충전할 때에는 먼저, 휴대폰 홀더(300)에 휴대폰(H)을 안착시키고, 이 휴대폰 홀더(300) 하부의 지지홈(301) 부위를 케이스(100) 내부의 돌출부(105)에 맞게 삽입하여 고정시킨 후 도어(107)를 닫고 전원을 인가하게 되며, 그러면 상기한 칫솔의 살균과정과 동일하게 자외선 램프(101)가 일정시간 동안은 점등되었다가 일정시간 동안은 소등되는 과정을 반복하면서 휴대폰(H)에 잔존하는 세균을 살균할 수 있다.

이때, 휴대폰을 살균할 때 충전까지 같이 수행하게 되면 휴대폰(H)의 살균과 충전의 효과를 동시에 얻을 수 있으며, 이를 위해 본 고안에서는 케이스(100) 내부에 구비되는 돌출부(105) 중 일측 돌출부(105)에는 케이스(100) 내부에 구비된 충전회로(미도시)와 전기적으로 연결된 전극(106)을 각각 형성하고, 일측 돌출부(105)에 대응되는 휴대폰 홀더(300)의 지지홈(301) 안쪽에는 돌출부(105)의 전극 (106)과 접속되는 전극(303)을 각각 형성하며, 휴대폰 안착부(302)의 휴대폰 단자 접촉부위에는 전극(303)과 전기적으로 연결된 단자핀(304)을 각각 형성한 것으로, 휴대폰 홀더(300)의 각 지지홈(301)이 케이스(100)의 돌출부(105)에 끼워지는 것과 동시에 각 전극(106)(303)이 서로 접속되어 전기적으로 통하는 상태가 되고, 휴대폰 홀더(300)의 휴대폰 안착부(302)에 형성된 단자핀(304)에는 휴대폰(H)의 단자가 접속되므로 휴대폰(H)의 살균과 동시에 충전의 효과를 도모할 수 있는 것이다.

그런데, 휴대폰(H)은 각 메이커 및 각 기종별로 폭이 다르고, 단자의 개수와 위치가 다르므로 휴대폰 홀더(300)를 범용적으로 사용하기 위해 본 고안에서는 휴대폰(H)의 양측벽을 지지하는 지지벽(305)이 제한된 영역내에서 좌우방향으로 슬라이딩될 수 있게 구성되고, 단자핀(304)은 2개가 구비되어 제한된 영역내에서 좌우방향으로 슬라이딩될 수 있게 구성되는 바, 휴대폰(H)을 휴대폰 홀더(300)에 안착시킬 때 양측 지지벽(305)을 대상이 되는 휴대폰(H)에 밀착시킬 수 있도록 조정하여 휴대폰(H)을 안정적으로 안착시킬 수 있으며, 휴대폰(H)이 안정적으로 안착된 상태에서 휴대폰(H)의 단자에 맞게 단자핀(304)의 위치를 손잡이(309)를 통해 조정할 수 있어 어떠한 기종의 휴대폰(H)도 충전 가능해지는 것이다. 이럴 경우 도시하지는 않았지만 단자핀(304)의 위치를 조정하여 충전이 가능한 위치가 되면 LED를 통해 휴대폰(H)의 단자와 단자핀(304)이 충전이 가능한 위치로 조정되었음을 외부로 표시해줌이 바람직하다.

한편, 케이스(100) 내부의 전원 소켓(108)에 리드선(314)의 플러그(312)를 꽂고 그 반대측의 휴대폰 커넥터(313)에 휴대폰의 포트를 꽂으면 휴대폰에 전원이 인가되어 충전의 기능을 담당할 수 있으며, 이와 같이 하는 경우 휴대폰 홀더(300)와 리드선(314)를 통해 2대의 휴대폰(H)을 동시에 충전, 살균할 수 있고, 휴대폰 홀더(300)가 충전기능없이 휴대폰의 거치만 가능하도록 구성된 경우에는 리드선(314)을 통해 휴대폰(H)에 전원을 인가하고, 이러한 상태에서 휴대폰 홀더(300)에 휴대폰을 거치시켜 충전 및 살균의 효과를 얻을 수 있다.

이와 같이, 본 고안에 따른 휴대폰 살균기 겸용 칫솔 살균장치는 칫솔 살균을 위한 칫솔 거치대(200)와, 휴대폰 살균을 위한 휴대폰 홀더(300)가 모두 착탈가능하게 구성되는 것이므로 이를 동시에 사용할 수도 있으나, 칫솔은 주로 욕실 또는 세면장에서 사용되는 것이고, 휴대폰(H)은 습기에는 약하므로 사용자가 원하는 용도에 맞게 어느 하나는 탈거해버리고 칫솔 살균기능만 구현하던가 또는 휴대폰 살균기능만을 개별적으로 구현할 수도 있다.

도 4는 본 고안의 다른 실시예로서, 케이스(100)의 내부에 휴대폰 지지홈(310)을 형성하되, 휴대폰 지지홈(310) 저면에는 케이스(100) 내부의 충전회로(미도시)와 전기적으로 연결되면서 휴대폰(H)의 포트에 대응되는 형상으로 된 휴대폰 커넥터(311)를 돌출 형성하여 구성한 것으로, 이와 같이 하면 휴대폰(H)을 휴대폰 지지홈(310)에 꽂으면서 그 포트가 휴대폰 커넥터(311)에 접속되어 휴대폰(H)의 살균과 충전의 효과를 동시에 얻을 수 있도록 할 수 있으며, 이러한 경우에도 칫솔 거치대(200)는 착탈가능하게 구성하여 칫솔 살균기능과 휴대폰 살균 기능을 동시에 구현할 수 있음은 물론 칫솔 살균기능 또는 휴대폰 살균기능을 개별적으로 구현할 수 있음은 자명하다.

이러한 경우에도 일측단부에는 전원 소켓(108)에 삽입되는 플러그(312)가 형성되고, 타측단부에는 휴대폰 포트에 대응되는 휴대폰 커넥터(313)가 형성된 휴대폰 충전용 리드선(314)을 착탈가능하게 구비하고, 케이스(100)의 하부일측에는 전원 소켓(108)을 형성하여 리드선(314)이 선택적으로 착탈될 수 있게 구성할 수 있으며, 그 효과 역시 본 고안에 실시예와 동등하게 구현할 수 있다.

고안의 효과

이상에서 설명한 바와 같이, 본 고안은 자외선을 방사하는 케이스 내부에 착탈식의 칫솔거치대와 착탈식의 휴대폰 홀더를 갖는 것이므로 칫솔 살균기능과 휴대폰 살균기능을 동시에 구현할 수 있음은 물론 사용자의 선택에 따라 칫솔 살균기능 또는 휴대폰 살균기능을 개별적으로 구현할 수 있으며, 휴대폰 홀더에는 휴대폰 충전기능을 가지고 있어 휴대폰의 살균과 동시에 충전이 가능해지고, 또한 휴대폰 홀더는 그 지지벽과 단자핀의 위치를 가변할 수 있어 사이즈와 단자의 개수 및 위치가 다른 모든 기종의 휴대폰에 범용적으로 사용할 수 있는 매우 유용한 효과가 있는 것이다.

(57) 청구의 범위

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청구항 1.
내부에 자외선을 발생시키는 자외선 램프(101)가 설치되고, 상기 자외선 램프(101)의 후면에는 빛을 전면과 상하방향으로 반사해주는 반사판(102)이 설치되며, 상부 양측에는 고리(104)가 각각 형성되고, 하부 양측에는 지지용 돌출부(105)가 각각 형성된 케이스(100);

반원형의 띠형상으로 된 본체(201)의 양단부가 상기 각 고리(104)에 걸려 상기 자외선 램프(101)의 외주에 착탈식으로 설치되고, 상기 본체(201)의 외부에는 다수의 칫솔걸이(202)가 방사상으로 각각 형성된 착탈식 칫솔 거치대(200); 및

하부 양측에는 상기 돌출부(105)에 대응되는 지지홈(301)이 형성되고, 중앙부에는 휴대폰 안착부(302)가 형성되어 상기 돌출부(105)에 상기 지지홈(301)이 끼워지는 것에 의해 상기 케이스(100) 내부에 착탈가능하게 설치되는 휴대폰 홀더(300)를 포함하여서 된 것을 특징으로 하는 휴대폰 살균기 겸용 칫솔 살균장치.

청구항 2.
제 1 항에 있어서,

상기 일측 돌출부(105)에는 상기 케이스(100) 내부에 구비된 충전회로와 전기적으로 연결된 전극(106)이 각각 형성되고,

상기 일측 돌출부(105)에 대응되는 상기 지지홈(301) 안쪽에는 상기 돌출부(105)의 전극(106)과 접속되는 전극(303)이 각각 형성되며,

상기 휴대폰 안착부(302)의 휴대폰 단자 접촉부위에는 상기 전극(303)과 전 기적으로 연결된 단자핀(304)이 각각 형성되는 것을 특징으로 하는 휴대폰 살균기 겸용 칫솔 살균장치.

청구항 3.
제 1 항 또는 제 2 항에 있어서,

상기 휴대폰 홀더(300)는,

휴대폰(H)의 양측벽을 지지하는 지지벽(305)이 제한된 영역내에서 좌우방향으로 슬라이딩될 수 있게 구성되고,

상기 각 단자핀(304)이 제한된 영역내에서 좌우방향으로 슬라이딩될 수 있게 구성된 것을 특징으로 하는 휴대폰 살균기 겸용 칫솔 살균장치.

청구항 4.
내부에 자외선을 발생시키는 자외선 램프(101)가 설치되고, 상기 자외선 램프(101)의 후면에는 빛을 전면방향으로 반사해주는 반사판(102)이 설치되며, 상부 양측에는 고리(104)가 각각 형성되고, 하부에는 휴대폰 지지홈(310)이 형성된 케이스(100); 및

반원형의 띠형상으로 된 본체(201)의 양단부가 상기 각 고리(104)에 걸려 상기 자외선 램프(101)의 외주에 착탈식으로 설치되고, 상기 본체(201)의 외부에는 다수의 칫솔걸이(202)가 방사상으로 각각 형성된 착탈식 칫솔 거치대(200)를 포함하여서 된 것을 특징으로 하는 휴대폰 살균기 겸용 칫솔 살균장치.

청구항 5.
제 4 항에 있어서,

상기 휴대폰 지지홈(310) 저면에는 상기 케이스(100) 내부의 충전회로와 전기적으로 연결되면서 휴대폰 포트에 대응되는 형상으로 된 휴대폰 커넥터(311)를 돌출 형성하여서 된 것을 특징으로 하는 휴대폰 살균기 겸용 칫솔 살균장치.

청구항 6.
제 1 항 또는 제 4 항에 있어서,

상기 케이스(100)의 하부일측에는 전원 소켓(108)이 형성되고,

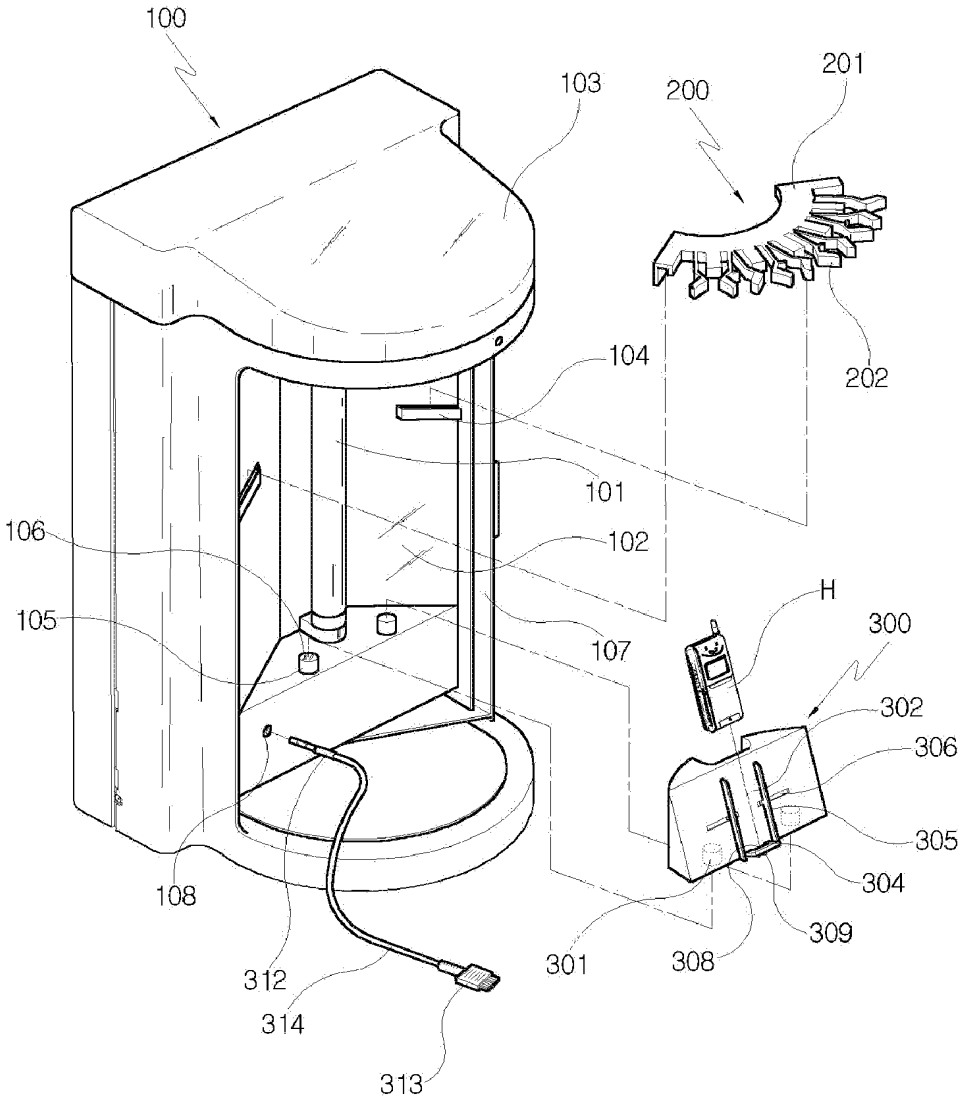
일측단부에는 상기 전원 소켓(108)에 삽입되는 플러그(312)가 형성되고, 타측단부에는 휴대폰 포트에 대응되는 휴대폰 커넥터(313)가 형성된 휴대폰 충전용 리드선(314)이 착탈가능하게 구비된 것을 특징으로 하는 휴대폰 살균기 겸

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용 칫솔 살균장치.

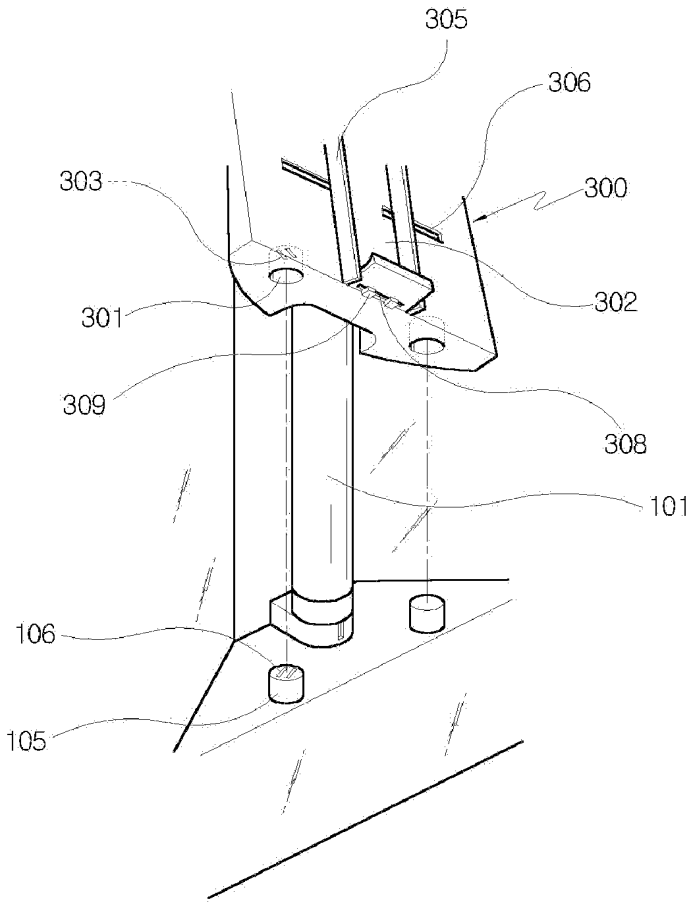
도면

도면1



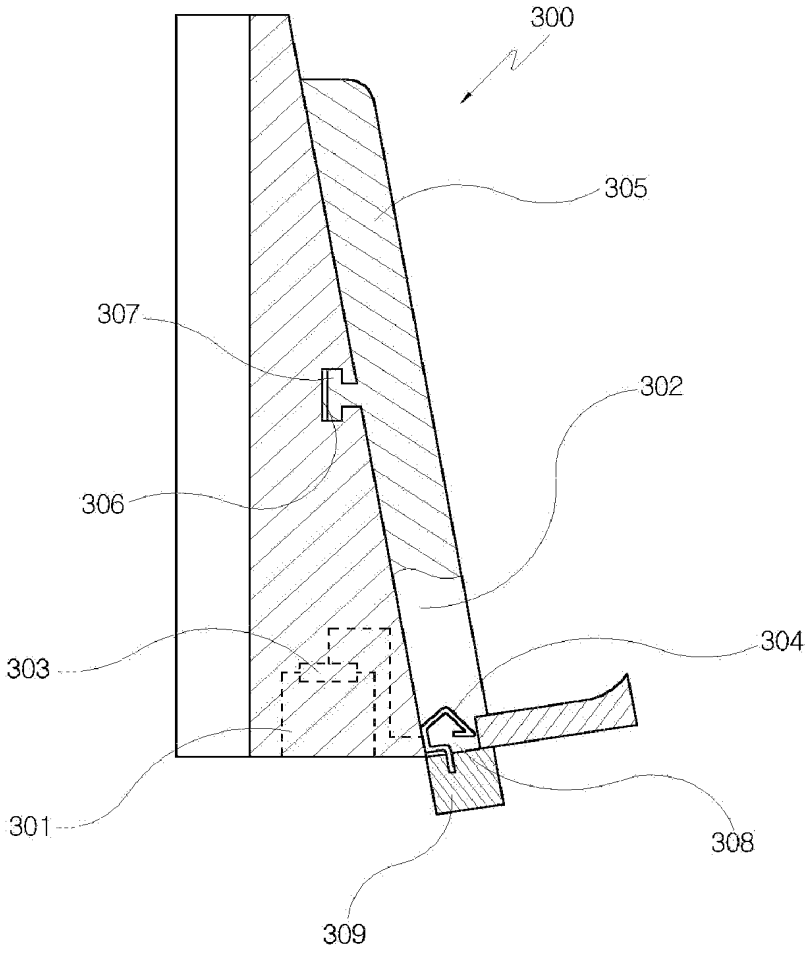
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도면2



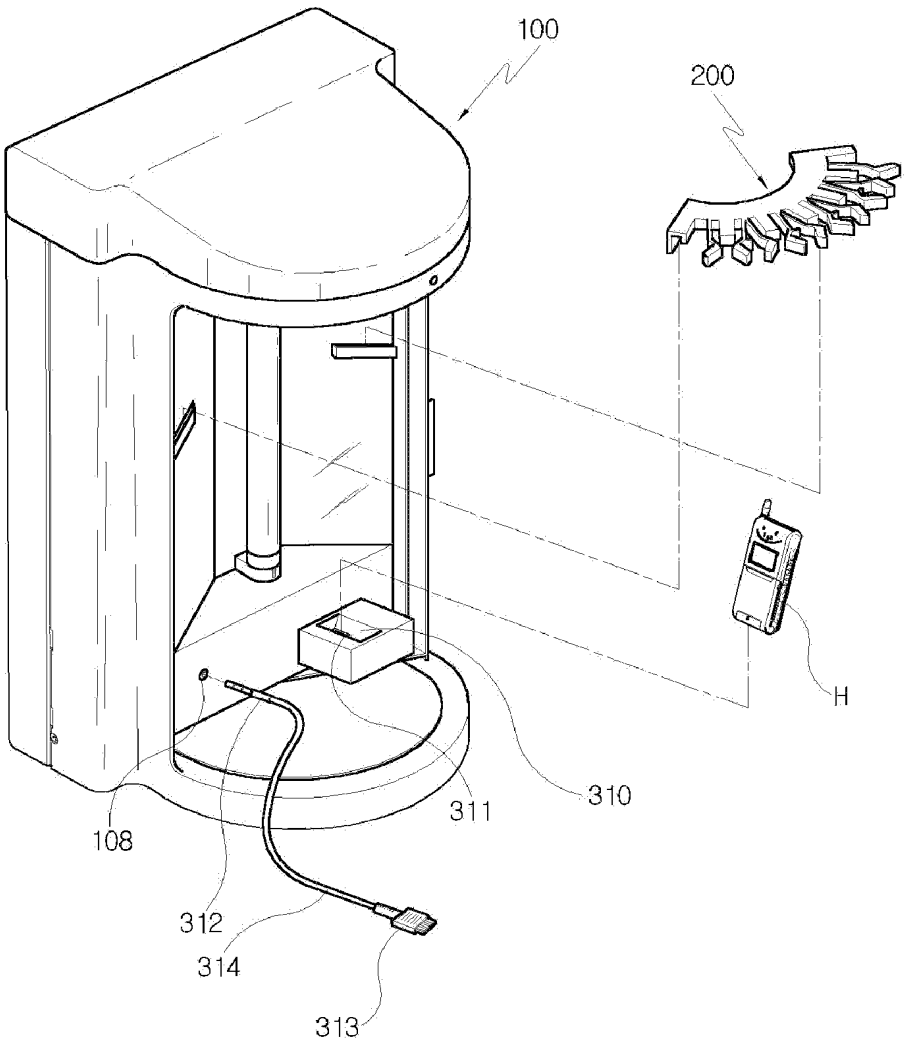
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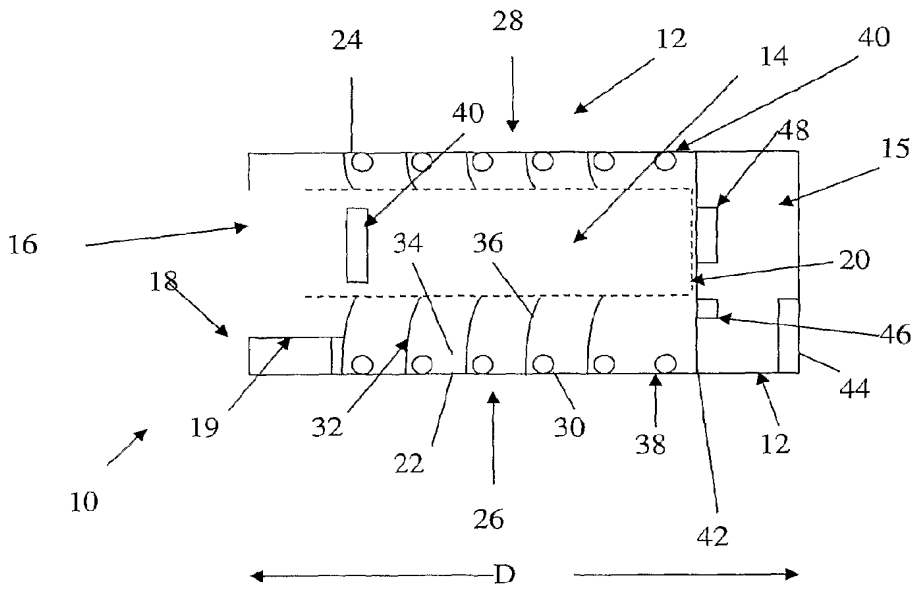
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(54) Title: HAND UNIT



(57) Abstract: A hand disinf ector (10) comprising a body (12) defining a chamber (14) for location of one or more hands to be disinfected and an opening (16) through which one or more hands can be passed into the chamber (14), wherein the disinf ector comprises a UV light source (30) positioned to irradiate the chamber (14).

WO 2007/010255 A1

Hand Unit

This invention relates to a unit for cleansing both small items and human hand(s). The invention is particularly adapted for cleansing such hand(s) and items used in hospital and in particular for virus sterilisation and deactivating viruses or other organisms containing RNA or DNA which may be present on such hand(s) or items.

It is known in hospital for visitors to attempt to sterilise their hand(s) using gels such as alcohol based gels or for visitors to regularly wash their hand(s). It is also known for Nurses to wear gloves, changing the gloves frequently and not using the same gloves between different patients. These methods of preventing cross contamination are only partially effective and require multiple and frequent actions. This is particularly true for nurses and doctors who will need to hand wash and glove change on a very frequent basis. Hand gel use also requires some technique/thoroughness to be truly effective and if not applied all over the hand(s) its usefulness is limited. This is problematic when it is carried out by untrained persons such as guests visiting patients. Such gels may also be less effective against viruses than they are against bacteria.

It is known to use ultraviolet light to deactivate viruses for example in water treatment whereby water is passed through a region of ultraviolet light in the cleaning process. This requires the complication of the water to be pumped through the region of UV and for the section to be sufficiently long to ensure deactivation of all viruses in the water. In order to cleanse solid objects, it is known to provide hand held units to shine ultraviolet light on items in order to cleanse them by deactivation of viruses. However, use of such hand held units requires the user to take considerable health and safety measures to prevent harm both to themselves and anybody else within the vicinity. Accordingly, typically protective clothing including gloves and goggles are worn by a user in order to reduce the risk of excess exposure to ultraviolet radiation. Moreover, it cannot be determined accurately how much of the surface of the item has been irradiated in such a handheld operation.

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It is also known to use UV light on hands for other purpose such as curing nails but this is done with UV A light at a wavelength of around 380-400 nm which is not found to be effective for sterilisation.

An object in the invention is to provide a unit which allows for at least some biological sterilisation of hand(s) or gloved hand(s) whilst mitigating some of the above mentioned problems. Another object of the invention is to allow UV exposure to be used on the hand(s) without causing unnecessary exposure to the individual or those around them from the ultraviolet radiation.

According to the first aspect of the invention there is provided a hand disinfector comprising a body, the body defining a chamber for location of one or more hands to be disinfected and an opening through which one or more hands can be passed into the chamber, wherein the disinfector comprises a UV light source positioned to irradiate the chamber.

Preferably the UV source irradiates UV with a wavelength shorter than 350 nm, more preferably shorter than 300 nm and/or is around 250 or 254 nm.

Preferably the unit comprising a timer in communication with the UV source which turns off the source after a preset time, such as around 3 seconds, of use and which in operation prevents hand(s) from being continuously exposed to UV for more than the set time. Preferably the unit comprises a sensor in communication with the UV source arranged to detect when hand(s) have been placed in the chamber and which in use turns on the UV source and begins irradiation of the hands when the sensor detects hand(s) begin entered into the chamber. More preferably the timer is in communication with the sensor and configured to start its preset time duration when the sensor detects a hand and/or the sensor comprises a light detector located on a first side of the chamber and the chamber comprises a reflector located on a second side opposite the first side, wherein the sensor detects a hand when a sufficient amount of the light from the reflector is blocked from reaching the light detector. Preferably still the sensor

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comprises a light source such as an LED arranged to radiate light onto the reflector for reflection onto the light detector.

Preferably the unit comprises a plurality of UV sources and more preferably comprises a first bank of UV sources disposed along a first surface of the chamber and a second bank of UV sources disposed along a second surface of the chamber which is preferably opposite the first surface. More preferably the banks comprise five or six UV sources and/or the banks of sources are disposed linearly along the length of the inserted hand in use.

Preferably one or more UV source comprises a tube, more preferably disposed so that in use is substantially perpendicular to the fingers of the inserted hand.

Preferably the disinfector comprises a reflector, which may be parabolic, curved away from the opening and/or have substantially constant curved cross section and/or .
, positioned in proximity to the UV source and arranged to reflect radiation from the source into the chamber and/or onto a hand in use. More preferably the reflector is positioned between the opening and the UV source. preferably the disinfector comprises an absorber to absorb UV radiation from the UV source preferably located in proximity to the source, the corresponding source is positioned between the opening and the absorber, and/or is black. More preferably it has an element located between two UV sources, the element comprising a first surface which faces the opening and comprises the absorber and a second surface facing away from the opening which comprises the reflector. Preferably the unit comprises a reflector/absorber for each UV source in the first and/or second bank Preferably still there are two further sources without a corresponding reflector/absorber.

Preferably the disinfector comprises a barrier which permits UV radiation to be transmitted through it such as a wire gauze, the barrier located inside the chamber and defines the area into which the hand(s) are contained in use, and which prevents the hand from easily touching one or more of the UV source, reflector or absorber. Preferably the chamber/area inside the barrier is dimensioned to accommodate two

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hands but does not have a significant amount of extra space and/or is one or more of more than about 15/20 cm deep, less than about 30 cam deep, more than about 50cm wide, less than about 70cm wide

Preferably the disinfector comprises a housing, which maybe separated from the chamber by a reflective surface, containing electronics such as a fuse block, a starter for each UV source and/or a ballast for each UV source.

Embodiments of the invention will now be described, by way of example only, with reference to the accompany drawings in which :

Figure 1 is a schematic side sectional view of the embodiment of the invention,

Figure 2 is a schematic front view of the embodiment of Figure 1,

Figure 3 is a schematic wiring diagram of the circuit linking the components of the embodiment of Figures 1 and 2.

Referring to Figures 1 and 2, there is shown a hand disinfecting unit 10 according to the invention comprising a main body 12, defining an internal chamber 14 and a compartment 15.

The chamber 14 is completely sealed by the main body 12 on five of its sides but has an opening 16 at its front end. Surrounding opening 16 is an apron 18.

Apron 18 has two faces, a front vertical face 17 and a horizontal face 19 which extends backwards into the chamber 14. Front vertical face 17 extends from the edges of the front face of body 12, inwardly and delimits the size of opening 16. Horizontal face 19 is painted matt black to eliminate reflection of radiation from its surface helping to reduce the amount of radiation leaving through the opening 16.

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Within the chamber 14 an area is delimited by a wire gauze 20 bent to form a substantially cuboid form in shape. The cuboid like form has five faces constructed of wire gauze with the face adjacent opening 16 having no wire and being completely open. The area delimited by the wire gauze 20 has a length just greater than that of a large human hand and a height great enough to accommodate most sizes of hand but is not unnecessarily larger than this. The width as seen in Figure 2 allows for two human hand(s) to be put side by side to fit comfortably within the chamber 14 and again is not unnecessarily larger than this. Consequently, the total width W as depicted in Figure 2 of unit 10 is 60 cm and the total depth D as depicted in Figure 1 is 24 cm. In an alternative embodiment the cuboid form of wire gauze 20 may have three open faces, including those adjacent the side walls of the chamber 14.

Referring to Figure 1 it can be seen that on each of the inside top and bottom surfaces 22 and 24 of the body 12 that there is a bank 26 and 28 of ultraviolet lamps 30. In this embodiment the ultraviolet lamps 30 are a number of tubes which extend along the width of the unit 10 and are of a substantially similar length to the width of the chamber 14. Each of the banks 26 and 28 in this embodiment have five UV lamps 30.

The lower and upper surfaces 22 and 24 also comprise an array of reflectors 32. Each array comprises five reflectors 32 which are arranged along with banks 26 and 28 so that reflectors 32 and lamps 30 alternate in sequence.

Each reflector 32 has a curved profile resembling part of a shallow parabola. The profile has a relatively straight lower section 34 adjacent to the surface 22/24 and a top portion 36 which curves backwards away from the opening 16 partially across the top of the corresponding lamp 30. Each reflector 32 is painted matt black on the side facing the opening 16 to absorb any reflections of UV radiation which reach it. The side of the reflector 32 facing away from the opening 16 is metallic and shiny to optimise reflections into the area delimited by the wire gauze 20 and away from the opening 16.

As can be seen in Figures 1 and 2 the reflectors 32 intermingled with lower bank 26 are significantly taller than those corresponding to upper bank 28. It can also be seen from

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the cross section in Figure 1 that the reflectors are very thin, being effectively just a piece of sheet metal, but that widthways as shown in Figure 2 they extent right across the full width of the chamber 14.

There are two further UV lamps 38 and 40 which are located on the lower surface 22 and upper surface 24 respectively and which are positioned behind the last lamp of the banks 26 and 28 and do not have a corresponding reflector 32.

At the end of chamber 14 opposite the opening 16 there is a panel 42 which separates the chamber 14 from compartment 15. On the side of panel 42 facing the chamber its surface is reflective in silver or white in order to reflect UV radiation from lamps 38 and 40 into the area delimited by the gauze 20.

Compartment 15 hides a ballast 44 and a starter 46 for each of the UV lamps 30 and also contains a fuse block 48.

Positioned on the inside side walls of the body 12 are a sensor and timer unit 50, which includes a light sensitive switch, and a flat reflector 52. The sensor and timer unit 50 and the flat reflector 52 face directly opposite each other. The flat reflector 52 is positioned to reflect visible light directly onto the sensor 50. Both the sensor unit 50 and flat reflector 52 are positioned at a level where the hand(s) should be inserted.

The sensor and timer unit may have a small light source such as an LED which transmits along the width of the unit 10 and hits a reflector 40 before returning back to the sensor unit 38. Alternatively it may rely on the reflection of ambient light.

Each of the UV lamps 30 operates with UV at about 254 nm which is found to be particularly effective at virus sterilisation and deactivating viruses or other organisms containing RNA or DNA

Referring to Figure 3 there is shown wiring for one lamp 30. This is repeated for each of the ten lamps 30 in the unit 10.

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The circuit 56 links a power supply 54 to the sensor and timing unit 50 and through the fuse box 48 onto each of the lamps 30 and corresponding ballast 44. An example illustrating only one lamp 30 is shown, the amp 30 being connected in series with only one ballast 48 to complete the circuit. Each of the lamps 30 is then connected in series with its corresponding ballast 48, but is in parallel with each of the subsequent ballasts 48 and lamps 30. Also in parallel with lamp 22 is the starter 46 corresponding to the particular lamp 22. This starter is needed to commence the lamp and may also connect to timer unit 50.

In use the user inserts their hands into the opening 16 fully so that all of their hands are contained within the chamber 14. The design of the unit 10 preferably produces a clearly defined cut off line just short of where a cuff of a standard surgical glove would be. The hands are inserted and block light being reflected by reflector 52 onto the sensor 50. With the light blocked the sensor's light sensitive switch triggers and starts the timer in the timer unit 52 and or which instructs the starters 46 and/or ballasts 44 to turn on each of the lamps 30. Typically the timer unit 52 would then instruct the lamps to turn off after a period of about three seconds which has been found to be as suitable time for achieving sufficient sterilisation without too much UV radiation exposure.

Whilst the hands are inside the chamber 14 they are prevented from touching or going too close to the lamps 30 and reflectors 32 by the wire gauze 20. For this reason the gauze is preferably fine enough not to let even small fingers protrude through it.

In use the shiny side of reflectors 32 with their carefully chosen angles ensure that UV radiation distribution is optimised in covering the inserted hands in a controlled and spread manner. Additionally it ensures that none of the lamps from the lamps 30 goes directly in the direction of opening 16 without first hitting another surface, in order to reduce escape of radiation from unit 10. This is further aided by the matt black side of the reflectors 32 and by matt black surfaces 19 which help eliminate unwanted reflection. Panel 42 also reflects light back from the lamps 30 in particular 40 and 42 onto the hands. It is found that lamps 38 and 40 do not need a reflector with matt black

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surfaces on one side as they are far enough away from the opening 16. Likewise whilst panel 42 does reflect some light in the direction of the opening 16, because of its distance from it and the amount of absorbing matt black surfaces between it and opening 16 the total light omitted from the opening 16 is very small.

The unit 10 can be used with gloved hands. Whether or not it is being used on gloved or naked hands may affect the length of time for which timing unit 50 is set and/or the power of the lamps 30. The UV intensity can be of any suitable level and can be increased or decreased by using different wattage lamps and by using resistance or other suitable controlled means. The lamps are preferably of a shatter proof material and preferably the disinfector is positioned so that a person's body is directly in front of the disinfector providing a further screen to any UV light spillage.

It is preferred that no door or screen is used across the opening 16 as this can itself be a target for contamination particularly if it obstructs easy entry of the hands.

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Claims

1. A hand disinfector comprising a body defining a chamber for location of one or more hands to be disinfected and an opening through which one or more hands can be passed into the chamber, wherein the disinfector comprises a UV light source positioned to irradiate the chamber.

2.A hand disinfector according to claim 1 wherein the UV source irradiates UV with a wavelength shorter than 350 nm, preferably shorter than 300 nm and/or is around 250 nm.

3. A hand disinfector according to claim 2 wherein the UV has a wavelength of around 254 nm.

4. A hand disinfector according to any preceding claim comprising a timer in communication with the UV source which turns off the source after a preset time of use and which in operation prevents hand(s) from being continuously exposed to UV for more than the set time.

5. A hand disinfector according to claim 4 wherein the preset time is around 3 seconds.

6. A hand disinfector according to any preceding claim wherein the disinfector comprises a sensor in communication with the UV source arranged to detect when hand(s) have been placed in the chamber and which in use turns on the UV source and begins irradiation of the hands when the sensor detects hand(s) begin entered into the chamber.

7. A hand disinfector according to claim 6 when dependent on claim 4 wherein the timer is in communication with the sensor and configured to start its preset time duration when the sensor detects a hand.

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8. A hand disinfector according to claim 6 or 7 wherein the sensor comprises a light detector located on a first side of the chamber and the chamber comprises a reflector located on a second side opposite the first side, wherein the sensor detects a hand when a sufficient amount of the light from the reflector is blocked from reaching the light detector.

9. A hand disinfector according to claim 8 wherein the sensor comprising a light source such as an LED arranged to radiate light onto the reflector for reflection onto the light detector.

10. A hand disinfector according to any preceding claim which comprises a plurality of UV sources.

11. A hand disinfector according to claim 10 wherein the disinfector comprises a first bank of UV sources disposed along a first surface of the chamber and a second bank of UV sources disposed along a second surface of the chamber.

12. A hand disinfector according to claim 11 wherein the first and second surface are opposite each other.

13 A hand disinfector according to claim 11 or 12 wherein the first bank and/or the second bank comprises five or six UV sources.

14 A hand disinfector according to claim 11, 12 or 13 wherein the banks of sources are disposed linearly along the length of the inserted hand in use.

15. A hand disinfector according to any preceding claim wherein one or more UV source comprises a tube, preferably disposed so that in use is substantially perpendicular to the fingers of the inserted hand.

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16. A hand disinfector according to any preceding claim comprising a reflector positioned in proximity to the UV source and arranged to reflect radiation from the source into the chamber and/or onto a hand in use.

17. A hand disinfector according to claim 16 wherein the reflector is curved and preferably curved away from the opening.

18. A hand disinfector according to claim 17 wherein the reflector has a substantially constant curved cross section.

19. A hand disinfector according to claim 17 wherein the reflector is substantially parabolic.

20. A hand disinfector according to claim 17, 18 or 19 wherein the reflector is positioned between the opening and the UV source.

21. A hand disinfector according to any preceding claim comprising an absorber to absorb UV radiation from the UV source preferably located in proximity to the source and/or preferably black.

22. .A hand disinfector according to claim 21 wherein the UV source is positioned between the opening and the absorber.

23. A hand disinfector according to any preceding claim when dependent on claims 10, 16 and 21 comprising an element located between two UV sources, the element comprising a first surface which faces the opening and comprises the absorber and a second surface facing away from the opening which comprises the reflector.

24. A hand disinfector according to any preceding claim when dependent on claims 11 and 16 or 21 wherein the disinfector comprises a reflector/absorber for each UV source in the first and/or second bank

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25. A hand disinfector according to claim 25 wherein the disinfector comprises two further sources without a corresponding reflector/absorber.

26. A hand disinfector according to any preceding claim comprising a barrier which permits UV radiation to be transmitted through it such as a wire gauze, the barrier located inside the chamber and defines the area into which the hand(s) are contained in use, and which prevents the hand from easily touching one or more of the UV source, reflector or absorber.

27. A hand disinfector according to any preceding claim comprising a housing containing electronics such as a fuse block, a starter for each UV source and/or a ballast for each UV source.

28. A hand disinfector according to claim 27 wherein the housing is separated from the chamber by a reflective surface.

29. A hand disinfector according to any preceding claim wherein the chamber/area inside the barrier is dimensioned to accommodate two hands but does not have a significant amount of extra space.

30. A hand disinfector according to any preceding claim which is one or more of more than about 15/20 cm deep, less than about 30 cam deep, more than about 50cm wide, less than about 70cm wide.

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Figure 1

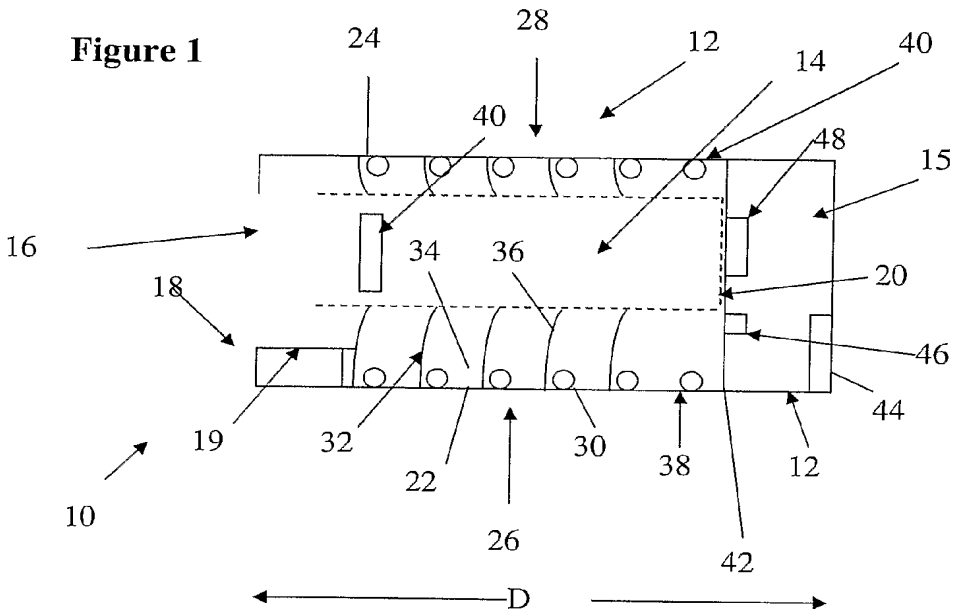
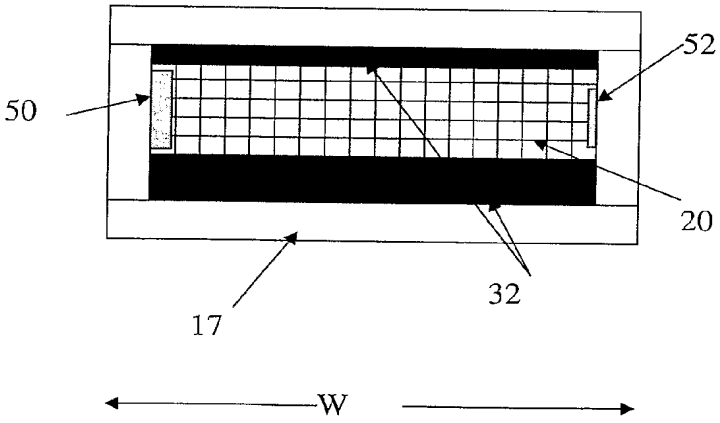
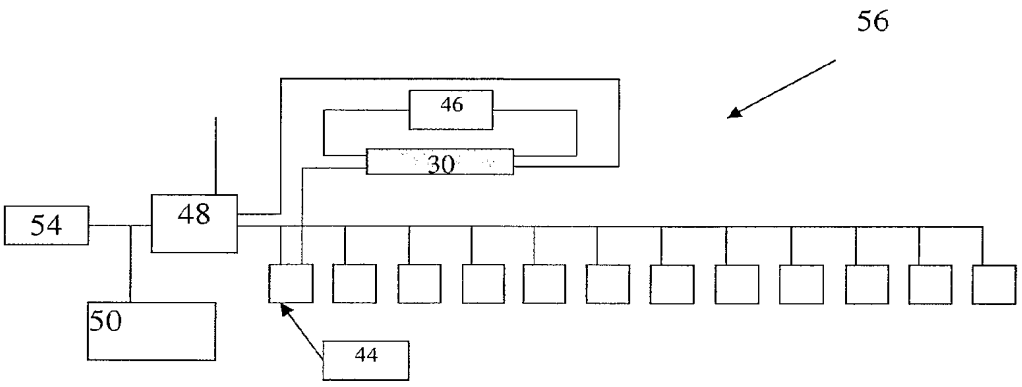


Figure 2



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Figure 3



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INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2006/002694

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61L2/10

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)
A61L A61N A47K

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, WPI Data

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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"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

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
11 October 2006	24/10/2006

Name and mailing address of the ISA/	Authorized officer
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	Marti, Pedro

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INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2006/002694

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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International application No
PCT/GB2006/002694

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PS_001014

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Espacenet

JP2012216299A LIGHT SOURCE SYSTEM

Applicants: OLYMPUS CORP

Inventors: NISHIO MASAHIRO

Classifications:
IPC ***F21V23/00; F21V25/00; G02B6/42; H05B37/02;***

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LIGHT SOURCE SYSTEM

Abstract

PROBLEM TO BE SOLVED: To provide a light source system having two sets or more of light source devices, which does not increase in size and can detect whether or not there is abnormality for each of the two sets or more of light devices.SOLUTION: In a detection period for which it is determined whether or not there is abnormality in a light source system, timing of lighting is changed for each of light source devices. For example, while a first light source device is lighted, a second light source device is extinguished, and reversely, while the second light source device is lighted, the first light source device is extinguished. A light quantity detector for detecting a light quantity of the light source devices can acquire in time-division the output of each of light source devices. Accordingly, a failure detection unit can determine whether or not there is abnormality for each of the light source devices on the basis of the output of the light quantity detector.

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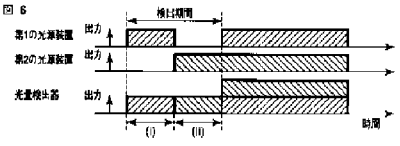
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(54)【発明の名称】光源システム

(57)【要約】
【課題】２組以上の光源装置を有する光源システムにおいて、大型化せず、かつ２組以上の光源装置の各々について異常の有無を検知できるようにする。
【解決手段】光源システムの異常の有無を特定する検出期間において、各光源装置の点灯のタイミングを異ならせる。例えば、第１の光源装置が点灯しているとき、第２の光源装置が消灯し、逆に第２の光源装置が点灯しているとき、第１の光源装置が消灯する。光源装置の光量を検知する光量検出器は、各光源装置の出力を、時分割で取得することができる。したがって、故障検出部は、この光量検出器の出力に基づいて、各光源装置の異常の有無を特定できる。
【選択図】図６



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【特許請求の範囲】
【請求項１】
互いに異なる識別因子を有する出力光を各々射出する複数の光源装置と、
前記出力光を受光し、該出力光に応じた受光信号を出力する光検出器と、
前記受光信号を取得し、該受光信号に含まれる前記識別因子に由来する成分と該受光信号とに基づいて、複数の前記光源装置の各々の故障の有無を特定する故障検出部と、
を具備することを特徴する光源システム。
【請求項２】
前記光検出器は、全ての前記光源装置について射出された前記出力光のうちそれぞれ少なくとも一部を受光することを特徴とする請求項１に記載の光源システム。
【請求項３】
前記光検出器の個数は、前記光源装置の個数よりも少ないことを特徴とする請求項１又は２に記載の光源システム。
【請求項４】
前記識別因子は、検出期間における時間と光強度との関係であり、
前記故障検出部は、前記検出期間における前記受光信号に基づいて、前記光強度が変化する前記時間を前記成分として複数の前記光源装置の各々から射出された前記出力光の状態を導出し、複数の該光源装置の各々の故障の有無を特定する、
ことを特徴とする請求項１乃至３のうち何れか１項に記載の光源システム。
【請求項５】
複数の前記光源装置は、前記検出期間において、各々前記時間に応じて前記出力光の射出と非射出とを切り替えることを特徴とする請求項４に記載の光源システム。
【請求項６】
複数の前記光源装置は、前記検出期間において、各々前記時間に応じて前記出力光の前記光強度を変化させることを特徴とする請求項４に記載の光源システム。
【請求項７】
複数の前記光源装置のうち一の該光源装置の前記出力光の前記光強度を前記時間に応じて変化させることを、前記検出期間において順次全ての該光源装置について行うことを特徴とする請求項４に記載の光源システム。
【請求項８】
前記検出期間は、前記光源装置の前記出力光の射出開始時に設けられることを特徴とする請求項４乃至７のうち何れか１項に記載の光源システム。
【請求項９】
前記検出期間は、前記光源装置の前記出力光の射出中に定期的に設けられることを特徴とする請求項４乃至７のうち何れか１項に記載の光源システム。
【請求項１０】
前記故障検出部は、前記光源装置の前記出力光の射出中に、前記受光信号に基づいて複数の前記光源装置のうち何れかに故障があるか否かを判定し、
前記検出期間は、前記故障検出部が前記光源装置のうち何れかに故障があると特定した際に設けられる、
ことを特徴とする請求項４乃至７のうち何れか１項に記載の光源システム。
【請求項１１】
前記識別因子は、波長であり、
前記受光信号は、前記波長毎に前記出力光の強度を表す波長別強度信号を含み、
前記故障検出部は、前記受光信号に基づいて、前記波長別強度信号を前記成分として複数の前記光源装置の各々から射出された前記出力光の状態を導出し、複数の該光源装置の各々の故障の有無を特定する、
ことを特徴とする請求項１乃至３のうち何れか１項に記載の光源システム。
【請求項１２】
前記故障検出部は、前記波長毎の前記波長別強度信号を比較することで、複数の前記光

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源装置の各々の故障の有無を特定することを特徴とする請求項１１に記載の光源システム。

【請求項１３】
前記光源装置の前記出力光の出射口に着脱可能な保持部材をさらに具備し、
前記光検出器は、前記保持部材に保持されている、
ことを特徴とする請求項１乃至３のうち何れか１項に記載の光源システム。

【発明の詳細な説明】
【技術分野】
【０００１】
本発明は、光源システムに関する。

【背景技術】
【０００２】
一般に、光源システムにおいて、システムの異常を検知する様々な機構が知られている。例えば特許文献１には、以下のような技術が開示されている。この光源システムは、パッケージの内部に半導体発光素子を備える光源と、光源から射出された光を集光させるレンズと、集光された光を導光部材に導入するためのコネクタと、コネクタに接続された導光部材と、導光部材の他端に配置され、導かれた光を射出する光部品と、を備えている。さらに、光源からの光を集光させるレンズとコネクタとの間には、光分岐部材が配置されている。さらに、光部品で反射した戻り光であって、光分岐部材によって分岐された光を検出する検知部材としての受光素子が配置されている。この光源システムは、受光素子が検知する光の強度に基づいて、導光部材の断線を検知する。

【先行技術文献】
【特許文献】
【０００３】
【特許文献１】特開２００８－０２６６９８号公報

【発明の概要】
【発明が解決しようとする課題】
【０００４】
例えば上記のような光源システムにおいて、射出光量を多くしたい場合や、射出（照射）範囲を広くした場合には、例えば光源から射出口までを含む光源装置の構成を２組以上同時に使用することが考えられる。このような２組以上の光源装置を有する光源システムにおいて、各光源装置の異常を検知するための機構をそれぞれ設けると、システム全体の構成が大型化する。

【０００５】
そこで本発明では、２組以上の光源装置を有する光源システムであって、大型化せず、かつ２組以上の光源装置の各々について異常の有無を特定できる光源システムを提供することを目的とする。

【課題を解決するための手段】
【０００６】
前記目的を果たすため、本発明の光源システムの一態様は、互いに異なる識別因子を有する出力光を各々射出する複数の光源装置と、前記出力光を受光し、該出力光に応じた受光信号を出力する光検出器と、前記受光信号を取得し、該受光信号に含まれる前記識別因子に由来する成分と該受光信号とに基づいて、複数の前記光源装置の各々の故障の有無を特定する故障検出部と、を具備することを特徴する。

【発明の効果】
【０００７】
本発明によれば、識別因子に基づいて複数の光源装置の各々について異常の有無を特定できるので、２組以上の光源装置を有する光源システムであって、大型化せず、かつ２組以上の光源装置の各々について異常の有無を特定できる光源システムを提供できる。

【図面の簡単な説明】

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【０００８】
【図１】本発明の第１の実施形態に係る光源システムの構成例を示すブロック図。
【図２】第１の実施形態に係る光源システムの各部の配置例を示す図。
【図３】第１の実施形態に係る光源システムの各部の別の配置例を示す図。
【図４】第１の実施形態に係る光源システムの各部の別の配置例を示す図。
【図５】第１の実施形態に係る光源システムの各部の別の配置例を示す図。
【図６】第１の実施形態に係る光源システムの動作の一例を示すタイミングチャート。
【図７】第１の実施形態の第１の変形例に係る光源システムの動作の一例を示すタイミングチャート。
【図８】第１の実施形態の第２の変形例に係る光源システムの動作の一例を示すタイミングチャート。
【図９】第１の実施形態の第３の変形例に係る光源システムの動作の一例を示すタイミングチャート。
【図１０】本発明の第２の実施形態に係る光源システムの構成例を示すブロック図。
【図１１】第２の実施形態に係る光源システムの動作の一例を示すタイミングチャート。
【図１２】第２の実施形態の第１の変形例に係る光源システムの構成例を示すブロック図。
【図１３】第２の実施形態の第２の変形例に係る光源システムの構成例を示すブロック図。
【図１４】本発明の第３の実施形態に係る光源システムの構成例を示すブロック図。
【発明を実施するための形態】
【０００９】
［第１の実施形態］
本発明の第１の実施形態について図面を参照して説明する。本実施形態に係る光源システムの構成の概略を図１に示す。光源システムは、光源制御部１１と、故障検出部１２と、第１の光源装置１３と、第２の光源装置１４と、光量検出器１５と、警告器１６とを有する。
【００１０】
光源制御部１１は、本光源システム全体を制御する。例えば光源制御部１１は、後に詳述する第１の光源装置１３及び第２の光源装置１４の動作を制御し、第１の光源装置１３及び第２の光源装置１４の光の射出のタイミングや射出する光の強度等を調整する。また、光源制御部１１は、故障検出部１２から入力する第１の光源装置１３及び第２の光源装置１４の状態に応じて、第１の光源装置１３及び第２の光源装置１４の動作を制御する。
【００１１】
第１の光源装置１３及び第２の光源装置１４は、それぞれ光源制御部１１の制御の下、光を射出する。光量検出器１５は、第１の光源装置１３の出力光と、第２の光源装置１４の出力光とが共に入射する場所に配置されている。光量検出器１５は、第１の光源装置１３の出力光と第２の光源装置１４の出力光とを受光し、その光量に応じた受光信号を、故障検出部１２に出力する。
【００１２】
故障検出部１２は、光量検出器１５からの受光信号を取得する。また、故障検出部１２は、光源制御部１１から、第１の光源装置１３及び第２の光源装置１４から光の射出のタイミングや光量等を表す信号を取得する。故障検出部１２は、取得したこれら信号に基づいて、第１の光源装置１３及び第２の光源装置１４について故障の有無等の状態を特定する。故障検出部１２は、特定した第１の光源装置１３及び第２の光源装置１４の状態を、光源制御部１１に出力する。また、故障検出部１２は、第１の光源装置１３又は第２の光源装置１４に異常があることを検出したら、警告器１６に警告を出させる。
【００１３】
警告器１６は、故障検出部１２の指示の下、第１の光源装置１３又は第２の光源装置１４に異常が検知された際に警告を出す。警告器１６は、例えばスピーカであり、音を発す

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るように構成されてもよい。また、警告器１６は、例えばＬＥＤであり、点灯により異常がある旨を表示してもよい。また、警告器１６は、本光源装置に接続された表示装置に担わせるように構成してもよい。

【００１４】

このように、例えば第１の光源装置１３及び第２の光源装置１４は、出力光を各々射出する複数の光源装置として機能し、例えば光量検出器１５は、出力光を受光し、該出力光に応じた受光信号を出力する光検出器として機能し、例えば故障検出部１２は、受光信号を取得し、該受光信号に含まれる識別因子に由来する成分と該受光信号とに基づいて、複数の光源装置の各々の故障の有無を特定する故障検出部として機能する。また、本実施形態では、光源装置は、第１の光源装置１３及び第２の光源装置１４の２個であるのに対して、光量検出器１５は１個であり、光量検出器１５の個数は、光源装置の個数よりも少ない。

【００１５】

ここで、第１の光源装置１３、第２の光源装置１４、及び光量検出器１５の配置例について説明する。例えば図２に示すように、光量検出器１５は、第１の光源装置１３及び第２の光源装置１４から射出された光が直接入射するような位置に、保持部２１によって固定される。図２においては、光量検出器１５は、第１の光源装置１３及び第２の光源装置１４の光の射出方向正面に配置されているが、第１の光源装置１３及び第２の光源装置１４から射出された光が直接入射するような位置であれば、偏った位置に配置されてもよい。また図２において、保持部２１は、第１の光源装置１３及び第２の光源装置１４を固定する部材と一体となって描かれているが、光量検出器１５を適切な位置に保持できればこれに限らない。

【００１６】

また、例えば図３に示すように、第１の光源装置１３及び第２の光源装置１４から射出された光が直接入射するような位置に、保持部２１に固定されたミラー２２を配置し、ミラー２２で反射した光を受光するように光量検出器１５を配置してもよい。

【００１７】

また、例えば図４に示すように、第１の光源装置１３及び第２の光源装置１４が配置されている部分に対して着脱自在なカバー状の保持部材２３に光量検出器１５を配置してもよい。この場合、保持部材２３は、本光源システムの使用前に、第１の光源装置１３及び第２の光源装置１４が配置されている部分を覆うように設置され、その状態で第１の光源装置１３及び第２の光源装置１４の異常の有無を確認する。その後、保持部材２３を第１の光源装置１３及び第２の光源装置１４が配置されている部分から外して、本光源システムを使用する。光量検出器１５は、カバー状の保持部材２３の内部であり、第１の光源装置１３及び第２の光源装置１４から射出された光が直接入射するような位置に配置されている。このような構成により、使用前に安全に以上の有無を点検することができる。

【００１８】

また、例えば図５に示すように、本光源システムは、第１の光源装置１３及び第２の光源装置１４から射出された光を調整する、例えばレンズなどの光学部材２４を備えている。光量検出器１５は、光学部材２４の表面で反射された光を受光できるような位置に配置されてもよい。この場合、光学部材２４は、第１の光源装置１３及び第２の光源装置１４から射出された光を適度に反射するように加工されていることが好ましい。

【００１９】

次に、本実施形態に係る光源システムの動作を説明する。光源制御部１１は、第１の光源装置１３及び第２の光源装置１４の点灯又は消灯を制御する。本実施形態では、故障した光源装置を特定する期間、すなわち、第１の光源装置１３及び第２の光源装置１４のうち何れかに故障があるか否かを特定するための期間として、検出期間が設けられている。本実施形態では、この検出期間は、本光源システムの電源投入後、光源としての使用の前に、すなわち、第１の光源装置１３及び第２の光源装置１４の光の射出開始時に設けられている。

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【００２０】
本光源システムの動作例のタイミングチャートを図６に示す。この図において、上段は、第１の光源装置１３の出力を示し、中段は、第２の光源装置１４の出力を示し、下段は、光量検出器１５の出力を示す。この図に示すように、検出期間において、第１の光源装置１３及び第２の光源装置１４は、それぞれ単独で点灯するように制御されている。すなわち、図２に示す例では、検出期間の前半（（ｉ）で示した期間）においては、第１の光源装置１３のみが点灯して第２の光源装置１４は消灯し、検出期間の後半（（ｉｉ）で示した期間）においては、逆に第２の光源装置１４のみが点灯して第１の光源装置１３は消灯する。

【００２１】
この検出期間において、光量検出器１５は、第１の光源装置１３及び第２の光源装置１４が射出する光を検出し、光量に応じた出力値を、故障検出部１２に出力する。また、光源制御部１１は、第１の光源装置１３及び第２の光源装置１４の発光タイミングや射出させた光量等に関する信号を、故障検出部１２に出力する。故障検出部１２は、光量検出器１５から入力した光量に応じた値、及び光源制御部１１から入力した信号に基づいて、第１の光源装置１３及び第２の光源装置１４に故障があるか否かを特定する。

【００２２】
ここで、検出期間において第１の光源装置１３が発光する時間と第２の光源装置１４が発光する時間とが区切られている。したがって、光量検出器１５は１つであるが、故障検出部１２は、光源制御部１１から入力した情報を利用して、光量検出器１５の出力について、第１の光源装置１３から射出された光に由来する信号と、第２の光源装置１４から射出された光に由来する信号とを分離することができる。
なお、検出期間は、光量検出器１５が安定して光量を検出できるような長さにするとよい。また、例えば光量検出器１５の出力を積分して用いる場合、検出期間は、必要なＳＮ比が得られる積分時間を確保できる長さにすればよい。

【００２３】
より具体的に説明する。図６に示すように、第１の光源装置１３が点灯している期間（（ｉ）で示した期間）において、光量検出器１５は、第１の光源装置１３から射出された光を検出し、その光量に応じた値を故障検出部１２に出力する。同様に、第２の光源装置１４が点灯している期間（（ｉｉ）で示した期間）において、光量検出器１５は、第２の光源装置１４から射出された光を検出し、その光量に応じた値を故障検出部１２に出力する。第１の光源装置１３及び第２の光源装置１４が共に正常に動作している場合、故障検出部１２は、検出期間の前半（（ｉ）で示した期間）においても、検出期間の後半（（ｉｉ）で示した期間）においても、ともに光量検出器１５から点灯を表す信号を入力するので、第１の光源装置１３及び第２の光源装置１４が共に正常に動作していることを特定できる。正常に動作していることが特定された場合には、図６に示すように、第１の光源装置１３と第２の光源装置１４とを両方とも点灯して通常の光源としての動作を開始する。

【００２４】
一方、例えば第１の光源装置１３が正常に機能しておらず、第１の光源装置１３から射出される光が弱い場合、第１の光源装置１３が点灯している期間（図６において（ｉ）で示した期間）において、光量検出器１５の出力は低下する。このような信号を入力した故障検出部１２は、第１の光源装置１３が故障していることを特定できる。逆に、例えば第２の光源装置１４が正常に機能しておらず、第２の光源装置１４から射出される光が弱い場合、第２の光源装置１４が点灯している期間（図６において（ｉｉ）で示した期間）において、光量検出器１５の出力は低下する。このような信号を入力した故障検出部１２は、第２の光源装置１４が故障していることを特定できる。

【００２５】
例えば第１の光源装置１３に故障があるとき、故障検出部１２は、第１の光源装置１３が故障している旨を、光源制御部１１に出力する。例えば第１の光源装置１３が故障している旨を入力した光源制御部１１は、第１の光源装置１３を消灯し、第２の光源装置１４

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を点灯状態とする。第１の光源装置１３を完全に消灯しなくとも、安全なレベルまで減光するように動作させてもよい。例えば第２の光源装置１４に故障があるときは、逆に光源制御部１１は、第２の光源装置１４を消灯し、第１の光源装置１３を点灯状態とする。

【００２６】

なお、上記説明では、光源装置は、第１の光源装置１３及び第２の光源装置１４の２つであるとして説明したが、光源装置が３つ以上の場合も同様に構成することができる。すなわち、光源装置の数に応じて、検出期間を分割し、それら光源装置を順次点灯させ、その光量を光量検出器１５で検出するようにすればよい。

【００２７】

また、上記説明では、検出期間のうち特定の期間において、第１の光源装置１３及び第２の光源装置１４のうち一方を完全に消灯するとして説明したが、出力を低下させるようにしてもよい。この場合、故障検出部１２は、出力の低下量を考慮して故障の有無を特定するように構成する。

【００２８】

以上のように動作する本実施形態に係る光源システムによれば、２つ以上の光源装置を有するシステムにおいて、異常の有無を検知する機構を大型化することなく、１つの光量検出器１５によって、各光源装置の故障の有無を特定することができる。したがって、一部の光源装置が故障した場合に、故障した光源装置のみを停止し、その他の光源装置を引き続き動作させることができる。その結果、何れかの光源装置に故障が生じても、故障がない光源装置によって、照明光の出力を維持することができる。

【００２９】

なお、本実施形態の説明では、異常がある光源装置は、光量が低下するとしたが、異常によって光量が上昇するときも、故障検出部１２は、同様に異常を検出できる。

また、本実施形態では、光量検出器１５は、常に受光量を表す受光信号を出力し続けているとしたが、検出期間のみ受光信号を出力するように構成してもよい。この場合、光量検出器１５は、故障検出部１２によって制御される。

【００３０】

「第１の実施形態の第１の変形例」

第１の実施形態の第１の変形例について説明する。ここでは、第１の実施形態との相違点について説明し、同一の部分については、同一の符号を付してその説明を省略する。第１の実施形態では、光源システムの使用の前に検出期間を設けている。これに対して本変形例では、検出期間を光源システムの使用中に周期的に設けている。

【００３１】

本変形例に係る光源システムの動作のタイミングチャートを、図７に示す。この図に示すように、光量検出器１５が受光信号を出力する検出期間は、第１の光源装置１３及び第２の光源装置１４がともに光を射出している通常の動作の間に挿入されている。言い換えると、検出期間と検出期間との間においては、第１の光源装置１３及び第２の光源装置１４は、ともに光を射出する通常の動作を行っている。

【００３２】

検出期間では、光源制御部１１は、第１の実施形態の場合の検出期間と同様に、第１の光源装置１３及び第２の光源装置１４を順次点灯させる。図７において、第１の光源装置１３が点灯する期間は（ｉ）で示され、第２の光源装置１４が点灯する期間は（ｉｉ）で示されている。光量検出器１５は、光を検出し、その光量を表す信号を故障検出部１２に出力する。故障検出部１２は、図７において（ｉ）で示された第１の光源装置１３が点灯している期間の光量検出器１５の出力と、図７において（ｉｉ）で示された第２の光源装置１４が点灯している期間の光量検出器１５の出力とに基づいて、第１の光源装置１３及び第２の光源装置１４の正常又は異常を第１の実施形態の場合と同様に特定する。故障検出部１２は、第１の光源装置１３及び第２の光源装置１４の異常の有無を、光源制御部１１に出力する。

【００３３】

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第１の実施形態の場合と同様に、光源装置の数は、２つに限らず、３つ以上でもよい。光源装置の数が３つ以上の場合、検出期間中に各光源装置は、順次点灯すればよい。また、光量検出器１５は、常に受光量を表す受光信号を出力し続けてもよいし、検出期間のみ受光信号を出力するように構成してもよい。何れの場合も故障検出部１２は、検出期間において受光信号を用いた処理を行う。

【００３４】

本光源システムを撮像装置と組み合わせて、本光源システムを撮影対象の照明のために用いる場合などは、前記の検出期間を、当該撮像装置のイメージャの読み出し期間や帰線期間等、当該撮像装置の露光期間以外の期間に設けるとよい。このようにすることで、撮像装置による画像撮影に影響を与えることがない。本変形例によれば、光源装置の異常の有無を定期的に検査することができる。

【００３５】

光源装置をパルス幅変調（Ｐｕｌｓｅ　Ｗｉｄｔｈ　Ｍｏｄｕｌａｔｉｏｎ；ＰＷＭ）によって制御する場合は、パルス変調の変調周期と検出期間の挿入周期を等しくすればよく、同様の効果が得られる。

【００３６】

［第１の実施形態の第２の変形例］

第１の実施形態の第２の変形例について説明する。ここでは、第１の実施形態との相違点について説明する。本変形例では、光源システムの使用中に、第１の光源装置１３及び第２の光源装置１４の出力の総光量を検出し、故障検出部１２は、その総光量の変化によって故障の発生を検知する。故障の発生が検知されたら、第１の実施形態と同様に検出期間を設ける。

【００３７】

本変形例に係る光源システムの動作のタイミングチャートを、図８に示す。光量検出器１５は、図８において使用期間と記した本光源システムの使用中の期間に、第１の光源装置１３及び第２の光源装置１４から射出される光を受光し、その強度を故障検出部１２に出力する。ここでは、故障検出部１２は、第１の光源装置１３の出力と第２の光源装置１４の出力とを区別せず、両出力の合計について光量検出器１５が出力した受光信号を取得している。

【００３８】

故障検出部１２は、使用期間において、光量検出器１５からの信号に基づいて、光強度が許容範囲を超えて変化することを検知したら、検出期間に移行させる。なお、図８においては、この許容範囲の下限値を一点鎖線で示した。すなわち、光量検出器１５による検出値が許容範囲から外れる場合、第１の光源装置１３又は第２の光源装置１４に異常が発生している可能性がある。しかしながら、第１の光源装置１３及び第２の光源装置１４のうち何れに異常があるのかは、第１の光源装置１３の出力と第２の光源装置１４の出力との合計を検出している使用期間では特定できない。そこで、第１の光源装置１３及び第２の光源装置１４のうち何れに異常があるのかを、検出期間において特定する。

【００３９】

故障検出部１２は、使用期間において、光強度が許容範囲を超えて変化していることを検出したら、その旨及び検出期間に移行する旨を光源制御部１１に出力する。検出期間において、光源制御部１１は、第１の実施形態の場合と同様に、所定の期間では第１の光源装置１３のみを点灯させ、その他の期間では第２の光源装置１４のみを点灯させる。第１の実施形態の場合と同様に、故障検出部１２は、光源制御部１１から取得した第１の光源装置１３及び第２の光源装置１４の発光タイミングと、光量検出器１５から取得した受光信号に含まれる光強度との関係に基づいて、第１の光源装置１３及び第２の光源装置１４のうち何れに異常があるのかを特定する。図８に示す例では、故障検出部１２は、第２の光源装置１４に係る光量検出器１５の出力が小さいことに基づいて、第２の光源装置１４に異常があることを特定する。

【００４０】

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故障検出部１２は、検出期間において特定した異常がある光源装置を、光源制御部１１に伝達する。光源制御部１１は、異常がある光源装置の出力を停止、又は安全な程度まで低下させる。図８に示す例では、故障検出部１２によって第２の光源装置１４に異常があることが特定されているので、光源制御部１１は、検出期間後において第２の光源装置１４の出力を停止している。

【００４１】

本変形例によれば、使用期間においては、第１の光源装置１３及び第２の光源装置１４を常時点灯することができる。すなわち、点灯デューティー比１００％の点灯が可能である。したがって、本変形例はより高い光量が必要なときに有効である。

【００４２】

使用期間における故障の検出は、本変形例のように検出期間で用いる光量検出器１５を用いても良いが、他の手段で故障を検出しても良い。例えば、本光源システムを映像取得システムと併用する場合、映像取得システムのカラーイメージセンサにより取得した画像に基づいて、光量の減少を検出するようにしてもよい。

【００４３】

［第１の実施形態の第３の変形例］

第１の実施形態の第３の変形例について説明する。ここでは、第１の実施形態との相違点について説明する。本変形例は、光源装置が３つ以上の場合に係る動作例である。

本変形例に係る光源システムの動作のタイミングチャートを図９に示す。図９に示す例では、光源システムは、３つの光源装置を有している。ここでは、これら光源を第１の光源装置、第２の光源装置、及び第３の光源装置と称し、第２の光源装置に故障があるものとして説明する。

【００４４】

本変形例では、第１の実施形態の第２の変形例と同様に、当該光源システムを使用中に、検出期間を設けている。検出期間において、光源制御部１１は、第１乃至第３の光源装置のうち、１つの光源装置を順次消灯する。すなわち、図９に示す例では、光源制御部１１は、検出期間中の（ｉ）と記した期間においては、第１の光源装置を消灯し、第２及び第３の光源装置を点灯する。同様に、検出期間中の（ｉｉ）と記した期間においては、光源制御部１１は、第２の光源装置を消灯し、第１及び第３の光源装置を点灯する。検出期間中の（ｉｉｉ）と記した期間においては、光源制御部１１は、第３の光源装置を消灯し、第１及び第２の光源装置を点灯する。

【００４５】

このとき、光量検出器１５は、光源装置から射出された光を検出し、その強度に応じた信号を故障検出部１２に出力する。第２の光源装置の出力が通常（図９における２段目に示す破線）より下がっているので、図９の最下段に示すように、検出期間において、第２の光源装置が点灯している（ｉ）を記した期間及び（ｉｉｉ）を記した期間の光量検出器１５の出力は、（ｉｉ）を記した期間の出力よりも低い。故障検出部１２は、このような期間ごとの光量検出器１５の出力を比較することにより、この例では、第２の光源装置に異常があることを特定する。このようにして、故障検出部１２は、複数の光源装置のうち、何れの光源装置に故障があるかを特定することができる。

【００４６】

なお、光源装置を順に消灯せずとも、光源制御部１１により、特定の光源装置の出力を例えば通常の半分など、所定の割合に変化させても良い。その場合も、同様に、何れかの光源装置に故障がある場合、故障検出部１２は、故障している光源装置を特定することができる。

【００４７】

また、検出期間において、各光源装置の出力光量を、所定のパターンで変調することで、故障検出部１２が光量検出器１５の出力に基づいて光源装置ごとの光を分離できるようにし、故障検出部１２は故障した光源装置を特定するように構成してもよい。例えば、各光源装置の変調に用いるパターンを、それぞれ直交性を持たせることで、光量検出器１５

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の出力について、どの光源装置に由来する光であるかを把握することができる。

【００４８】

また、多くの光源装置のうち、１つずつ光量等を変化させるに限らず、最適秤量問題のアプローチをとることで、最短の検出期間で故障している光源装置を特定するように構成してもよい。すなわち、同時に複数の光源装置の光量を変化させ、それらの組み合わせに基づいて、異常がある光源装置を特定するように構成してもよい。例えば、全光源装置のうち半分ずつ消灯し、どちらの半分に異常がある光源装置が含まれているかを特定し、異常がある光源装置が含まれている半分の光源装置についてさらに同様のことを繰り返し、最終的に異常がある光源装置を１個に限定する等である。何れの光源装置の出力光量等を変化させるかは、予めそのパターンを用意しておき、図示しない記憶部などに備えおくことができる。この場合、光源制御部１１は、記憶部に備えられたパターンを読み出して光源装置の制御を行うことができる。このような方法は、多くの光源装置を備えた光源システム、例えば数十以上の光源装置を備えた光源システムの場合、特に有効である。

【００４９】

［第２の実施形態］

本発明の第２の実施形態について説明する。ここでは、第１の実施形態との相違点について説明し、同一の部分については、同一の符号を付してその説明を省略する。本実施形態では、分光センサを利用し光源装置から射出される光の波長の違いを利用して、何れの光源装置に異常があるかを特定する。

【００５０】

本実施形態に係る光源システムの構成を図１０を参照して説明する。本光源装置の第１の光源装置１３及び第２の光源装置１４は、互いに異なる波長の光を射出する。ここでは、第１の光源装置１３が射出する光の波長をλ１とし、第２の光源装置１４が射出する光の波長をλ２とする。本実施形態に係る光源システムは第１の実施形態における光量検出器１５の代わりに分光センサ３５を有している。

【００５１】

本実施形態において、光源制御部１１は、第１の実施形態と異なり第１の光源装置１３及び第２の光源装置１４を両方とも同時に点灯させる。分光センサ３５は、第１の光源装置１３が射出する波長λ１の光強度と、第２の光源装置１４が射出する波長λ２の光強度とを表す波長別強度信号を含む受光信号を故障検出部１２に出力する。

【００５２】

故障検出部１２は、分光センサ３５から入力した受光信号に基づいて、第１の光源装置１３及び第２の光源装置１４の異常の有無を判断する。例えば故障検出部１２は、第１の光源装置１３又は第２の光源装置１４の出力が低下したことを検知したとき、若しくは第１の光源装置１３又は第２の光源装置１４の出力が所定の範囲を超えたことを検知したとき、その光源装置に異常があると判断することができる。また、第１の光源装置１３が射出する光の光量と、第２の光源装置１４が射出する光の光量とを比較して、その大小又は差の大きさで故障を判別しても良い。

【００５３】

故障検出部１２は、第１の光源装置１３又は第２の光源装置１４に異常があることを検出したら、その旨を光源制御部１１に出力する。光源制御部１１は、異常がある光源装置を消灯する。光源制御部１１は、異常がある光源装置を消灯せずに、出力を安全なレベル、例えば発火しないレベル等に低下させるようにしてもよい。異常がない光源装置は、点灯を維持することができる。

【００５４】

例えば、図１１に示すように、第２の光源装置１４の出力が低下した場合を考える。このとき、分光センサ３５の出力に基づいて、すなわち、第１の光源装置１３が射出する波長λ１の光強度は変化せず、第２の光源装置１４が射出する波長λ２の光強度が低下していることを検知して、故障検出部１２は、第２の光源装置１４に異常があることを特定する。故障検出部１２は、第２の光源装置１４に異常がある旨を光源制御部１１に出力する

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。光源制御部１１は、故障検出部１２から入力した情報に基づいて、第２の光源装置１４の出力を停止する。

【００５５】

以上のように本実施形態によれば、２つ以上の光源装置を有する光源システムにおいて、異常の有無を検知する機構を大型化することなく、１つの分光センサによって、複数の光源装置のうち何れの光源装置が故障しているのかを特定することができる。したがって、一部の光源装置が故障した場合に、故障した光源装置のみを停止し、その他の光源装置を引き続き動作させることができる。その結果、故障がない光源装置によって、照明光の出力を維持することができる。また、第１の実施形態においては、各光源装置を期間毎に消灯等する必要があるが、本実施形態によれば、各光源装置を常時点灯した状態で、異常の検出を行うことができる。

【００５６】

なお、ここでは、光源装置が２個であり、射出する光の波長が２種類の場合を例に挙げて説明したが、光源装置が３個以上であり波長の種類は３種類以上であっても同様に構成することができる。また、本実施形態は第１の実施形態と組み合わせることも可能である。例えば、光源装置が４個であり、そのうち２個は、波長λ１の光を射出し、その他の２個は波長λ２の光を射出するものとする。この時、検出期間を設けて、その検出期間において、波長λ１の光を射出する光源装置の各々の故障の有無を特定するために、第１の実施形態のように、それぞれの光の射出のタイミングを異ならせるようにしてもよい。同様に検出期間において、波長λ２の光を射出する光源装置の各々の故障の有無を特定するために、それぞれの光の射出のタイミングを異ならせるようにしてもよい。

【００５７】

［第２の実施形態の第１の変形例］

第２の実施形態の第１の変形例について説明する。ここでは、第２の実施形態との相違点について説明する。本変形例に係る光源システムは、図１２に示すように、光源制御部１１と、故障検出部１２と、第１の励起光源３３と、第２の励起光源３４と、第１の光ファイバ３６と、第２の光ファイバ３７と、第１の蛍光体ユニット３８と、第２の蛍光体ユニット３９と、分光センサ３５と、警告器１６とを備える。

【００５８】

光源制御部１１は、第１の励起光源３３及び第２の励起光源３４の出力を制御する。第１の励起光源３３は、光源制御部１１の制御の下、波長λ１の励起光を射出する。第１の励起光源３３から射出された励起光は、第１の光ファイバ３６に入射する。第１の光ファイバ３６は、入射した励起光を第１の蛍光体ユニット３８に導く。第１の蛍光体ユニット３８では、第１の光ファイバ３６によって導かれた波長λ１の励起光の一部を波長変換し、波長λ３の蛍光を射出する。また、第１の光ファイバ３６によって導かれ、第１の蛍光体ユニット３８で波長変換されなかった励起光は、第１の蛍光体ユニット３８を透過して射出される。このように、第１の励起光源３３、第１の光ファイバ３６及び第１の蛍光体ユニット３８は、第１の光源装置５１を構成する。

【００５９】

同様に、第２の励起光源３４は、光源制御部１１の制御の下、波長λ２の励起光を射出する。第２の励起光源３４から射出された励起光は、第２の光ファイバ３７に入射する。第２の光ファイバ３７は、入射した励起光を第２の蛍光体ユニット３９に導く。第２の蛍光体ユニット３９では、第２の光ファイバ３７によって導かれた波長λ２の励起光の一部を波長変換し、波長λ４の蛍光を射出する。また、第２の光ファイバ３７によって導かれ、第２の蛍光体ユニット３９で波長変換されなかった励起光は、第２の蛍光体ユニット３９を透過して射出される。このように、第２の励起光源３４、第２の光ファイバ３７及び第２の蛍光体ユニット３９は、第２の光源装置５２を構成する。

【００６０】

分光センサ３５は、第１の蛍光体ユニット３８から射出した波長λ１の励起光及び波長λ３の蛍光と、第２の蛍光体ユニット３９から射出した波長λ２の励起光及び波長λ４の

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蛍光とを受光する。分光センサ３５は、波長λ１の励起光、波長λ２の励起光、波長λ３の蛍光及び波長λ４の蛍光のそれぞれについて、光強度を故障検出部１２に出力する。

【００６１】

故障検出部１２は、分光センサ３５からの入力に基づいて、第１の励起光源３３、第２の励起光源３４、第１の光ファイバ３６、第２の光ファイバ３７、第１の蛍光体ユニット３８、及び第２の蛍光体ユニット３９の何れかに故障があるか否かを特定する。

例えば、波長λ１の光も波長λ３の光も検出されない場合、第１の励起光源３３又は第１の光ファイバ３６に異常があると考えられる。また、波長λ１の光は検出され、波長λ３の光が検出されない場合、第１の蛍光体ユニット３８に異常があると考えられる。また、波長λ２の光も波長λ４の光も検出されない場合、第２の励起光源３４又は第２の光ファイバ３７に異常があると考えられる。また、波長λ２の光は検出され、波長λ４の光が検出されない場合、第２の蛍光体ユニット３９に異常があると考えられる。

【００６２】

故障検出部１２は、第１の励起光源３３、第２の励起光源３４、第１の光ファイバ３６、第２の光ファイバ３７、第１の蛍光体ユニット３８、及び第２の蛍光体ユニット３９の何れかに故障があることを検出したら、その旨を光源制御部１１に出力する。光源制御部１１は、故障を検出した旨を故障検出部１２から入力したら、故障に係る第１の励起光源３３又は第２の励起光源３４を消灯する。光源制御部１１は、故障に係る第１の励起光源３３又は第２の励起光源３４の出力を低下させるようにしてもよい。

【００６３】

本変形例のような、励起光源と波長変換ユニットと用いた光源装置においても、第２の実施形態と同様に、１つの分光センサによって、複数の光源装置のうち何れの光源装置が故障しているのかを特定することができる。

なお、ここでは、励起光源が２個であり射出する光の波長が２種類の場合を例に挙げて説明したが、励起光源が３個以上であり波長の種類は３種類以上でも同様である。

【００６４】

［第２の実施形態の第２の変形例］

第２の実施形態の第２の変形例について説明する。ここでは、第２の実施形態との相違点について説明する。光源システムを映像取得システムと併用する場合、映像取得システムのカラーイメージセンサにより取得した画像に基づいて、各波長の光量を検出してもよい。また、図１３に示すように、光源システムが独自にカラーイメージセンサ３１を備えてもよい。何れの場合も、本光源装置によって、被照射物９０に照射された光の反射光をカラーイメージセンサが捉えて、光源の異常の有無を特定する。

【００６５】

このような場合、故障検出部１２は、カラーイメージセンサ３１が撮影により取得した画像の情報を取得する。故障検出部１２は、この画像情報に基づいて、本光源システムに係る波長毎にその光強度を得る。この光強度に基づいて、前記した第２の実施形態の場合と同様に、本光源システムが備える各光源について、異常があるか否かを判定する。

本変形例によっても第２の実施形態と同様に、複数の光源装置のうち何れの光源装置が故障しているのかを特定することができる。

【００６６】

［第３の実施形態］

第３の実施形態について説明する。ここでは、第１の実施形態との相違点について説明し、同一の部分については、同一の符号を付してその説明を省略する。本実施形態に係る光源システムの構成例を図１４に示す。この図に示すように光源システムは、光源制御部１１と、故障検出部１２と、第１の励起光源３３と、第２の励起光源３４と、第１の分岐カプラ４１と、第２の分岐カプラ４２と、第１の蛍光体ユニット３８と、第２の蛍光体ユニット３９と、第１の光ファイバ４３と、第２の光ファイバ４４と、第３の光ファイバ４５と、第４の光ファイバ４６と、第５の光ファイバ４７と、第６の光ファイバ４８と、波長フィルタ４９と、光量検出器１５と、警告器１６とを備える。

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【００６７】
第１の分岐カプラ４１及び第２の分岐カプラ４２は、２×１型の分岐カプラである。第１の分岐カプラ４１の根元側ポートには、第１の光ファイバ４３と第３の光ファイバ４５とが接続されている。第１の光ファイバ４３の他端には、第１の励起光源３３が接続されている。第３の光ファイバ４５の他端には、波長フィルタ４９を介して光量検出器１５が接続されている。第１の分岐カプラ４１の先端側ポートには、第２の光ファイバ４４が接続されている。第２の光ファイバ４４の他端には、第１の蛍光体ユニット３８が接続されている。このようにして、第１の励起光源３３と、第１の分岐カプラ４１と、第１の蛍光体ユニット３８と、第１の光ファイバ４３と、第２の光ファイバ４４と、第３の光ファイバ４５とは、第１の光源装置６１を構成する。

【００６８】
第２の分岐カプラ４２の根元側ポートには、第４の光ファイバ４６と第６の光ファイバ４８とが接続されている。第４の光ファイバ４６の他端には、第２の励起光源３４が接続されている。第６の光ファイバ４８の他端には、波長フィルタ４９を介して光量検出器１５が接続されている。第２の分岐カプラ４２の先端側ポートには、第５の光ファイバ４７が接続されている。第５の光ファイバ４７の他端には、第２の蛍光体ユニット３９が接続されている。このようにして、第２の励起光源３４と、第２の分岐カプラ４２と、第２の蛍光体ユニット３９と、第４の光ファイバ４６と、第５の光ファイバ４７と、第６の光ファイバ４８とは、第２の光源装置６２を構成する。
光源制御部１１は、第１の励起光源３３及び第２の励起光源３４の出力を制御する。

【００６９】
第１の光源装置６１における導光について説明する。第１の励起光源３３は、光源制御部１１の制御の下、波長λ１の励起光を射出する。第１の励起光源３３から射出された励起光は、第１の光ファイバ４３に入射する。第１の光ファイバ４３は、入射した励起光を第１の分岐カプラ４１に導く。第１の光ファイバ４３から第１の分岐カプラ４１に導かれた励起光は、ほぼ全て第２の光ファイバ４４に導かれる。第２の光ファイバ４４に入射した励起光は、第１の蛍光体ユニット３８に導かれる。第１の蛍光体ユニット３８では、第２の光ファイバ４４によって導かれた波長λ１の励起光の一部が、第１の蛍光体ユニット３８内の蛍光体で波長変換され、波長λ３の蛍光が第１の蛍光体ユニット３８の出射口から射出される。また、第２の光ファイバ４４によって導かれ、第１の蛍光体ユニット３８で波長変換されなかった励起光は、第１の蛍光体ユニット３８を透過して射出される。

【００７０】
第１の蛍光体ユニット３８で波長変換された蛍光の大部分は、第１の蛍光体ユニット３８の出射口から射出されるが、蛍光の一部は第２の光ファイバ４４に入射する。第２の光ファイバ４４に入射した蛍光は、第１の分岐カプラ４１に導かれる。第１の分岐カプラ４１において、蛍光は、理想的には第１の光ファイバ４３と第３の光ファイバ４５とにそれぞれ１／２ずつ入射する。第３の光ファイバ４５に入射した蛍光は、波長フィルタ４９に導かれる。

【００７１】
第２の励起光源３４は、光源制御部１１の制御の下、波長λ２の励起光を射出する。第１の励起光源３３から射出された励起光は、第４の光ファイバ４６に入射する。第４の光ファイバ４６は、入射した励起光を第２の分岐カプラ４２に導く。第４の光ファイバ４６から第２の分岐カプラ４２に導かれた励起光は、ほぼ全て第５の光ファイバ４７に導かれる。第５の光ファイバ４７に入射した励起光は、第２の蛍光体ユニット３９に導かれる。第２の蛍光体ユニット３９では、第５の光ファイバ４７によって導かれた波長λ２の励起光の一部が、第２の蛍光体ユニット３９内の蛍光体で波長変換され、波長λ４の蛍光が第２の蛍光体ユニット３９の出射口から射出される。また、第５の光ファイバ４７によって導かれ、第２の蛍光体ユニット３９で波長変換されなかった励起光は、第２の蛍光体ユニット３９を透過して射出される。

【００７２】

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第２の蛍光体ユニット３９で波長変換された蛍光の大部分は、第２の蛍光体ユニット３９の出射口から射出されるが、蛍光の一部は第５の光ファイバ４７に入射する。第５の光ファイバ４７に入射した蛍光は、第２の分岐カプラ４２に導かれる。第２の分岐カプラ４２において、蛍光は、理想的には第４の光ファイバ４６と第６の光ファイバ４８とにそれぞれ１／２ずつ入射する。第６の光ファイバ４８に入射した蛍光は、波長フィルタ４９に導かれる。

波長フィルタ４９には、波長λ３及び波長λ４の蛍光を透過するものが使用されている。したがって、第３の光ファイバ４５又は第６の光ファイバ４８によって導かれた蛍光は、光量検出器１５に入射する。

【００７３】

光源制御部１１は、第１の励起光源３３及び第２の励起光源３４の点灯、消灯を制御する。本実施形態では第１の実施形態と同様に、第１の励起光源３３及び第２の励起光源３４は、それぞれ単独で点灯する期間を持つように制御されている。それぞれの時間において光量検出器１５で検出した光量に基づいて、故障検出部１２は、第１の光源装置６１及び第２の光源装置６２の状態を検知する。すなわち、光源システムが正常に動作しているときは、光量検出器１５に入射する蛍光の光量は、所定の範囲に収まる。この所定の範囲は、正常動作時の光量検出器１５への入射光量に基づいて定められる。このように、所定の範囲に光量検出器１５に入射する蛍光の光量が収まっているとき、故障検出部１２は、本光源装置が正常に動作していると判断する。

【００７４】

また、故障検出部１２は、例えば第１の励起光源３３のみが点灯している期間において、光量検出器１５によって検出される光量が低下する場合、第１の励起光源３３が属する第１の光源装置６１が故障していると判断する。逆に、例えば第２の励起光源３４のみが点灯している期間において、光量検出器１５によって検出される光量が低下する場合、第２の励起光源３４が属する第２の光源装置６２が故障していると故障検出部１２は判断する。

【００７５】

例えば、蛍光体に亀裂が入ったり、蛍光体が第１の蛍光体ユニット３８から外れたりする等、第１の蛍光体ユニット３８に故障が発生したときは、蛍光体に照射される励起光が減少する。このため、蛍光体で波長変換された蛍光は減少し、第２の光ファイバ４４に再入射する蛍光も減少する。第２の光ファイバ４４に再入射した蛍光は、正常動作時と同様に第３の光ファイバ４５を経由して光量検出器１５に入射するので、このとき蛍光の光量は正常動作時の光量に比べて減少する。第２の蛍光体ユニット３９に故障が発生したときも同様である。

【００７６】

また、例えば第２の光ファイバ４４が断線したときは、第１の励起光源３３から第１の光ファイバ４３に入射し、第１の分岐カプラ４１を経由した励起光は、第２の光ファイバ４４の断線部で反射し、断線部よりも第１の蛍光体ユニット３８側に進行する励起光の光量は減少する。したがって第１の蛍光体ユニット３８に入射する励起光は減少する。そのため、蛍光体で発生する蛍光が減少し、蛍光体から第２の光ファイバ４４に再入射する蛍光は減少する。よって、光量検出器１５に入射する蛍光は減少する。第５の光ファイバ４７が断線したときも同様である。

【００７７】

また、第１の光ファイバ４３が断線したときは、第１の励起光源３３から第１の光ファイバ４３に入射した励起光は、第１の光ファイバ４３の断線部で反射・散乱し、第１の分岐カプラ４１へ入射する励起光は減少する。したがって、第１の蛍光体ユニット３８に入射する励起光が減少する。そのため、蛍光体で発生する蛍光が減少する。その結果、蛍光体から第２の光ファイバ４４に再入射する蛍光は減少し、光量検出器１５に入射する蛍光は減少する。第４の光ファイバ４６が断線した時も同様である。

【００７８】

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また、第３の光ファイバ４５が断線したときは、正常動作時と同様に、第１の蛍光体ユニット３８で発生した蛍光の一部は、第２の光ファイバ４４に再入射し、第１の分岐カプラ４１で１／２の蛍光が第３の光ファイバ４５に入射する。この蛍光は、第３の光ファイバ４５の断線部で光量が減少するので、光量検出器１５に入射する蛍光の光量が減少する。第６の光ファイバ４８が断線した場合も同様である。

以上に述べたように、本実施形態の光源システムを構成している各光ファイバの断線や、各蛍光体ユニットの故障が発生した場合は、光量検出器１５に入射する蛍光の光量は減少する。

【００７９】

故障検出部１２は、第１の光源装置６１又は第２の光源装置６２に故障が検出されたとき、その旨を光源制御部１１に出力する。

第１の光源装置６１又は第２の光源装置６２に故障が検出された旨を入力した光源制御部１１は、故障した第１の光源装置６１及び第２の光源装置６２のうち、故障した方に属する第１の励起光源３３又は第２の励起光源３４を消灯する。完全に消灯せずとも、例えばレーザの漏れが人体に影響を与えないレベルなど、出力を安全なレベルまで低下させてもよい。第１の励起光源３３及び第２の励起光源３４のうち、故障が検出されなかった光源については、点灯を維持することができる。

【００８０】

以上のとおり、本実施形態によれば、本実施形態のような構成を有する光源システムにおいて、異常の有無を検知する機構を大型化することなく、光ファイバの断線や、波長変換部材の脱落、破損の発生を、１つの光量検出器１５で検出し、かつ、複数の光源装置のうちどれが故障したのかを特定することができる。その結果、故障に係る励起光源の出力を停止又は低減することができる。以上により、簡単な構成によって励起光が本光源装置から外部へ漏出する状態を防止でき高い安全性を確保することができるとともに、故障のない光源を維持することで、照明光の出力を維持することができる。

【００８１】

また、波長フィルタ４９として波長λ３および波長λ４の蛍光を透過するものを用いたが、波長λ１および波長λ２の励起光を透過するフィルタを用いてもよい。その場合、故障検出部１２は、例えば第１の励起光源３３のみが点灯している期間において、光量検出器１５によって検出される光量が増加または減少し所定の範囲を外れた場合、第１の励起光源３３が属する第１の光源装置６１が故障していると判断する。逆に、例えば第２の励起光源３４のみが点灯している期間において、光量検出器１５によって検出される光量が増加または減少し所定の範囲を外れた場合、第２の励起光源３４が属する第２の光源装置６２が故障していると故障検出部１２は判断する。

また、光量検出器１５に入射する光を分岐カプラなどで分岐し、それぞれに異なる波長を透過する波長フィルタを設けて、蛍光と励起光の光量を検出する構成としてもよい。その場合、蛍光と励起光の情報を組み合わせることで、より確実に光源装置の故障を判断できる。

【００８２】

なお、本発明は上記実施形態そのままに限定されるものではなく、実施段階ではその要旨を逸脱しない範囲で構成要素を変形して具体化できる。また、上記実施形態に開示されている複数の構成要素の適宜な組み合わせにより、種々の発明を形成できる。例えば、実施形態に示される全構成要素から幾つかの構成要素を削除しても、発明が解決しようとする課題の欄で述べられた課題が解決でき、かつ、発明の効果が得られる場合には、この構成要素が削除された構成も発明として抽出され得る。さらに、異なる実施形態にわたる構成要素を適宜組み合わせてもよい。

【００８３】

なお、本発明に係る光源システムは、以下の要旨を含んでいる。

［１］　互いに異なる識別因子を有する出力光を各々射出する複数の光源装置と、

前記出力光を受光し、該出力光に応じた受光信号を出力する光検出器と、

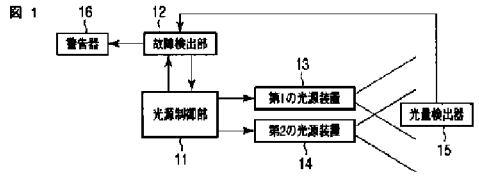
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前記受光信号を取得し、該受光信号に含まれる前記識別因子に由来する成分と該受光信号とに基づいて、複数の前記光源装置の各々の故障の有無を特定する故障検出部と、
を具備することを特徴する光源システム。
［２］　前記出力光が入射するミラーをさらに具備し、
前記光検出器は、前記ミラーで導かれた前記出力光を受光する、
ことを特徴とする［１］に記載の光源システム。
［３］　前記光検出器は、前記出力光が照射された被照明物で反射された該出力光を受光することを特徴とする［１］に記載の光源システム。
［４］　前記光源装置は、前記出力光の光路を調整する光学部材を有しており、
前記光検出器は、前記光学部材で反射した前記出力光を受光する、
ことを特徴とする［１］に記載の光源システム。
［５］　前記光検出器は、映像取得装置であり、
前記受光信号は、前記映像取得装置が取得した映像信号である、
ことを特徴とする［１］に記載の光源システム。
［６］　前記光源装置はそれぞれ、
励起光を射出する励起光源と、
前記励起光源を導く光ファイバと、
前記光ファイバによって導かれた前記励起光を吸収し、波長変換して波長変換光を射出する波長変換部材と、
を有しており、
前記光源装置は、前記励起光と前記波長変換光とを前記出力光として射出する、
ことを特徴とする［１］に記載の光源システム。
［７］　前記波長変換部材から射出された前記波長変換光の一部を前記光検出器に導く検出用光ファイバをさらに具備することを特徴とする［６］に記載の光源システム。
［８］　前記光ファイバに挿入された分岐カプラと、
前記波長変換部材から射出された前記波長変換光の一部であって、前記光ファイバによって導かれ、前記分岐カプラで分岐された該波長変換光の一部を前記光検出器に導く検出用光ファイバと、
をさらに具備することを特徴とする［６］に記載の光源システム。
［９］　複数の前記光源装置から射出された前記波長変換光の一部は、前記検出用光ファイバによって全て一つの前記光検出器に導かれることを特徴とする［７］又は［８］に記載の光源システム。
［１０］　前記識別因子は、前記励起光及び／又は前記波長変換光の波長であり、
前記受光信号は、前記波長毎に前記出力光の強度を表す波長別強度信号を含み、
前記故障検出部は、前記受光信号に基づいて、前記波長別強度信号を前記成分として複数の前記光源装置の各々から射出された前記出力光の状態を導出し、複数の該光源装置の各々の故障の有無を特定する、
ことを特徴とする［６］乃至［９］のうち何れかに記載の光源システム。
［１１］　前記故障検出部が、複数の前記光源装置の何れかに故障があることを特定したら、
前記故障がある前記光源装置は、前記出力光の出力を停止又は低下させ、
前記故障がない前記光源装置は、前記出力光の射出を継続する、
ように各前記光源装置を制御する光源制御部をさらに具備する
ことを特徴とする［１］に記載の光源システム。
［１２］　前記光検出器は、光量検出器であることを特徴とする［１］に記載の光源システム。
［１３］　前記光検出器は、波長毎の光量を前記受光信号として出力する分光検出器であることを特徴とする［１］又は［１０］に記載の光源システム。
【符号の説明】
【００８４】

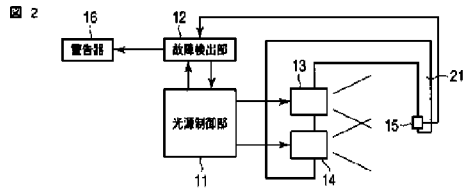
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１１…光源制御部、１２…故障検出制御部、１３…第１の光源装置、１４…第２の光源装置、１５…光量検出器、１６…警告器、２１…保持部、２２…ミラー、２３…保持部材、２４…光学部材、３１…カラーイメージセンサ、３３…第１の励起光源、３４…第２の励起光源、３５…分光センサ、３６…第１の光ファイバ、３７…第２の光ファイバ、３８…第１の蛍光体ユニット、３９…第２の蛍光体ユニット、４１…第１の分岐カプラ、４２…第２の分岐カプラ、４３…第１の光ファイバ、４４…第２の光ファイバ、４５…第３の光ファイバ、４６…第４の光ファイバ、４７…第５の光ファイバ、４８…第６の光ファイバ、４９…波長フィルタ、５１…第１の光源装置、５２…第２の光源装置、６１…第１の光源装置、６２…第２の光源装置、９０…被照射物。

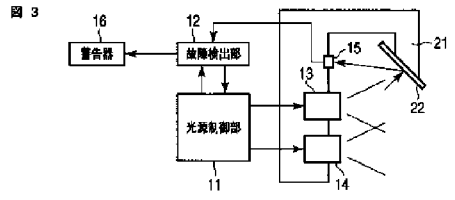
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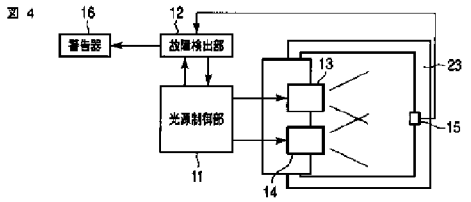
【図２】



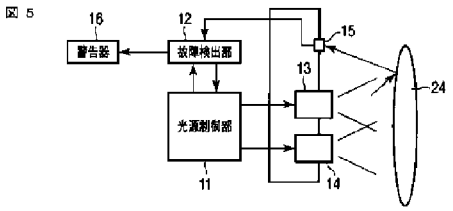
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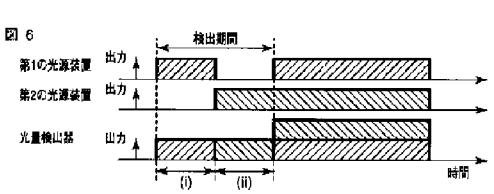
【図４】



【図５】

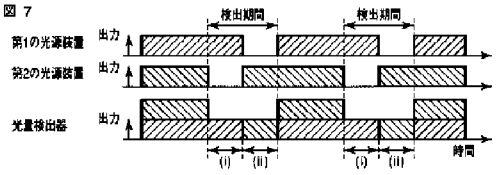


【図６】



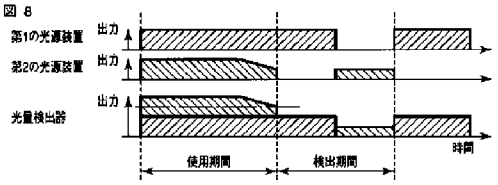
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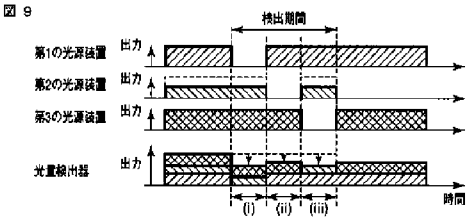
【図８】

図 8



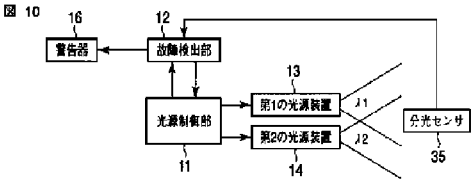
【図９】

図 9



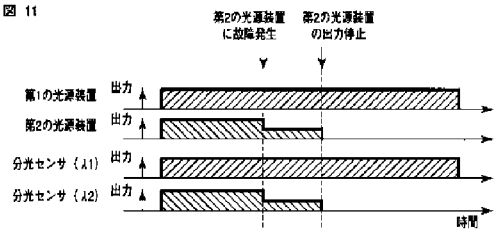
【図１０】

図 10



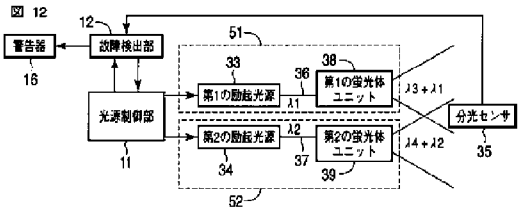
【図１１】

図 11



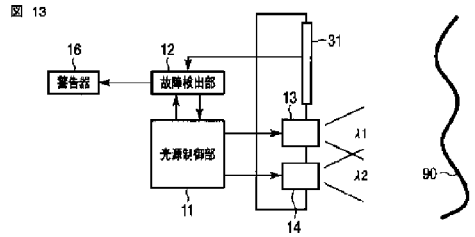
【図１２】

図 12



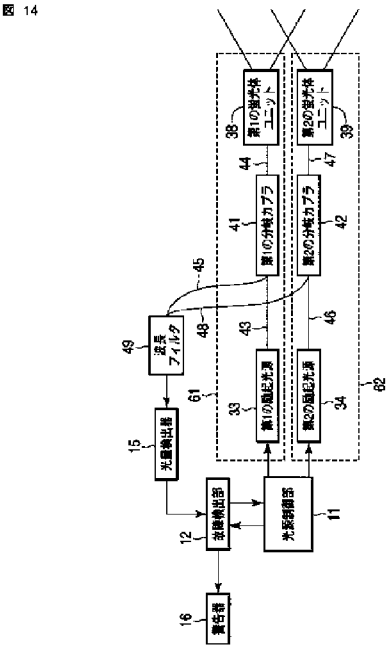
【図１３】

図 13



【図１４】

図 14



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3K014 JA07
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CJ11

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Espacenet

Bibliographic data: KR20110024651 (A) — 2011-03-09

POTABLE TELEPHONE ULTRAVIOLET RAYS STERILIZATION DISINFECTION CHARGER

Inventor(s):	SHIN DAE HYUN [KR] ±
Applicant(s):	SHIN DAE HYUN [KR] ±

Classification:	**- international:**	***A61L2/10***
	- European:	
Application number:	KR20090082738 20090901	
Priority number(s):	KR20090082738 20090901	

Abstract of KR20110024651 (A)

PURPOSE: A mobile telephone ultraviolet ray sterilization battery charger is provided, which removes bacteria from a cellular phone using an ultraviolet ray sterilizer. CONSTITUTION: A mobile telephone ultraviolet ray sterilization battery charger comprises: a closed box capable of accepting all kinds of mobile telephones; a charge code fixed inside the box; and an ultraviolet ray sterilizer installed inside the closed box. The ultraviolet ray sterilizer can remove various kinds of bacteria from a mobile telephone for mobile telephone charging time.

Last updated: 14.03.2012 Worldwide Database 5.7.38; 92p

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A61L 2/10 (2006.01)
(21) 출원번호 10-2009-0082738
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(71) 출원인
신대현
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신대현
경기도 양평군 서종면 문호리 795번지 9호 흰피아빌라 302호

전체 청구항 수 : 총 1 항

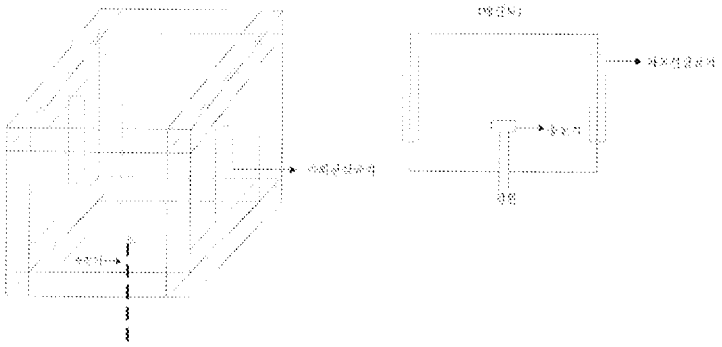
(54) 휴대전화 자외선살균소독 충전기

(57) 요 약

본 발명은 휴대전화(핸드폰) 충전기를 이용하여 휴대전화(핸드폰)에 묻어있는 세균등 을 퇴치하는 방법에 관한 것으로, 더욱이 상세하게는 휴대전화(핸드폰) 충전기에 자외선살균소독기를 달아 핸드폰 충전시간을 이용하여 핸드폰에 묻어 있는 세균등을 퇴치하는 방법에 관한 것이다.

이를 위하여 본 발명은 휴대전화(핸드폰)충전기에 자외선살균소독기를 부착한 것으로, 휴대전화(핸드폰)충전기에 대표도 도1과 같이 자외선살균소독기를 달아 약 30분에서 1시간의 휴대전화(핸드폰)충전시간을 이용하여 휴대전화(핸드폰)에 오염된 세균등을 박멸하여 휴대전화(핸드폰) 통화시 보다 위생적이고 쾌적한 통화를 할 수 있는 특징이 있다.

대 표 도



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특허청구의 범위

청구항 1

휴대전화(핸드폰) 충전기에 자외선살균소독기를 부착하여 휴대전화(핸드폰) 충전시간 약 30분에서 1시간의 휴대전화(핸드폰)의 배터리충전시간을 이용하여 핸드폰에 묻어있는 세균등을 퇴치하는 방법

명 세 서

발명의 상세한 설명

기 술 분 야

[0001] 본 발명은 휴대전화(핸드폰) 충전기를 이용하여 휴대전화(핸드폰)에 묻어있는 세균등 을 퇴치하는 방법에 관한 것으로, 더욱이 상세하지는 휴대전화(핸드폰) 충전기에 자외선살균소독기를 달아 핸드폰 충전시간을 이용하여 핸드폰에 묻어 있는 세균등을 퇴치하는 방법에 관한 것이다.

배 경 기 술

[0002] 일반적으로 개개인이 사용하고 있는 휴대전화(핸드폰)는 배터리 방전시 단순 충전만하여 휴대전화를 사용하도록 되어 있다.

발명의 내용

해결 하고자하는 과제

[0003] 본 발명은 자외선살균소독기를 이용하여 휴대전화(핸드폰) 배터리충전시간에 휴대전화(핸드폰)에 묻어 있는 세균등을 박멸하여 보다 위생적이고 쾌적한 휴대전화(핸드폰)를 사용하도록 제공하는데 그 목적이 있다.

과제 해결수단

[0004] 본 발명은 휴대전화(핸드폰) 배터리 충전기에 자외선살균소독기를 부착한 것으로 휴대전화(핸드폰) 충전기에 자외선살균소독기를 부착하여 약 30분에서 1시간의 충전시간에 휴대전화(핸드폰)에 세균등으로 오염된 것을 퇴치하여 통화시 보다 위생적이고 쾌적한 통화를 할 수 있는 특징이 있다.

효 과

[0005] 본 발명은 휴대전화(핸드폰)의 충전기에 자외선살균소독기를 부착하여 휴대전화에 묻어 있는 세균등을 박멸하는 방법으로, 평소 휴대전화(핸드폰)에 자생 또는 감염된 세균들이 번식하여 위생상감염이 심한 휴대전화(핸드폰)를 그대로 사용하고 있는 것이 현실이다 이를 위하여 본 발명은 휴대전화(핸드폰)에 자생 또는 감염된 세균등을 박멸하여 보다 위생적이고 쾌적한 통화를 할 수 있다.

발명의 실시를 위한 구체적인 내용

[0006] 본 발명은 첨부된 도면을 참조하여 상세히 설명하면 다음과 같다.

[0007] 일반 휴대전화(핸드폰)충전기에 도1과 같이 휴대전화(핸드폰 : 모든 기종)가 들어갈 수 있는 상자에 도 1에서 보는바와 같이 자외선살균기를 부착하는 방법으로 밀폐된 공간에서 자외선살균기를 이용하여 휴대전화(핸드폰)에 묻어있는 각종 세균등을 휴대전화 충전시간 약 30분에서 1시간의 휴대전화(핸드폰)충전시간을 이용하여 퇴치하는 것이다.

[0008] 이로 인하여 휴대전화(핸드폰)을 보다 위생적이고 쾌적한 통화뿐만 아니라 휴대전화(핸드폰)사용자들이 세균으로부터 안심하고 통화 할 수 있을 것이다.

도면의 간단한 설명

[0009] 도 1은 자외선살균기를 장착한 휴대전화(핸드폰) 충진기의 정면도.

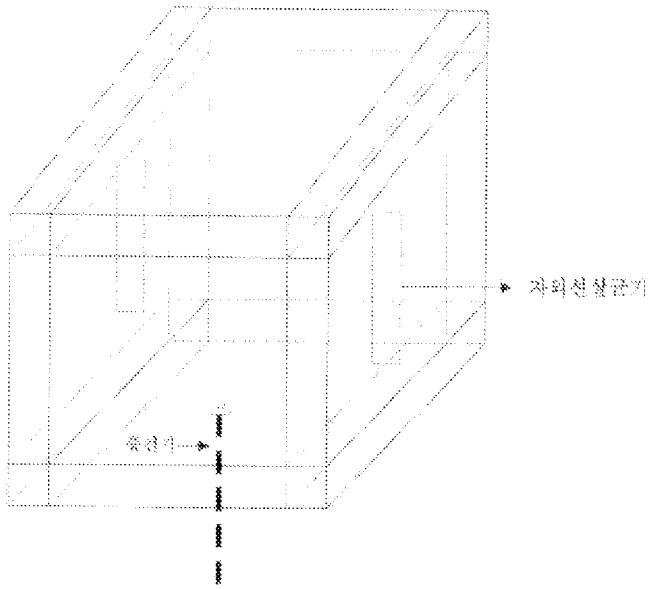
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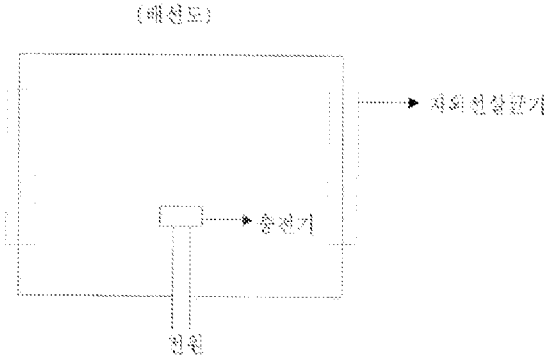
[0010] 도 2는 자외선살균기를 장착한 휴대전화(핸드폰) 충전기의 배선도.

도면

도면1



도면2



PS_000155

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(71) Applicant and
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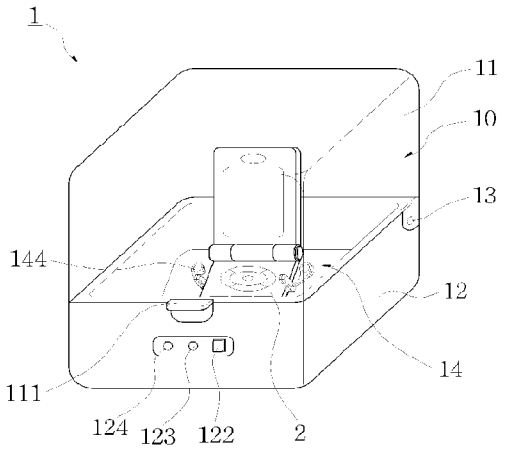
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

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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.

(54) Title: STERILIZING AND CHARGING APPARATUS FOR MOBILE COMMUNICATION TERMINALS



(57) Abstract: The present invention provides a sterilizing and charging apparatus for mobile communication terminals which charges a battery of a mobile communication terminal and, simultaneously, sterilizes the mobile communication terminal. The sterilizing and charging apparatus (1) includes a reception box (10) having upper and lower cases (11) and (12), and a sterilizing ultraviolet lamp (125) which is provided on an inner surface of a front wall of the lower case (12). The sterilizing and charging apparatus (1) further includes a terminal mount (14) which is provided at a predetermined position opposite to the sterilizing ultraviolet lamp (125), and an AC/DC converter (151) to convert alternating-current power into direct-current power and supply the direct-current power to both the universal charging terminal (143) and the sterilizing ultraviolet lamp (125).

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Description

STERILIZING AND CHARGING APPARATUS FOR MOBILE COMMUNICATION TERMINALS

Technical Field

[1] The present invention relates, in general, to sterilizing and charging apparatuses for mobile communication terminals and, more particularly, to a sterilizing and charging apparatus for mobile communication terminals which charges a battery functioning as a power source for a mobile communication terminal and, simultaneously, sterilizes the mobile communication terminal, on which bacteria live.

Background Art

[2] Generally, mobile communication terminals, such as cellular phones and personal digital assistants (PDA), have a communication function to receive the voice of a user and transfer it to another person through a mobile radio communication network. Due to this feature, the mobile communication terminals are easily spattered with saliva from the mouth of user. As well, because the mobile communication terminals are in close contact with the faces of users, sweat or cosmetics of the users easily pollute the mobile communication terminals.

[3] As such, a polluted mobile communication terminal provides an environment suitable for propagation of various germs. Thus, the polluted mobile communication terminal is harmful to the respiratory system of a user and the skin of the user which is in direct contact with the polluted mobile communication terminal. Typically, users hold mobile communication terminals with their hands while using the mobile communication terminals. Therefore, various harmful germs, which live in the mobile communication terminals, are contagious to other persons through the hands of the users. In particular, babies may be easily infected with harmful bacteria by contacting users having used the polluted mobile communication terminal.

[4] Also, in the conventional charging apparatuses, a universal charging terminal corresponding to a USB (universal serial bus) terminal of a mobile communication terminal for charging and data switching is fastened to a lower end of a terminal mount. Accordingly, there is difficulty in setting the mobile communication terminal on the terminal mount.

[5] Furthermore, because mobile communication terminals differ from each other in size and shape, a mobile communication terminal placed on a terminal mount in a sterilizing and charging apparatus may lean to one side. Thus, the efficiency of

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sterilizing the mobile communication terminal is decreased.

Disclosure of Invention

Technical Problem

[6] Accordingly, the present invention has been made keeping in mind the above problems occurring in the prior art, and an object of the present invention is to provide a sterilizing and charging apparatus for mobile communication terminals which can charge a battery functioning as a power source for the mobile communication terminal and, simultaneously, sterilize the mobile communication terminal on which bacteria live.

[7] Another object of the present invention is to provide a sterilizing and charging apparatus for mobile communication terminals in which a universal charging terminal corresponding to a USB (universal serial bus) terminal of a mobile communication terminal for charging and data switching can be led to the outside, and the mobile communication terminal is automatically fastened to a terminal mount when being placed on the terminal mount.

Technical Solution

[8] In order to accomplish the above object, the present invention provides a sterilizing and charging apparatus for a mobile communication terminal, including: a reception box comprising openable upper and lower cases; a sterilizing ultraviolet lamp provided on an inner surface of a front wall of the lower case; a terminal mount provided at a predetermined position opposite to the sterilizing ultraviolet lamp in the reception box, with a universal charging terminal provided at a predetermined position on the terminal mount to correspond to a USB (universal serial bus) terminal of the mobile communication terminal for charging and data switching; and an AC/DC converter to convert alternating-current power applied thereto by turning on a power switch into direct-current power and supply the direct-current power to both the universal charging terminal of the terminal mount and the sterilizing ultraviolet lamp.

[9] The terminal mount may include a support groove to receive and support a lower end of the mobile communication terminal therein; and a seat depression provided on an inclined surface of the terminal mount to receive and support a rear part of the mobile communication terminal therein. The universal charging terminal of the terminal mount may protrude from a central portion of a lower surface of the support groove.

[10] The terminal mount may further include a pair of rotating arms rotatably provided around opposite sides of the seat depression on the inclined surface of the terminal

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mount by hinges, the pair of rotating arms being elastically biased toward a center of the seat depression; and a pair of restraining units provided on ends of the rotating arms to be in close contact with opposite sides of the mobile communication terminal to hold the mobile communication terminal between them. Alternatively, the terminal mount may further include a pair of sliders having stoppers and being inserted into slider guide holes provided on opposite sidewalls of the seat depression, with at least one spring coupled to each of the sliders inside each of the slider guide holes. The pair of sliders is elastically biased toward a center of the seat depression. The sliders are each tapered at an end thereof, so that, when the mobile communication terminal is inserted downwards into the seat depression, the ends of the sliders are pushed outwards by the mobile communication terminal and, thereafter, are elastically returned toward the center of the seat depression to hold opposite sides of the mobile communication terminal.

[11] The sterilizing and charging apparatus may further include a holding pad having a predetermined thickness and being attached to each inside surface of the retaining units or each of the ends of the sliders.

[12] The sterilizing and charging apparatus may further include a charge indicator lamp provided on a predetermined position of an outer surface of the front wall of the lower case to indicate a state of charging the mobile communication terminal using the universal charging terminal; and a sterilizing indicator lamp provided on a pre-determined position of the outer surface of the front wall of the lower case to indicate a state of sterilizing the mobile communication terminal using the sterilizing ultraviolet lamp.

[13] The sterilizing and charging apparatus may further include a timer operated by turning on the power switch to count elapsed time up to a predetermined time period; a control switch to interrupt the supply of the power to the sterilizing ultraviolet lamp according to output of the timer.

[14] The terminal mount may include a seat depression provided on an inclined surface of a front part of a hollow mount body; a receiving groove having a through hole at a bottom thereof and provided on a lower end of the seat depression to receive the universal charging terminal of the terminal mount therein; a cable winder provided in the hollow mount body to allow a cable connected to the universal charging terminal to be wound around the cable winder while passing through the through hole of the receiving groove; a pair of sliders having stoppers and inserted into slider guide holes provided on opposite sidewalls of the seat depression; and a plate spring having a bent

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shape and being in contact at a predetermined portion thereof with each of the sliders inside the hollow mount body.

[15] The cable winder may include a pair of support brackets provided on a lower part in the hollow mount body and spaced apart from each other by a predetermined interval; a drum wheel provided between the pair of support brackets by a hinge shaft; and a spiral spring coupled to an end of the hinge shaft exposed outside the support brackets.

[16] The plate spring may be fastened to the mount body at an end thereof by a fastening pin.

[17] The sterilizing and charging apparatus may further include a band which has a predetermined elasticity and is coupled at both ends thereof to the mount body while being supported around opposite sides of the seat depression, so that the mobile communication terminal is supported in the seat depression by the elasticity of the band.

Advantageous Effects

[18] As described above, the present invention provides a sterilizing and charging apparatus for mobile communication terminals which can charge a battery functioning as a power source for a mobile communication terminal and, simultaneously, sterilize the mobile communication terminal on which bacteria live, thus preventing infection from the bacteria living on the mobile communication terminal.

[19] Furthermore, a sterilizing ultraviolet lamp is automatically turned off after a predetermined time period has passed, thus prevent waste of electricity.

[20] Moreover, a universal charging terminal corresponding to a USB terminal of the mobile communication terminal for charging and data switching can be led outside a terminal mount. The mobile communication terminal is automatically fastened to a terminal mount when being placed on the terminal mount. Therefore, the sterilizing and charging apparatus of the present invention is convenient to a user.

Description of Drawings

[21] The above and other objects, features and other advantages of the present invention will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

[22] FIG. 1 is a perspective view of a sterilizing and charging apparatus for mobile communication terminals, according to a first embodiment of the present invention;

[23] FIG. 2 is a perspective view of a sterilizing and charging apparatus for mobile communication terminals, according to a second embodiment of the present invention;

[24] FIG. 3 is a perspective view of a sterilizing and charging apparatus for mobile

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communication terminals, according to a third embodiment of the present invention;

[25] FIG. 4 is a sectional view of the sterilizing and charging apparatus of FIG. 1;

[26] FIG. 5 is a sectional view of the sterilizing and charging apparatus of FIG. 2;

[27] FIG. 6 is a sectional view of the sterilizing and charging apparatus of FIG. 3;

[28] FIG. 7 is an enlarged view to show an important part of the sterilizing and charging apparatus of FIG. 1;

[29] FIG. 8 is an enlarged view to show an important part of the sterilizing and charging apparatus of FIG. 2;

[30] FIG. 9 is an enlarged sectional view taken along the line A-A of FIG. 6;

[31] FIG. 10 is a view showing an operation of the sterilizing and charging apparatus of FIG. 3;

[32] FIG. 11 is a view showing a part of a sterilizing and charging apparatus for mobile communication terminals, according to a fourth embodiment of the present invention; and

[33] FIG. 12 is a block diagram to illustrate an electrical flow in the sterilizing and charging apparatus of the present invention.

Best Mode

[34] Hereinafter, embodiments of the present invention will be described in detail with reference to the accompanying drawings.

[35] FIG. 1 is a perspective view of a sterilizing and charging apparatus 1 for mobile communication terminals, according to a first embodiment of the present invention. FIG. 2 is a perspective view of a sterilizing and charging apparatus 1 for mobile communication terminals, according to a second embodiment of the present invention. FIG. 3 is a perspective view of a sterilizing and charging apparatus 1 for mobile communication terminals, according to a third embodiment of the present invention. FIG. 4 is a sectional view of the sterilizing and charging apparatus 1 of FIG. 1. FIG. 5 is a sectional view of the sterilizing and charging apparatus 1 of FIG. 2. FIG. 6 is a sectional view of the sterilizing and charging apparatus 1 of FIG. 3. FIG. 7 is an enlarged view to show an important part of the sterilizing and charging apparatus 1 of FIG. 1. FIG. 8 is an enlarged view to show an important part of the sterilizing and charging apparatus 1 of FIG. 2. FIG. 9 is an enlarged sectional view taken along the line A-A of FIG. 6. FIG. 10 is a view showing an operation of the sterilizing and charging apparatus 1 of FIG. 3. FIG. 11 is a view showing a part of a sterilizing and charging apparatus for mobile communication terminals, according to a fourth embodiment of the present invention. FIG. 12 is a block diagram to illustrate an

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electrical flow in the sterilizing and charging apparatus 1 of the present invention.

[36] As shown in the drawings, the sterilizing and charging apparatus 1 according to the first embodiment of the present invention includes a reception box 10 to receive therein a mobile communication terminal 2, such as a cellular phone or a PDA. The reception box 10 includes upper and lower cases 11 and 12 which are openable by hinges 13.

[37] The upper case 11 is made of a transparent material to allow a user to observe the interior of the reception box 10. An openable handle 111 protrudes forwards from a lower end of a front wall of the upper case 11 for ease in opening the reception box 10. Furthermore, a locking part 112 having a locking protrusion 112a extends from the lower end of the front wall of the upper case 11 toward the lower case 12 to lock the upper case 11 to the lower case 12.

[38] A locking groove 121 is provided on an upper end of a front wall of the lower case 12 to correspond to the locking protrusion 112a provided on the lower end of the front wall of the upper case 11. In addition, a power switch 122 to turn on or off the sterilizing and charging apparatus 1, a charge indicator lamp 123 and a sterilizing indicator lamp 124 are provided on an outer surface of the front wall of the lower case 12.

[39] The sterilizing and charging apparatus 1 further includes a sterilizing ultraviolet lamp 125 which is provided on an inner surface of the front wall of the lower case 12 to sterilize the mobile communication terminal 2 on which bacteria live. The sterilizing and charging apparatus 1 further includes a terminal mount 14 which is provided at a predetermined position opposite to the sterilizing ultraviolet lamp 125 in the reception box 10 to allow the mobile communication terminal 2 to be mounted thereon.

[40] The terminal mount 14 includes a support groove 141 to receive and support a lower end of the mobile communication terminal 2 therein, and a seat depression 142 which is provided on an inclined surface of the terminal mount 14 to receive and support a rear part of the mobile communication terminal 2 therein. Preferably, the seat depression 142 has a size suitable to receive therein a mobile communication terminal 2, such as a cellular phone or a PDA, which are formed in various sizes.

[41] A universal charging terminal 143 protrudes upwards from a center of a bottom of the support groove 141 of the terminal mount 14 to correspond to a USB terminal of the mobile communication terminal 2 for charging and data switching.

[42] In the first embodiment of the present invention, a pair of rotating arms 144 and 145 is rotatably provided around opposite sides of the seat depression 142 on the

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inclined surface of the terminal mount 14 by hinges. The rotating arms 144 and 145 are elastically biased toward a center of the seat depression 142. Restraining units 144a and 145a are provided on ends of the rotating arms 144 and 145 to hold opposite sides of the mobile communication terminal 2 between them. Holding pads 144b and 145b each having a predetermined thickness are attached to inside surfaces of the retaining units 144a and 145a to stably hold the mobile communication terminal 2.

[43] FIG. 12 is a block diagram to illustrate electrical flow in the sterilizing and charging apparatus 1 of the present invention. Referring to FIG. 12, the power switch 122 to turn on or off the sterilizing and charging apparatus 1 is connected to a power inlet end through which utility power is applied. The sterilizing and charging apparatus 1 further includes an AC/DC converter 151 which is connected to the power switch 122 to convert alternating-current power into direct-current power and supply the direct-current power to both the universal charging terminal 143 of the terminal mount 14 and the sterilizing ultraviolet lamp 125.

[44] The sterilizing and charging apparatus 1 further includes a timer 152 which is operated by turning on the power switch 122 to count the elapsed time during a pre-determined time period. The sterilizing and charging apparatus 1 further includes a control switch (SW) which is provided between the AC/DC converter 151 and the sterilizing ultraviolet lamp 125 to interrupt the supply of power to the sterilizing ultraviolet lamp 125 according to the output of the timer 152.

[45] The operation of the sterilizing and charging apparatus 1 according to the first embodiment having the above-mentioned construction will be described herein below.

[46] The user holds the openable handle 111 of the upper case 11 and rotates the upper case 11 around the hinges 13 to open the reception box 10. Thereafter, the mobile communication terminal 2 is mounted on the terminal mount 14 by being pushed downwards such that the lower end and the rear part of the mobile communication terminal 2 are respectively inserted into the support groove 141 and the seat depression 142 of the terminal mount 14. At this time, the universal charging terminal 142, which protrudes into the support groove 141 of the terminal mount 14, is inserted into the USB terminal of the mobile communication terminal 2. Furthermore, the rotating arms 144 and 145 rotate at predetermined angles while being pushed outwards by the opposite sides of the mobile communication terminal 2. Thus, a distance between the rotating arms 144 and 145 is increased to the width of the mobile communication terminal 2.

[47] When the universal charging terminal 142 of the terminal mount 14 is completely

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inserted into the USB terminal of the mobile communication terminal 2, the holding pads 144b and 145b attached to the retaining units 144a and 145a come into close contact with both sides of the mobile communication terminal 2 while the rotating arms 144 and 145 are elastically biased toward the center of the mobile communication terminal 2. Thus, the mobile communication terminal 2 is stably placed in the seat depression 142 without undesirably moving.

[48] After the mobile communication terminal 2 is received on the terminal mount 14, the upper case 11 is closed. Thereafter, the power switch 122 provided on the front wall of the lower case 12 is turned on. Then, alternating-current power supplied to the sterilizing and charging apparatus 1 is converted by the AC/DC converter 151 into direct-current power. The direct-current power is supplied to the mobile communication terminal 2 through the universal charging terminal 143 of the support groove 141, thus charging a battery of the mobile communication terminal 2. Simultaneously, the direct-current power is supplied to the sterilizing ultraviolet lamp 125 via the control switch (SW), when turned on, to allow the sterilizing ultraviolet lamp 125 to execute the sterilizing function.

[49] At this time, the charge indicator lamp 123 and the sterilizing indicator lamp 124, which are provided on the outer surface of the front wall of the lower case 12, emit light, for example, red light. Also, the timer 152 is operated by the connection of the power switch 122 to count elapsed time up to a predetermined time period sufficient to sterilize the mobile communication terminal 2.

[50] When the timer 152 has counted down the sterilization period, the control switch (SW) is turned off by an output signal of the timer 152. Thus, the supply of power to the sterilizing ultraviolet lamp 125 is intercepted to prevent waste of electricity.

[51] As such, when the sterilization by the sterilizing ultraviolet lamp 125 is finished, the sterilizing indicator lamp 124 emits, for example, green light, thus indicating the completion of the sterilization of the mobile communication terminal 2. In the same manner, when the charging of the battery is finished, the charge indicator lamp 124 emits green light, thus indicating the completion of the charging of the battery.

[52] In the sterilizing and charging apparatus 1 according to the second embodiment, a terminal mount 14 differs from the first embodiment. In detail, the terminal mount 14 of the second embodiment includes a pair of sliders 146 and 147 which are inserted into opposite sidewalls of a seat depression 142 to be able to protrude toward the seat depression 142. Springs 146a and 147a are coupled to each of the sliders 146 and 147, so that the sliders 146 147 are elastically biased toward the center of the seat

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depression 142. The sliders 146 and 147 are each tapered at an end thereof. Thus, when the mobile communication terminal 2 is inserted downwards into the seat depression 142, the sliders 146 and 147 are pushed outwards by the contact with the mobile communication terminal 2 and, thereafter, they are elastically returned toward the center of the seat depression 142 to hold opposite sides of the mobile communication terminal 2. Holding pads 144b and 145b having predetermined thicknesses are respectively attached to inside surfaces of the ends of the sliders 146 and 147 to stably hold the mobile communication terminal 2 between them.

[53] In the case of the second embodiment, a method of placing the mobile communication terminal 2 onto the terminal mount 14 differs from the first embodiment, but otherwise, the operation is the same as that of the first embodiment. Therefore, only the method of placing the mobile communication terminal 2 onto the terminal mount 14 will be described herein below.

[54] The user holds the openable handle 111 of the upper case 11 and rotates the upper case 11 around the hinges 13 to open the reception box 10. Thereafter, the user opens a mobile communication terminal 2 and places the opened mobile communication terminal 2 onto the terminal mount 14 along the seat depression 142. While the mobile communication terminal 2 is inserted into the seat depression 142, it is guided by the tapered parts of the opposite sliders 144 and 145. Therefore, a distance between the sliders 144 and 145 is increased to the width of the mobile communication terminal 2.

[55] Due to the above-mentioned structure, the sterilizing and charging apparatus of the present invention can be adapted to any mobile communication terminal 2 regardless of their size and width.

[56] In the above-mentioned operation of placing the mobile communication terminals 2 onto the terminal mount 14, a lower end and a rear part of the mobile communication terminal 2 are respectively inserted into a support groove 141 and the seat depression 142 of the terminal mount 14 such that a universal charging terminal 142, which protrudes into the support groove 141, is inserted into a USB terminal of the mobile communication terminal 2.

[57] The sliders 144 and 145, pushed outwards while the mobile communication terminal 2 is received in the seat depression 142 of the terminal mount 14, are elastically biased toward the center of the mobile communication terminal 2. Thus, the holding pads 144b and 145b attached to the ends of the sliders 144 and 145 come into close contact with both sides of the mobile communication terminal 2. Accordingly, the mobile communication terminal 2 is stably placed in the seat depression 142

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without being undesirably moved.

[58] Otherwise, the operation of the second embodiment remains the same as the first embodiment, therefore further explanation is deemed unnecessary.

[59] The sterilizing and charging apparatus according to the third embodiment different from the second embodiment, in that a universal charging terminal 143 is capable of being extracted to the outside, and a plate spring 165 is used instead of the springs 144a and 144b of the second embodiment. In the third embodiment, a terminal mount 4 includes a seat depression 142 which is provided on an inclined surface of a front part of a hollow mount body 160. The terminal mount 4 further includes a receiving groove 162 which has a through hole 161 at a bottom thereof and is provided on a lower end of the seat depression 142 to receive the universal charging terminal 143 of the terminal mount 14 therein. The terminal mount 4 further includes a cable winder 170 which is provided in the hollow mount body 160 to allow a cable 171 connected to a lower end of the universal charging terminal 143 to be wound around the cable winder 170 while passing through the through hole 161 of the receiving groove 162. The terminal mount 4 further includes a pair of sliders 146 and 147 which have stoppers 164 and are inserted into slider guide holes 163 provided on opposite sidewalls of the seat depression 142. The terminal mount 4 further includes the plate spring 165 which has a bent shape and is in contact at a predetermined portion thereof with each of the sliders 146 and 147 inside the hollow mount body 160.

[60] The cable winder 170 has a pair of support brackets 172 which is provided on a lower part in the hollow mount body 160. The support brackets 172 are spaced apart from each other by a predetermined interval. A drum wheel 174 is provided between the support brackets 172 by a hinge shaft 173. Preferably, a spiral spring 175 is coupled to an end of the hinge shaft 173 exposed outside the support brackets 172. Therefore, when not in use, the cable 171 of the universal charging terminal 143 is wound around the cable winder 170 by the elasticity of the spiral spring 175 which is coupled to the hinge shaft 173 of the support brackets 172. When the user pulls the universal charging terminal 143, the universal charging terminal 143 is extracted to the outside while the cable 171 is unwound from the cable winder 170.

[61] Preferably, the plate spring 165 is fastened to the mount body 160 at only one end thereof by a fastening pin.

[62] The operation of the sterilizing and charging apparatus according to the third embodiment having the above-mentioned construction will be described herein below.

[63] To charge and sterilize a mobile communication terminal 2, in a state in which the

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upper case 11 is open, the user pulls the universal charging terminal 143, which has been inserted in the receiving groove 162 of the seat depression 142 of the hollow mount body 160, with his/her fingers. Then, the universal charging terminal 143 is extracted along with the cable 171 to the outside through the through hole 161 of the receiving groove 162.

[64] While the cable 171 connected to the universal charging terminal 143 is unwound from the drum wheel 174 of the cable winder 170, the hinge shaft 173 rotates along with the drum wheel 174, thus compressing the spiral spring 175.

[65] The universal charging terminal 143 extracted outside the seat depression 142 through the above-mentioned process is connected to the mobile communication terminal 2. Thereafter, the mobile communication terminal 2 is received onto the seat depression 142 by being pushed downwards. Simultaneously, the sliders 146 and 147 move outwards due to contact with both sides of the mobile communication terminal 2. Thus, the plate springs 165 are compressed. Therefore, even if the user lets go of the mobile communication terminal 2, the elasticity of the plate springs 165 prevents the mobile communication terminal 2 from undesirably moving. That is, each plate spring 165 is fastened at an end thereof to the hollow mount body 160 by a fastening pin 176. The other end of the plate spring 165 is not fastened to anything. Thus, the distance from one end of the plate spring 165 to the other end can vary due to elasticity.

[66] When the mobile communication terminal 2 is inserted into the seat depression 142, the drum wheel 174 rotates in a reverse direction due to a restoring force of the compressed spiral spring 175. Thus, the cable 171 connected to the lower end of the universal charging terminal 143 is retracted into the hollow mount body 160 through the through hole 161. Therefore, the user can conveniently use the sterilizing and charging apparatus.

[67] After the mobile communication terminal 2 is received on the terminal mount 14, the upper case 11 is closed. Thereafter, the power switch 122 provided on the lower case 12 is turned on. Then, power is applied to both the sterilizing ultraviolet lamp 125 and a battery of the mobile communication terminal 2 through the universal charging terminal 143. Thus, the mobile communication terminal 2 is sterilized and, simultaneously, the battery is charged.

[68] After the sterilizing and charging operations are completed, the user removes the mobile communication terminal 2 from the reception box 10 and separates the mobile communication terminal 2 from the universal charging terminal 143 to use it.

[69] As such, in the third embodiment, the mobile communication terminal 2 which is

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placed in the seat depression 142 is held by the sliders 146 and 147 which are affected by the elasticity of the plate springs 165.

[70] Unlike the rotating arms 144 and 145 and the sliders 146 and 147 used to hold the mobile communication terminals 2 in the first through third embodiments, a band 177 is used in the sterilizing and charging apparatus according to the fourth embodiment. As shown in FIG. 11, the band 177 having a predetermined elasticity is coupled at both ends thereof to a mount body 160 while being supported around opposite sides of a seat depression 142. Thus, the mobile communication terminal 2 is supported in the seat depression 142 by the elasticity of the band 177.

[71] Although the preferred embodiments of the present invention have been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

Industrial Applicability

[72] As described above, the present invention provides a sterilizing and charging apparatus for mobile communication terminals which can charge a battery functioning as a power source for a mobile communication terminal and, simultaneously, sterilize the mobile communication terminal on which bacteria live, thus preventing infection from the bacteria living on the mobile communication terminal.

[73] Furthermore, a sterilizing ultraviolet lamp is automatically turned off after a predetermined time period has passed, thus prevent waste of electricity.

[74] Moreover, a universal charging terminal corresponding to a USB terminal of the mobile communication terminal for charging and data switching can be led outside a terminal mount. The mobile communication terminal is automatically fastened to a terminal mount when being placed on the terminal mount. Therefore, the sterilizing and charging apparatus of the present invention is convenient to a user.

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Claims

[1] A sterilizing and charging apparatus for a mobile communication terminal, comprising:
a reception box comprising openable upper and lower cases;
a sterilizing ultraviolet lamp provided on an inner surface of a front wall of the lower case;
a terminal mount provided at a predetermined position opposite to the sterilizing ultraviolet lamp in the reception box, with a universal charging terminal provided at a predetermined position on the terminal mount to correspond to a USB (universal serial bus) terminal of the mobile communication terminal for charging and data switching; and
an AC/DC converter to convert alternating-current power applied thereto by turning on a power switch into direct-current power and supply the direct-current power to both the universal charging terminal of the terminal mount and the sterilizing ultraviolet lamp.

[2] The sterilizing and charging apparatus according to claim 1, wherein the terminal mount comprises:
a support groove to receive and support a lower end of the mobile communication terminal therein; and
a seat depression provided on an inclined surface of the terminal mount to receive and support a rear part of the mobile communication terminal therein, wherein
the universal charging terminal of the terminal mount protrudes from a central portion of a lower surface of the support groove.

[3] The sterilizing and charging apparatus according to claim 2, wherein the terminal mount further comprises:
a pair of rotating arms rotatably provided around opposite sides of the seat depression on the inclined surface of the terminal mount by hinges, the pair of rotating arms being elastically biased toward a center of the seat depression; and
a pair of restraining units provided on ends of the rotating arms to be in close contact with opposite sides of the mobile communication terminal to hold the mobile communication terminal between them.

[4] The sterilizing and charging apparatus according to claim 2, wherein the terminal mount further comprises:

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a pair of sliders having stoppers and being inserted into slider guide holes provided on opposite sidewalls of the seat depression, with at least one spring coupled to each of the sliders inside each of the slider guide holes, the pair of sliders being elastically biased toward a center of the seat depression, wherein the sliders are each tapered at an end thereof, so that, when the mobile communication terminal is inserted downwards into the seat depression, the ends of the sliders are pushed outwards by the mobile communication terminal and, thereafter, are elastically returned toward the center of the seat depression to hold opposite sides of the mobile communication terminal.

[5] The sterilizing and charging apparatus according to claim 3 or 4, further comprising:
a holding pad having a predetermined thickness and being attached to each inside surface of the retaining units or each of the ends of the sliders.

[6] The sterilizing and charging apparatus according to claim 1, further comprising:
a charge indicator lamp provided on a predetermined position of an outer surface of the front wall of the lower case to indicate a state of charging the mobile communication terminal using the universal charging terminal; and
a sterilizing indicator lamp provided on a predetermined position of the outer surface of the front wall of the lower case to indicate a state of sterilizing the mobile communication terminal using the sterilizing ultraviolet lamp.

[7] The sterilizing and charging apparatus according to claim 1, further comprising:
a timer operated by turning on the power switch to count elapsed time up to a predetermined time period;
a control switch to interrupt the supply of the power to the sterilizing ultraviolet lamp according to output of the timer.

[8] The sterilizing and charging apparatus according to claim 1, wherein the terminal mount comprises:
a seat depression provided on an inclined surface of a front part of a hollow mount body;
a receiving groove having a through hole at a bottom thereof and provided on a lower end of the seat depression to receive the universal charging terminal of the terminal mount therein;
a cable winder provided in the hollow mount body to allow a cable connected to the universal charging terminal to be wound around the cable winder while passing through the through hole of the receiving groove;

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a pair of sliders having stoppers and inserted into slider guide holes provided on opposite sidewalls of the seat depression; and

a plate spring having a bent shape and being in contact at a predetermined portion thereof with each of the sliders inside the hollow mount body.

[9] The sterilizing and charging apparatus according to claim 8, wherein the cable winder comprises:

a pair of support brackets provided on a lower part in the hollow mount body and spaced apart from each other by a predetermined interval;

a drum wheel provided between the pair of support brackets by a hinge shaft; and

a spiral spring coupled to an end of the hinge shaft exposed outside the support brackets.

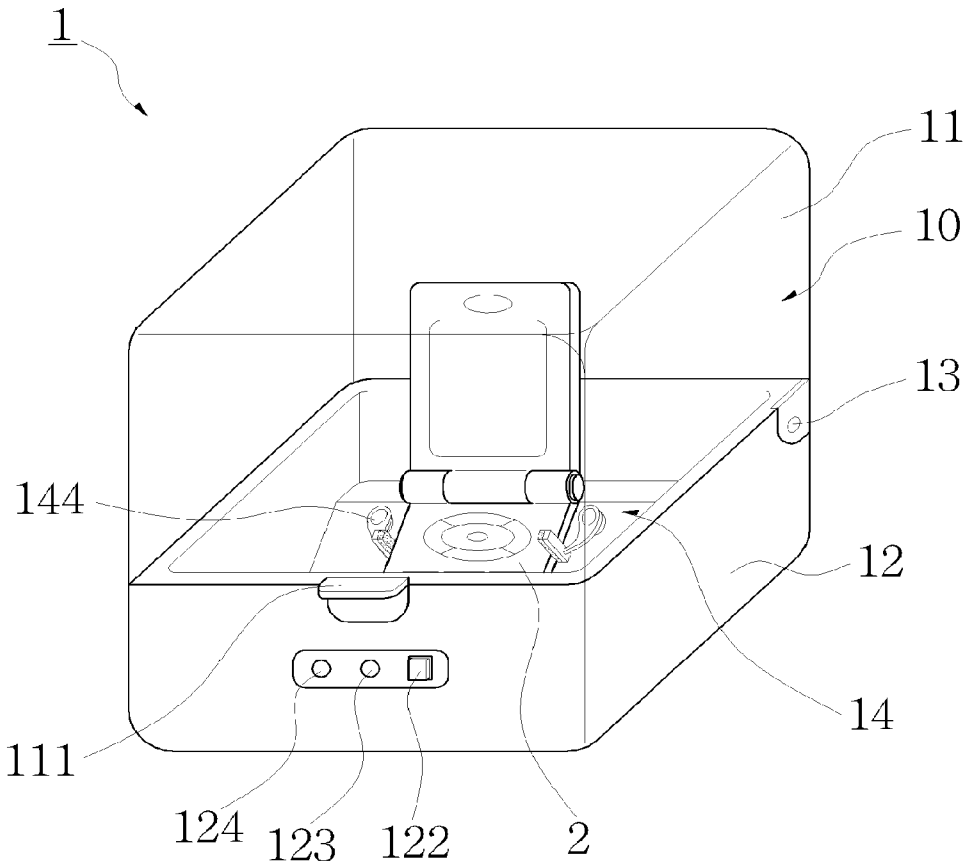
[10] The sterilizing and charging apparatus according to claim 8, wherein the plate spring is fastened to the mount body at an end thereof by a fastening pin.

[11] The sterilizing and charging apparatus according to claims 8 through 10, further comprising:

a band having a predetermined elasticity and coupled at both ends thereof to the mount body while being supported around opposite sides of the seat depression, so that the mobile communication terminal is supported in the seat depression by the elasticity of the band.

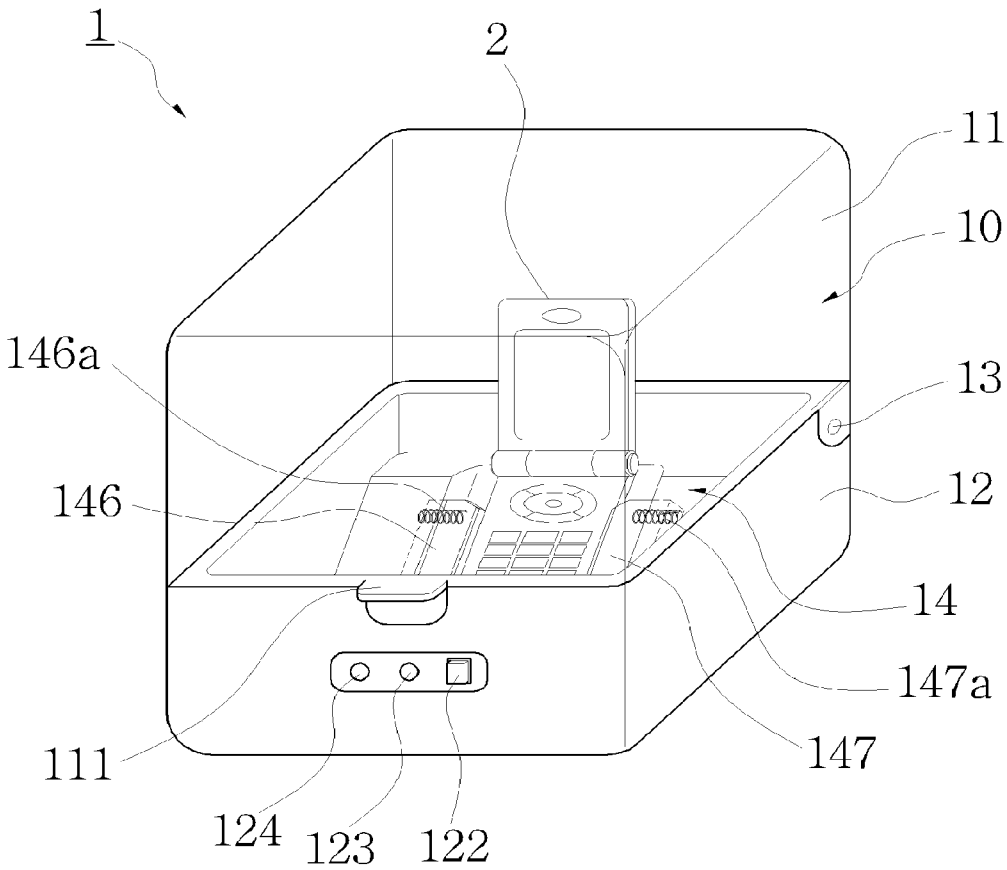
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[Fig. 1]



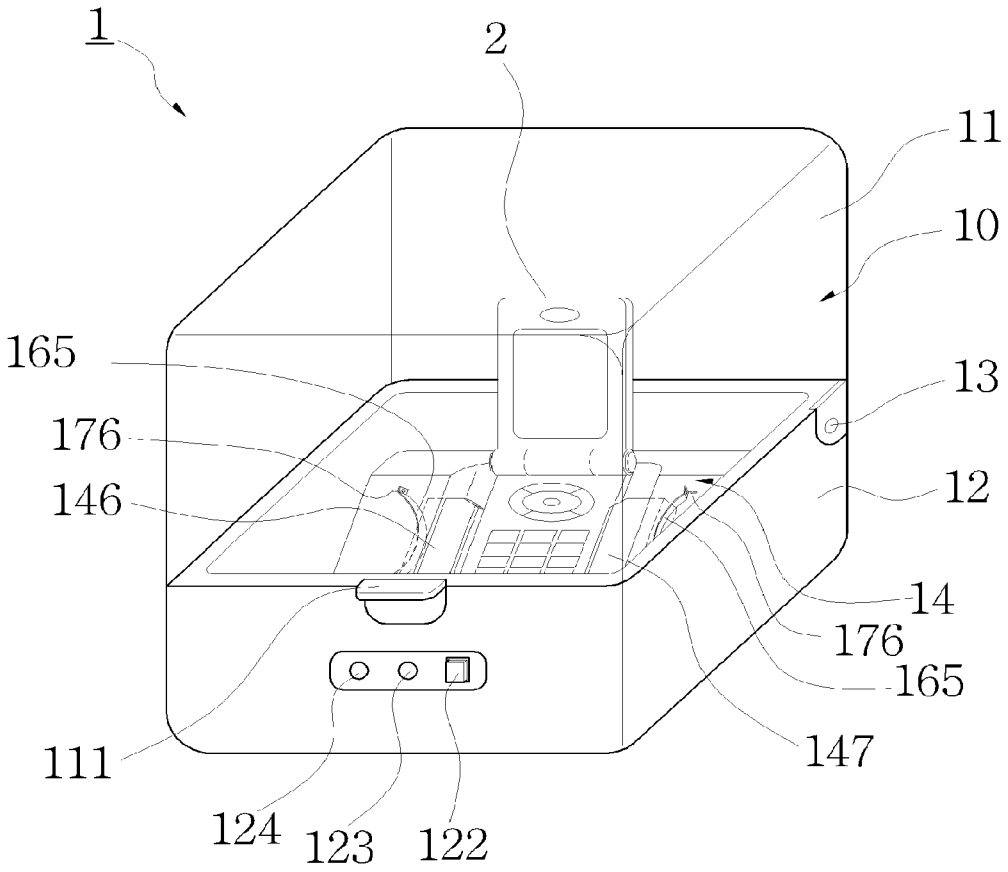
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[Fig. 2]



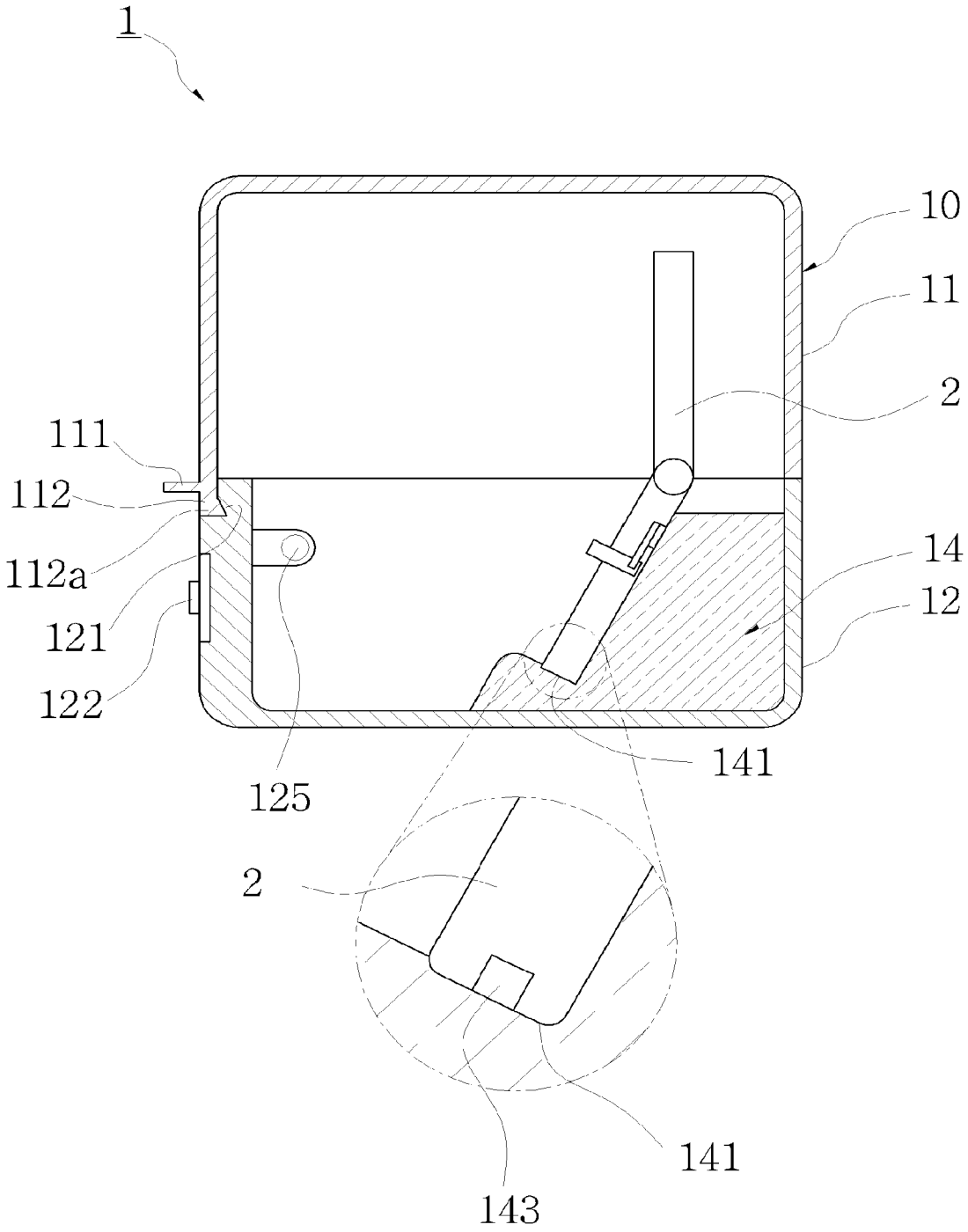
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[Fig. 3]



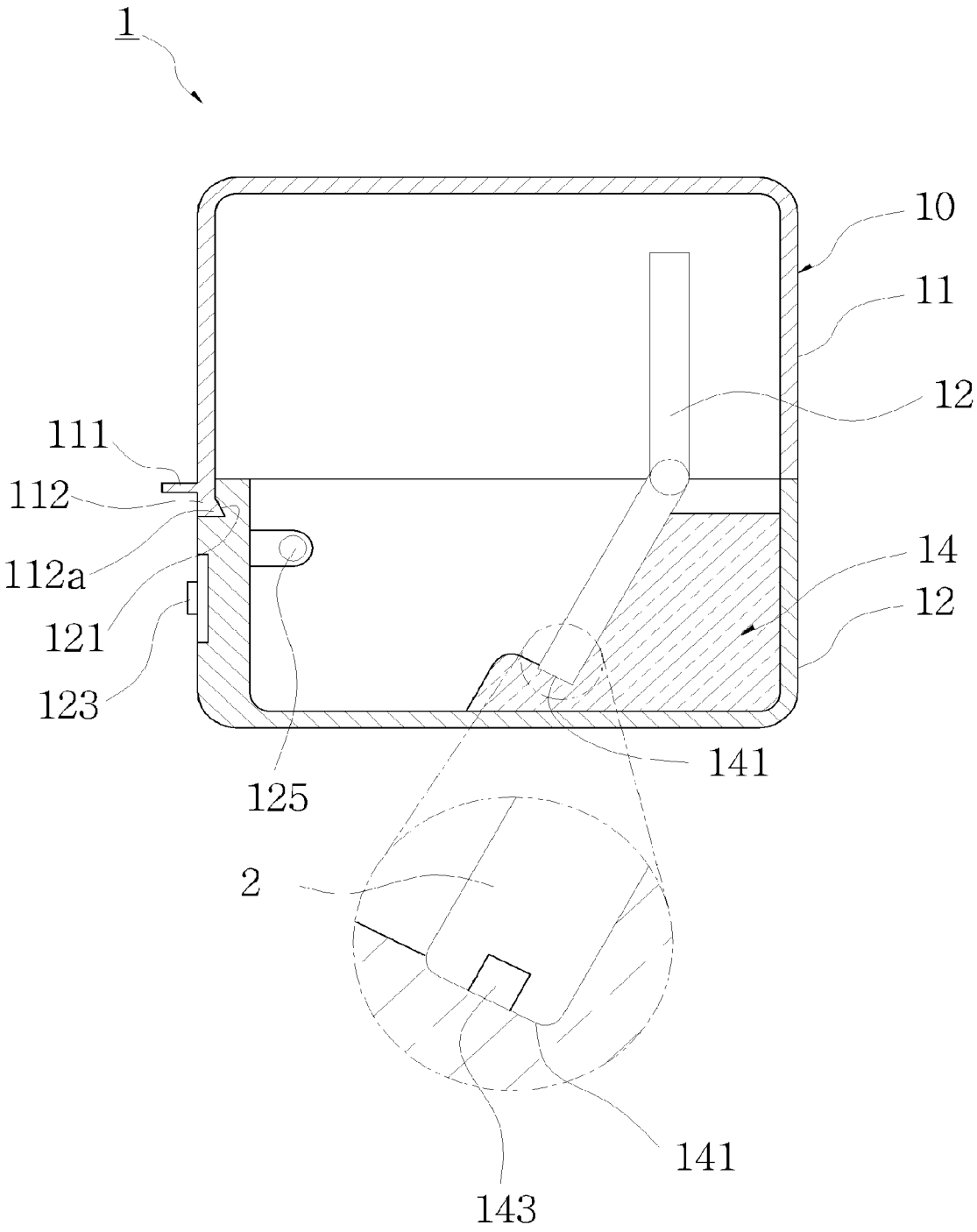
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[Fig. 4]



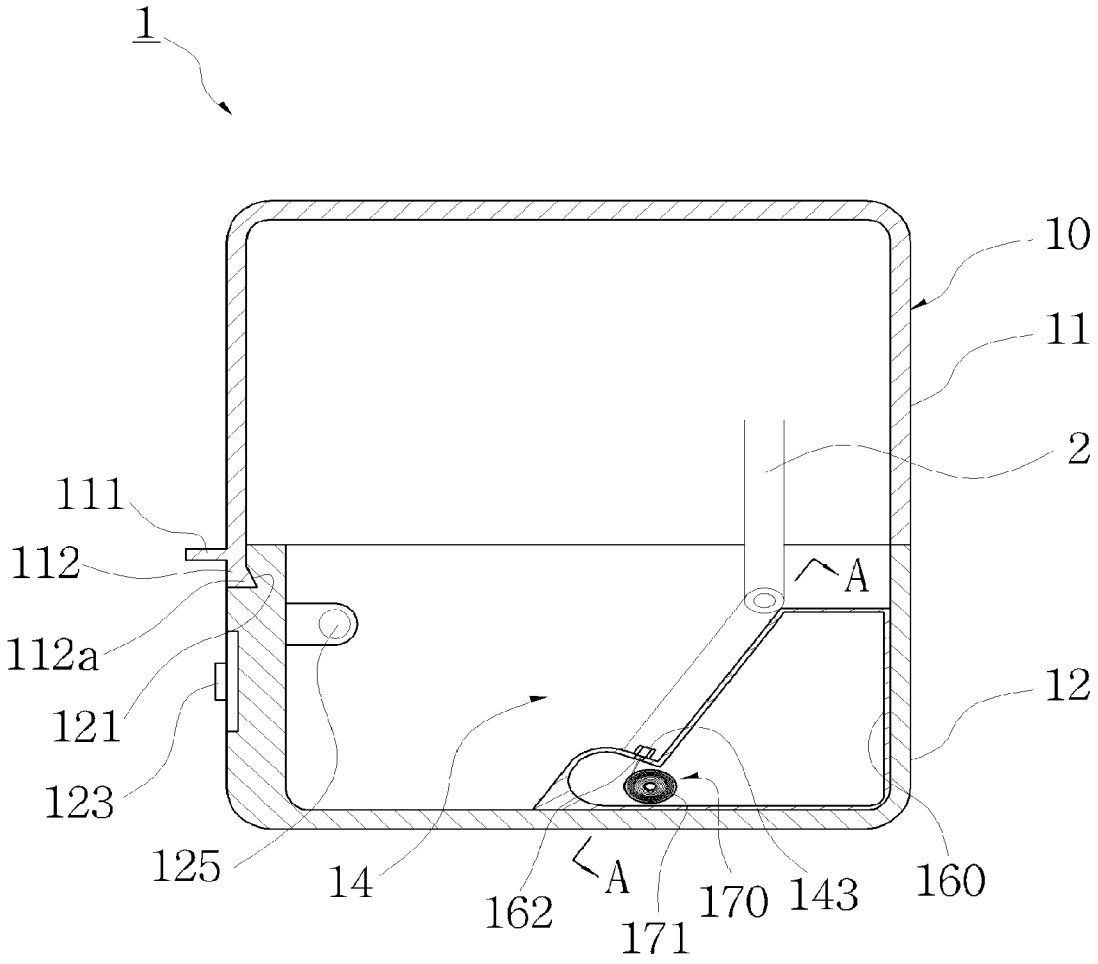
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[Fig. 5]

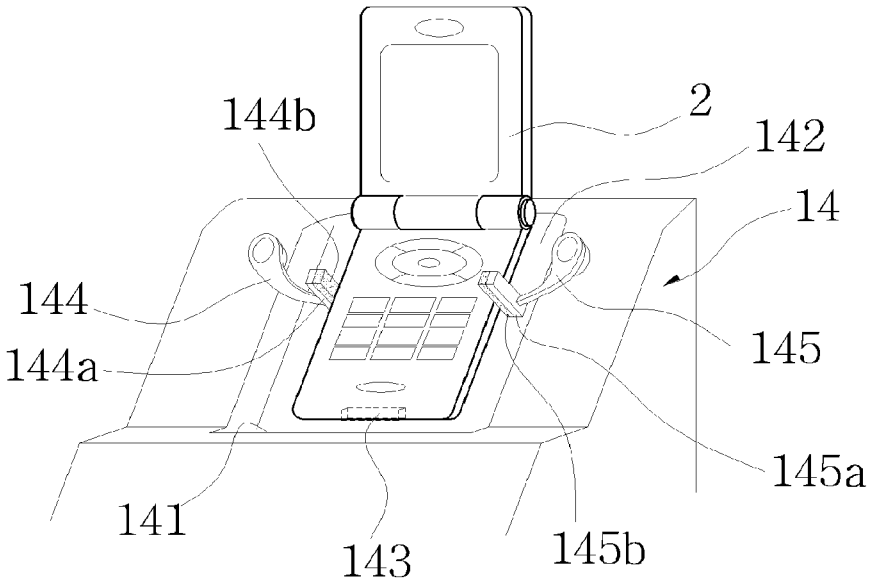


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[Fig. 6]

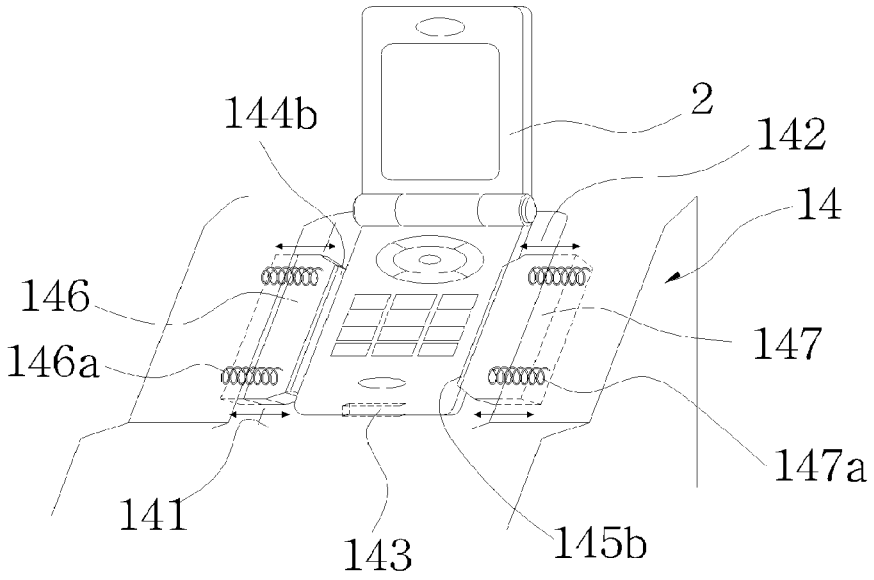


[Fig. 7]

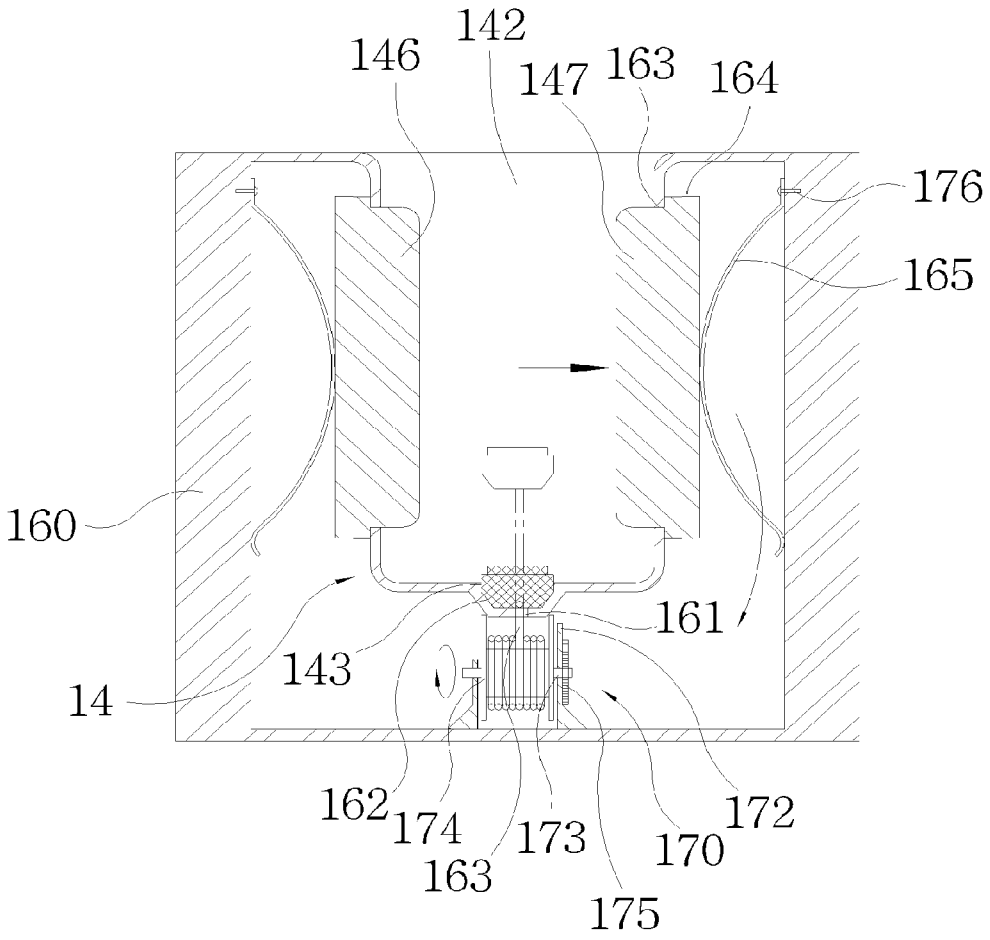


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[Fig. 8]

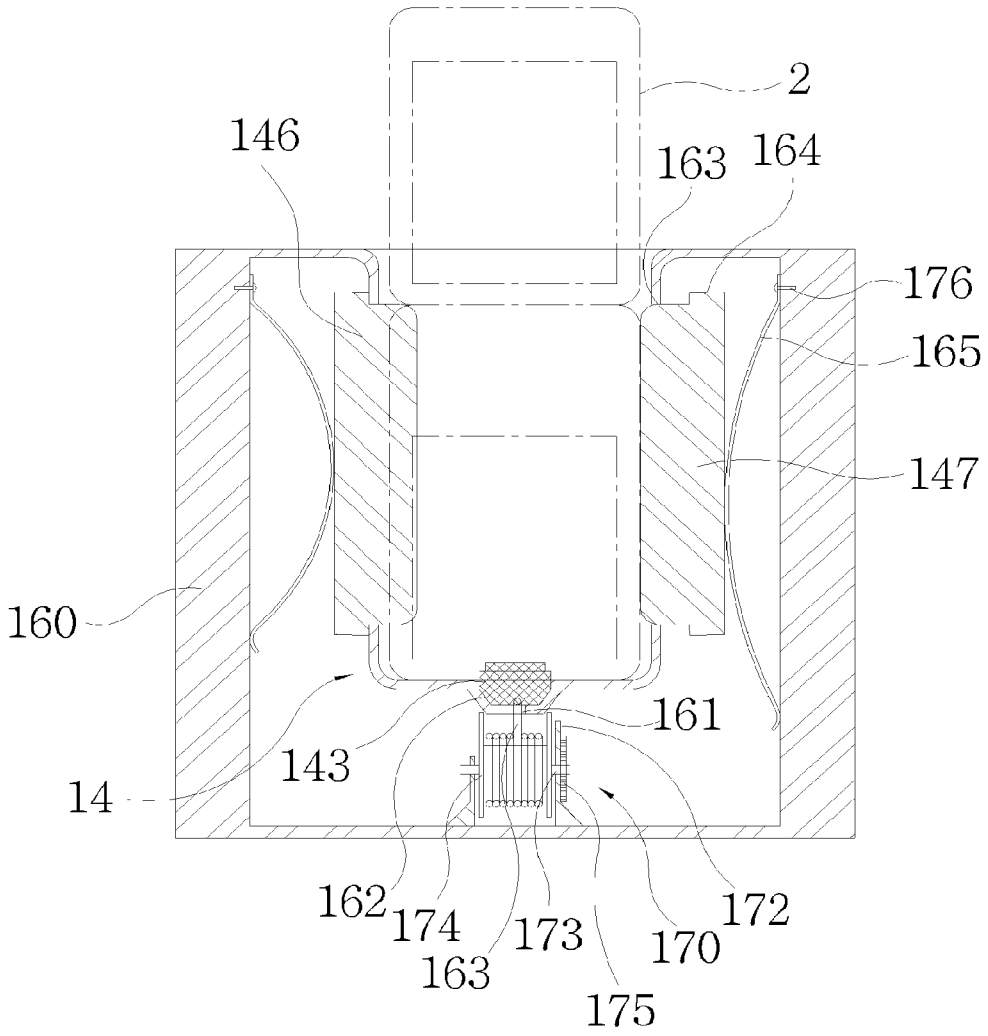


[Fig. 9]



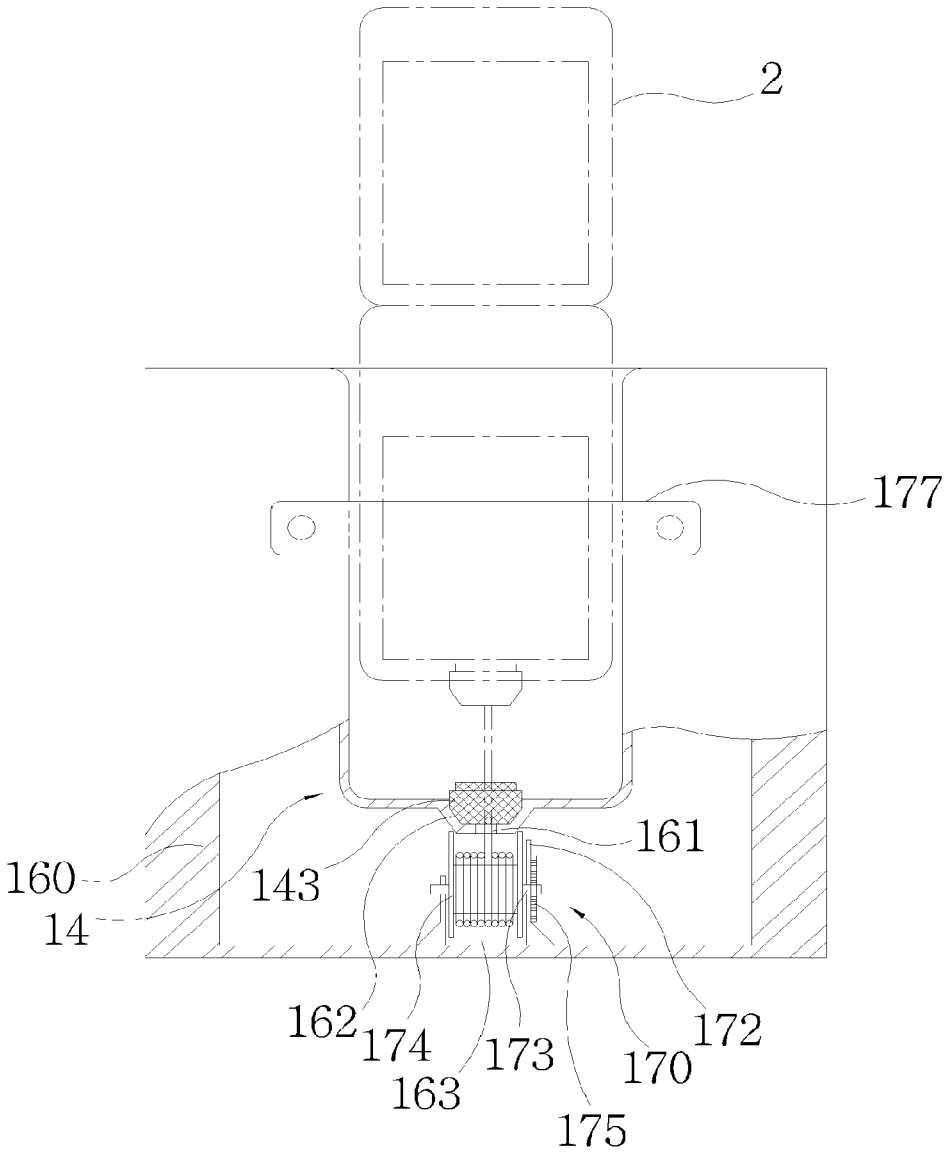
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[Fig. 10]



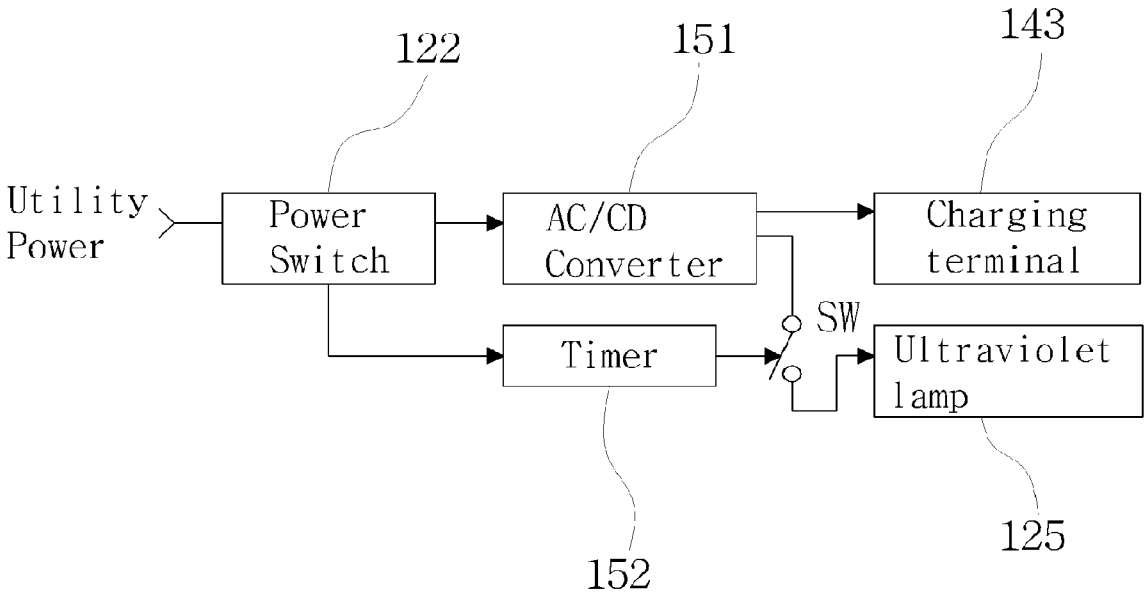
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[Fig. 11]



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[Fig. 12]



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INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2004/002848

A. CLASSIFICATION OF SUBJECT MATTER

IPC7 H02J 7/00

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)
IPC7 H02J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean Patents and applications for inventions since 1975
Korean Utility models and applictions for Utility models since 1975
Japanese Utility models and application for Utility models since 1975

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KR 2003-0083662 A (HYUK DAL KWON) 30 OCT. 2003 pages 2, lines 40 - pages 3, lines 46, Figs. 1-5	1,2,7
A	US 6490351 B (JON L. ROBERTS) 3 DEC. 2003 Astract, Figs 1-4, Claims 1-4	1, 7
A	US 2004/0147293 A (SAMSUNG ELECTRONICS CO., LTD) 29 JUL. 2004 Astract, Figs 2-5, Claims 1-7	1, 2
A	KR 20-0357216 Y (HO WON LEE) 7 JUL. 2004. See the whole document	1

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:
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"E" earlier application or patent but published on or after the international filing date
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"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
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"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
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
24 MAY 2005 (24.05.2005)	**24 MAY 2005 (24.05.2005)**

Name and mailing address of the ISA/KR	Authorized officer
Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	JEON, Yong Hai Telephone No. 82-42-481-5657

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/KR2004/002848

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
KR 2003-0083662 A	30 OCT. 2003	NONE	
US 6490351 B	3 DEC. 2003	AU 200024985 A	01 AUG. 2000
		CA 2365306 A	20 JUL. 2000
		GB 2383225 A	18 JUN. 2003
		WO 200041734 B	26 OCT. 2000
US 2004/0147293	29 JUL. 2004	KR 1020040065771 A	23 JUL. 2004
KR 20-0357216 Y	7 JUL. 2004	NONE	

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(74) Agent: **HWANG, Jung-Hyun**; Rm. 607, SungJi Heights III B/D, 642-6 Yeoksam-dong, Kangnam-ku, Seoul 135-717 (KR).

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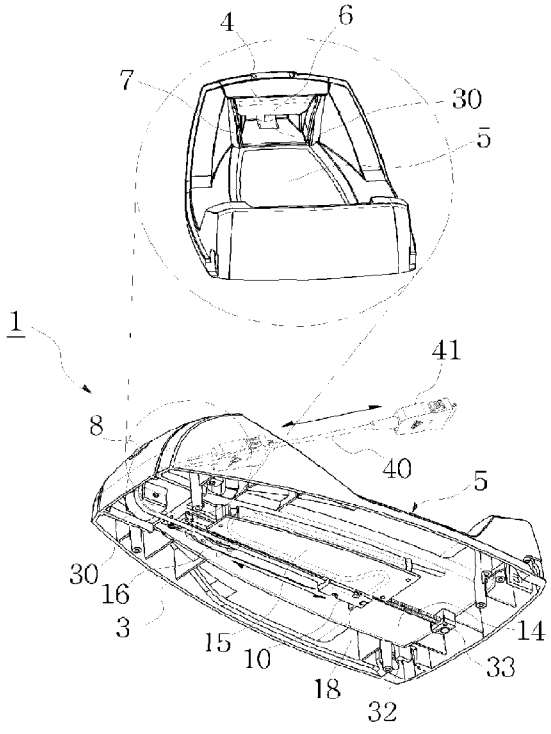
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Published:
— *with international search report*

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.

WO 2006/075894 A1

(54) Title: STERILIZING AND CHARGING APPARATUS FOR MOBILE COMMUNICATION TERMINALS



(57) Abstract: A sterilizing and charging apparatus for mobile commnnication terminals is disclosed. The sterilizing and charging apparatus (1) of the present invention is provided with a terminal mount (5), defined in a case (3), an ultraviolet lamp (2) and an openable lid (2). The apparatus (1) includes a universal charging terminal seat depression (7), a cable guide roller (30), a stopper guide rod (32) supported by two support units, and a stopper (10) which moves along the stopper guide rod (32). The apparatus (1) further includes a spiral spring (14) coupled both to the stopper and to the rear support unit, a cable removal preventing plate (15), a latch guide groove (16), a cable (40) held at a predetermined position by the stopper while a length of the cable (40) is located in a space between the cable removal preventing plate (15) and the lower surface of the case (3), and a universal charging terminal (41) coupled to the cable (40).

Description

STERILIZING AND CHARGING APPARATUS FOR MOBILE COMMUNICATION TERMINALS

Technical Field

[1] The present invention relates, in general, to sterilizing and charging apparatuses for mobile communication terminals and, more particularly, to a sterilizing and charging apparatus for mobile communication terminals which improves on an apparatus disclosed in Korean Patent Application No. 2004-77695, and which sterilizes a mobile communication terminal on which bacteria live, and which has a structure in which a universal charging terminal may easily replaced with a different kind of universal charging terminal, and in which a cable to which the universal charging terminal is coupled can be extracted from the terminal mount to a predetermined distance and retracted into the terminal mount so that the universal charging terminal can be easily coupled to a USB (universal serial bus) terminal of the mobile communication terminal for charging and data transfer, and in which an adhesive sheet or a suction unit is provided on the seating surface of the terminal mount so that the mobile communication terminal can be stably seated on the terminal mount without moving.

Background Art

[2] Generally, mobile communication terminals, such as cellular phones and personal digital assistants (PDA), have a communication function to receive the voice of a user and transfer it to another person through a mobile radio communication network. Due to this feature, the mobile communication terminals are easily sprayed with saliva from the mouth of a user. As well, because the mobile communication terminals are in close contact with the faces of users, sweat or cosmetics from the users easily pollute the mobile communication terminals.

[3] As such, a polluted mobile communication terminal provides an environment suitable for the propagation of various germs. Thus, the polluted mobile communication terminal is harmful to the respiratory system of a user and the skin of the user which is in direct contact with the polluted mobile communication terminal. Typically, users hold mobile communication terminals with their hands while using the mobile communication terminals. Therefore, various harmful germs, which live on the mobile communication terminals, infect other persons through the hands of the users. In particular, babies may be easily infected with harmful bacteria by coming into contact with users having used the polluted mobile communication terminal.

[4] Furthermore, a universal charging terminal corresponding to a USB (universal serial bus) terminal of a mobile communication terminal for charging and data

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switching is fastened to a lower end of a terminal mount. Accordingly, there is difficulty in setting the mobile communication terminal on the terminal mount.

[5] Moreover, the number of pins of universal charging terminals for charging and data switching differs according to country, for example, eight, sixteen or twenty-four pins. Therefore, the conventional art is problematic in that intercompatibility is low.

[6] In addition, smaller mobile communication terminals having various sizes may undesirably move in a terminal mount. That is, stability is low while the mobile communication terminal is set on the terminal mount.

Disclosure of Invention

Technical Problem

[7] Accordingly, the present invention has been made keeping in mind the above problems occurring in the prior art, and an object of the present invention is to provide a sterilizing and charging apparatus for mobile communication terminals which sterilizes a mobile communication terminal on which bacteria live, and which has a structure in which a universal charging terminal may easily be replaced with a different kind of universal charging terminal, and in which a cable to which the universal charging terminal is coupled can be extracted from the terminal mount to a predetermined distance and retracted into the terminal mount so that the universal charging terminal can easily be coupled to a USB (universal serial bus) terminal of the mobile communication terminal for charging and data switching, and in which an adhesive sheet or a suction unit is provided on the seating surface of the terminal mount so that the mobile communication terminal can be stably seated on the terminal mount without moving.

Technical Solution

[8] In order to accomplish the above object, the present invention provides a sterilizing and charging apparatus for a mobile communication terminal, including: a terminal mount provided in a case in which an ultraviolet lamp to be operated by a control switch is installed; and an openable lid mounted on the case. The sterilizing and charging apparatus further includes: a universal charging terminal seat depression having a predetermined size and provided in the front of the terminal mount, with a through hole formed at a central portion in the universal charging terminal seat depression; a cable guide roller vertically and rotatably provided below the through hole of the universal charging terminal seat depression, with a winding groove formed around a circumferential outer surface of the cable guide roller; a stopper guide rod spaced apart from a lower surface of the case and supported at opposite ends thereof by a support unit while extending a predetermined length forwards and backwards; a stopper fitted over the stopper guide rod such that the stopper guide rod passes through

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front and rear surfaces of the stopper, with a cable holding hole formed through the stopper and communicating with the front surface and with a first sidewall of the stopper, and a latch provided on a second sidewall of the stopper; a spiral spring coupled at a first end thereof to the rear surface of the stopper and coupled at a second end thereof to the support unit to which a rear end of the stopper guide rod is coupled; a cable removal preventing plate coupled to the lower surface of the case at a predetermined position spaced apart from the lower surface of the case, so that a space having a predetermined size is defined between the lower surface of the case and the cable removal preventing plate around the first sidewall of the stopper through which the cable holding hole communicates; a latch guide groove formed in the lower surface of the case to guide the latch of the stopper forwards and backwards, the latch guide groove being parallel with the stopper guide rod; a cable held at a predetermined portion thereof by the cable holding hole of the stopper and supported by the winding groove of the cable guide roller, the cable being extracted to an upper surface of the case through the through hole while a length of the cable is located in the space between the cable removal preventing plate and the lower surface of the case; and a universal charging terminal coupled to an end of the cable extracted to the upper surface of the case.

[9] The sterilizing and charging apparatus may further include a terminal socket coupled to the end of the cable and provided with a grip provided on an outer surface of the terminal socket, an external thread, and a terminal; and an internal thread provided in a rear part of the universal charging terminal, so that the terminal socket of the cable removably engages with the internal thread of the universal charging terminal. Alternatively, the sterilizing and charging apparatus may further include an internal socket extending a predetermined length from the universal charging terminal; and an external socket provided on the end of the cable extracted through the through hole of the case, so that the universal charging terminal is removably coupled to the cable by inserting the internal socket into the external socket.

[10] The stopper may include: an upper stopper, having an upper cable holding groove formed on a lower surface of the upper stopper and communicating with a front surface and with a first sidewall of the upper stopper, and a latch removal preventing piece extending a predetermined length downwards from a second sidewall opposite the first sidewall of the upper stopper; and a lower stopper, having a lower cable holding groove formed on an upper surface of the lower stopper to correspond to the upper cable holding groove of the upper stopper, so that the upper and lower cable holding grooves form the cable holding hole of the stopper, a spring support protrusion provided on a rear part of the lower stopper, the latch extending a predetermined length outwards from a front portion of a sidewall of the lower stopper corresponding to the

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latch removal preventing piece, extending a predetermined length backwards, and bent downwards at an end thereof, and a guide rod passing hole passing from a front surface to a rear surface of the lower stopper.

[11] The latch guide groove 16 may extend a predetermined length in a straight line to form a first straight part, and be curved at a front end of the first straight part in an arc shape having a predetermined curvature, and extend a predetermined length from a front end of the curved part in a straight line coaxial to the first straight part to form a second straight part. The case may include: a hook provided in the curved part of the latch guide groove; and a release part, having a predetermined inclination, provided in the curved part of the latch guide groove at a predetermined position corresponding to the hook.

[12] The sterilizing and charging apparatus may further include a sheet, having a predetermined adhesive force, provided on a seating surface of the terminal mount. Alternatively, the sterilizing and charging apparatus may further include at least one suction unit coupled at a lower end thereof to a seating surface of the terminal mount such that a suction opening of the suction unit faces upwards.

Advantageous Effects

[13] The present invention provides a sterilizing and charging apparatus for mobile communication terminals which sterilizes a mobile communication terminal on which bacteria live, and which has a structure capable of replacing a universal charging terminal with a different kind of universal charging terminal, and in which a cable to which the universal charging terminal is coupled can be extracted from the terminal mount to a predetermined distance and retracted into the terminal mount so that the universal charging terminal is easily coupled to a USB (universal serial bus) terminal of the mobile communication terminal, and in which an adhesive sheet or a suction unit is provided on a seating surface of the terminal mount so that the mobile communication terminal can be stably seated on the terminal mount without moving.

Description of Drawings

[14] FIG. 1 is a bottom perspective view of a sterilizing and charging apparatus for mobile communication terminals, according to an embodiment of the present invention;

[15] FIG. 2 is an exploded perspective view showing a stopper of the sterilizing and charging apparatus of FIG. 1;

[16] FIGS. 3 and 4 are bottom views of the sterilizing and charging apparatus to show the operation of the stopper of FIG. 2;

[17] FIGS. 5 and 6 are detailed views showing representative methods of coupling a universal charging terminal to a cable of the sterilizing and charging apparatus

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according to the present invention;

[18] FIGS. 7 and 8 respectively show an adhesive sheet and suction cups which are provided on terminal mounts of the sterilizing and charging apparatuses according to the present invention; and

[19] FIG. 9 is a perspective view showing use of the sterilizing and charging apparatus according to the present invention.

Best Mode

[20] Hereinafter, a preferred embodiment of the present invention will be described in detail with reference to the attached drawings.

[21] FIG. 1 is a bottom perspective view of a sterilizing and charging apparatus 1 for mobile communication terminals, according to the present invention. FIG. 2 is an exploded perspective view showing a stopper 10 of the sterilizing and charging apparatus 1 of FIG. 1. FIGS. 3 and 4 are bottom views of the sterilizing and charging apparatus 1 to show the operation of the stopper 10 of FIG. 2. FIGS. 5 and 6 are detailed views showing representative methods of coupling a universal charging terminal 41 to a cable 40 of the sterilizing and charging apparatus 1 according to the present invention. FIGS. 7 and 8 respectively show an adhesive sheet 70 and suction cups 71 which are provided on terminal mounts 5 of the sterilizing and charging apparatuses 1 according to the present invention. FIG. 9 is a perspective view showing use of the sterilizing and charging apparatus 1 according to the present invention.

[22] As shown in the drawings, the sterilizing and charging apparatus 1 of the present invention includes the terminal mount 5 which is provided in a case 3 in which an ultraviolet lamp 4 that is operated by a control switch 8 is installed, and an openable lid 2 is mounted on the case 3. The sterilizing and charging apparatus 1 further includes a seat depression 7, a cable guide roller 30, a stopper guide rod 32, the stopper 10, a spiral spring 14, a cable removal preventing plate 15, a latch guide groove 16, the cable 40 and the universal charging terminal 41.

[23] As shown in FIG. 1, the seat depression 7 has a predetermined size and is provided in the front of the terminal mount 5, with a through hole 6 formed at a central portion in the seat depression 7. Thus, the seat depression 7 forms a space to seat the universal charging terminal 41 therein.

[24] The cable guide roller 30 has a circular shape and is vertically and rotatably mounted to a lower surface of the case 3 below the through hole 6 of the seat depression 7. A winding groove 31 is formed around a circumferential outer surface of the cable guide roller 30. The cable guide roller 30 serves to guide the cable 40 such that the cable 40 easily moves forwards and backwards in the winding groove 31.

[25] The stopper guide rod 32 is spaced apart from the lower surface of the case 3 and extends a predetermined length forwards and backwards such that the opposite ends of

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the stopper guide rod 32 are supported by two support units 33. The stopper guide rod 32 passes through the stopper 10 so as to guide the forward and backward movement of the stopper 10.

[26] The stopper 10 is fitted over the stopper guide rod 32 such that the stopper guide rod 32 passes through front and rear surfaces of the stopper 10. A cable holding hole is formed through the stopper 10 and communicates with the front surface and with a first sidewall of the stopper 10. A latch 13 is provided on a second sidewall opposite the first sidewall of the stopper 10. The cable 40 is held by the cable holding hole of the stopper 10 so that the cable 40 moves forwards and backwards along with the stopper 10 while the stopper 10 is guided by the stopper guide rod 32.

[27] Preferably, as shown in Fig. 2, the stopper 10 includes an upper stopper 17 and a lower stopper 20. The upper stopper 17 has an upper cable holding groove 11 which is formed on a lower surface of the upper stopper 17 and communicate with a front surface and with a first sidewall of the upper stopper 17. The upper stopper 17 further has a latch removal preventing piece 18 which extends a predetermined length downwards from a second sidewall opposite the first sidewall of the upper stopper 17. The lower stopper 20 has a lower cable holding groove 12 which is formed on an upper surface of the lower stopper 20 to correspond to the upper cable holding groove 11 of the upper stopper 17. The upper and lower cable holding grooves 11 and 12 form the cable holding hole in the stopper 10. The lower stopper 20 further has a spring support protrusion 19 which has a cylindrical shape and is provided on a rear part of the lower stopper 20. The latch 13 extends a predetermined length outwards from a front portion of a sidewall of the lower stopper 20 corresponding to the latch removal preventing piece 18, and extends a predetermined length backwards, and is bent downwards at an end thereof. The lower stopper 20 further has a guide rod passing hole 21 which passes from a front surface to a rear surface of the lower stopper 20.

[28] The upper and lower cable holding grooves 11 and 12 preferably have L shapes, but they may have shapes which are bent several times. In other words, the shapes of the upper and lower cable holding grooves 11 and 12 are not limited to the L shape.

[29] The spiral spring 14 is coupled at a first end thereof to the rear surface of the stopper 10 and coupled at a second end thereof to the support unit 33 to which a rear end of the stopper guide rod 32 is coupled. The spiral spring 14 has appropriate tension force to return the stopper 10 to its original position when the stopper 10 moves forwards.

[30] The cable removal preventing plate 15 is coupled to the lower surface of the case 3 at a position spaced apart from the lower surface of the case 3 by a predetermined distance, so that a space having a predetermined size is defined between the lower surface of the case 3 and the cable removal preventing plate around the first sidewall of

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the stopper 20 through which the cable holding hole communicates. Extra length of the cable 40 is placed in the space between the lower surface of the case 3 and the cable removal preventing plate 15 so that the cable 40 can move forwards and backwards along with the stopper 10 without being stretched.

[31] As shown in FIG. 3, the latch guide groove 16 is formed in the lower surface of the case 3 parallel to the stopper guide rod 32 so as to guide the latch 13 of the stopper 10 forwards and backwards.

[32] Furthermore, the latch guide groove 16, which is formed parallel to the stopper guide rod 32 under the lower surface of the case 3 to guide the longitudinal movement of the latch of the stopper 10, extends a predetermined length in a straight line to form a first straight part, and is curved at a front end of the first straight part in an arc shape having a predetermined curvature, and extends a predetermined length from a front end of the curved part in a straight line coaxial to the first straight part to form a second straight part. Furthermore, a hook 22 is provided in the curved part of the latch guide groove 16. A release part 23 having a predetermined inclination is provided in the curved part of the latch guide groove 16 at a position corresponding to the hook 22. Therefore, the latch 13 of the stopper 10 moves forwards along the latch guide groove 16 while the stopper 10 moves forwards. When the stopper 10 releases after passing over the hook 22, the latch 13 of the stopper 10 is hooked to the hook 22. When the stopper 10 moves forwards again and reaches the release part 23 of the curved part of the latch guide groove 16, the latch 13 moves along the inclination of the release part 23 and, finally, the latch 13 is freed from the curved part of the latch guide groove 16. Then, the latch 13 is not hooked to the hook 22 until the stopper 10 moves backwards to its original position.

[33] The cable 40 is held at a predetermined portion thereof by the cable holding hole of the stopper 10, is supported by the winding groove 31 of the cable guide roller 30, and is extracted to an upper surface of the case 3 through the through hole 6 while extra cable 40 is located in the space between the cable removal preventing plate 15 and the lower surface of the case 3.

[34] The universal charging terminal 41 is coupled to an end of the cable 40 extracted to the upper surface of the case 3. The removable coupling of the universal charging terminal 41 to the cable 40 may be conducted by engaging a terminal socket 50 coupled to the end of the cable 40 with an internal thread 54 provided in a rear part of the universal charging terminal 41. Here, the terminal socket 50 has a grip 51 which is provided on an outer surface of the terminal socket 50, an external thread 52 and a terminal 53. Alternatively, an internal socket 60 is provided on an end of a separate cable which extends a predetermined length from the universal charging terminal 41, and an external socket 61 is provided on the end of the cable 40 extracted through the

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through hole 6 of the case 3, so that the universal charging terminal 41 may be removably coupled to the cable 40 by inserting the internal socket 60 into the external socket 61. Because the number of pins of the universal charging terminal 41 is still not standardized internationally, the universal charging terminal 41 may be not suitable for a user's mobile communication terminal. To solve this problem, the present invention has a structure such that the universal charging terminal 41 may easily be replaced with another.

[35] As shown in FIGS. 7 and 8, to prevent a mobile communication terminal mounted on the terminal mount 5 from undesirably moving, a sheet 70 having a predetermined adhesive force may be provided on the seating surface of the terminal mount 5. Alternatively, at least one suction cup 71 may be coupled at a lower end thereof to the seating surface of the terminal mount 5 such that a suction opening 72 of the suction cup 71 faces upwards.

[36] The assembly of the sterilizing and charging apparatus of the present invention will be explained herein below.

[37] The seat depression 7 having a predetermined size is provided in the front of the terminal mount 5 of the case 3. The through hole 6 is formed at the central portion in the seat depression 7. The cable guide roller 30 having the winding groove 31 is vertically and rotatably mounted to the case 3 below the through hole 6 of the seat depression 7.

[38] Thereafter, the cable 40 is held at a predetermined position thereof by the cable holding hole of the stopper 10 which is formed by the upper and lower cable holding grooves 11 and 12. Here, the stopper 10 includes the upper stopper 17 and the lower stopper 20. The upper stopper 17 has the upper cable holding groove 11 which is formed on the lower surface of the upper stopper 17 and communicates with the front surface and with the first sidewall of the upper stopper 17, and the latch removal preventing piece 18 which extends a predetermined length downwards from the second sidewall opposite the first sidewall of the upper stopper 17. The lower stopper 20 has the lower cable holding groove 12 which is formed on the upper surface of the lower stopper 20 to correspond to the upper cable holding groove 11 of the upper stopper 17, and the spring support protrusion 19 which has a cylindrical shape and is provided on the rear part of the lower stopper 20. The lower stopper 20 further has the latch 13 which extends a predetermined length outwards from the front portion of the sidewall of the lower stopper 20 corresponding to the latch removal preventing piece 18, extends a predetermined length backwards, and is bent downwards at the end thereof. The lower stopper 20 further has the guide rod passing hole 21 which passes from the front surface to the rear surface of the lower stopper 20. After a predetermined part of the cable 40 is seated in the upper or lower cable holding groove 11 or 12 of the

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stopper 10 having the above-mentioned construction, the front end of the spiral spring 14 is supported by the spring support protrusion 19 of the lower stopper 20. Subsequently, the upper and lower stoppers 17 and 20 are coupled to each other.

[39] Thereafter, the stopper guide rod 32 having a predetermined length is inserted into the guide rod passing hole 21 which is longitudinally formed through the lower stopper 20. The latch 13 of the stopper 10 is placed in the latch guide groove 16 which is longitudinally formed under the lower surface of the case 3 to guide the latch 13. Simultaneously, the opposite ends of the stopper guide rod 32 are supported by the pair of support units 33 such that the stopper guide rod 32 is spaced apart from the lower surface of the case 3. At this time, the second end of the spiral spring 14 is supported along with the stopper guide rod 32 by the rear support unit 33.

[40] Thereafter, the cable removal preventing plate 15 is mounted at a position spaced apart from the lower surface of the case 3 such that a space having a predetermined size is defined between the lower surface of the case 3 and the cable removal preventing plate 15 around the first sidewall of the stopper 10 through which the cable holding hole passes. Extra length of the cable 40 held by the stopper 10 is located in the space between the lower surface of the case 3 and the cable removal preventing plate 15. Thus, the cable 40 does not become tense while the stopper 10 moves forwards and backwards. As well, the cable removal preventing plate 15 prevents the cable 40 from interfering with a substrate or an electric component (not shown) placed below the case 3.

[41] Thereafter, the cable 40 to which the stopper 10 is coupled at a predetermined position is extracted to the upper surface of the case 3 after passing through the winding groove 31 of the cable guide roller 30. The universal charging terminal 41 is coupled to the extracted end of the cable 40.

[42] At this time, the universal charging terminal 41 is coupled to the cable 40 by either of the two coupling structures, as shown in FIGS. 5 and 6. Of course, the universal charging terminal 41 may be coupled to the cable 40 by modifications of the above-mentioned coupling structures, and these modifications fall within the bounds of the present invention.

[43] As shown in FIG. 5, in the first coupling structure, the terminal socket 50, which has the grip 51, the external thread 52 and the terminal 53 and is coupled to the end of the cable 40, engages with the internal thread 54 provided in the rear part of the universal charging terminal 41. As shown in FIG. 6, in the second coupling structure, the internal socket 60 is provided on the end of the separate cable which extends a predetermined length from the universal charging terminal 41, and the external socket 61 is provided on the end of the cable 40 extracted through the through hole 6 of the case 3, so that the universal charging terminal 41 may be removably coupled to the cable 40

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by inserting the internal socket 60 into the external socket 61.

[44] Meanwhile, the assembly of other components such as the lid 2, the ultraviolet lamp 4 and the substrate can be conducted with reference to the structure shown in the drawings and using conventional techniques, therefore further explanation is deemed unnecessary. Hereby, the assembly process of the present invention is completed.

[45] The operation of the sterilizing and charging apparatus 1 of the present invention assembled through the above-mentioned assembly process will be explained herein below.

[46] First, a plug (not shown), which is coupled to the sterilizing and charging apparatus 1 through an electric wire extracted from a lower end of a rear part of the sterilizing and charging apparatus 1, is inserted into a typical plug socket (not shown), so as to apply power to the sterilizing and charging apparatus 1.

[47] Thereafter, a user lifts the lid 2 from the case 3 to open the terminal mount 5. The user pulls the universal charging terminal 41, placed in front of the terminal mount 5, to a predetermined distance, and inserts the universal charging terminal 41 into a USB terminal (not shown) of a mobile communication terminal for charging and data switching. Here, to easily couple the universal charging terminal 41 to the USB terminal, the cable 40 is stopped when extracted to a predetermined length. In this state, if the cable 40 is further pulled and released, both the cable 40 and the universal charging terminal 41 are retracted into the case 3.

[48] The operation of the cable 40 being hooked and unhooked will be explained in detail herein below.

[49] When the cable 40 is pulled out along with the universal charging terminal 41, the stopper 10 gradually moves forwards from the initial position, as shown in FIG. 3. At this time, the latch 13 of the stopper 10 moves forwards along the latch guide groove 16. The latch guide groove 16 extends a predetermined length in a straight line to form the first straight part, and is curved at the front end of the first straight part in an arc shape having a predetermined curvature, and extends a predetermined length from the front end of the curved part in a straight line coaxial to the first straight part to form the second straight part. Furthermore, the hook 22 is placed in the curved part of the latch guide groove 16. Therefore, when the stopper 10 passes through the curved part of the latch guide groove 16, the latch 13 of the stopper 10 passes over the hook 22.

[50] In this state, if the cable 40, which has been pulled out, is released, the stopper 10 moves backwards due to the tension force of the spiral spring 14 which is coupled to the rear part of the stopper 10. When the stopper 10, which is moving backwards, reaches the hook 22 of the curved part of the latch guide groove 16, the latch 13 of the stopper 10 is hooked to the hook 22. Thus, as shown in FIG. 4, the stopper 10 is stopped, and the cable 10 maintains its state of being extracted to a predetermined

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length.

[51] To retract the cable 40 into the case 3, the user again pulls the cable 40. Then, the stopper 10 moves forwards, and the latch 13 of the stopper 10 moves away from the hook 22 and reaches the release part 23. Continuously, the latch 13 moves along the inclination of the release part 23 and, finally, the latch 13 is free from the curved part of the latch guide groove 16. Thus, the stopper 10 is released from the hooked state. At this time, if the user releases the cable 40, the stopper 10 moves backwards due to the tension force of the spiral spring 14. Furthermore, the latch 13 of the stopper 13, which was free from the curved part of the latch guide groove 16, is not hooked to the hook 22 while the stopper 10 moves backwards. The stopper 10 is finally returned to the original position thereof. The cable is retracted into the case 3, and the universal charging terminal 41 is seated into the seat depression 7 of the case 3. Furthermore, the latch removal preventing piece 18 of the upper stopper 17 prevents the latch 13 from being excessively bent in a lateral direction. Accordingly, even if excessive lateral force due to interaction with the hook 22 or the release part 23 is applied to the latch 13 of the stopper 10, the latch 13 is prevented from being broken or deformed.

[52] Meanwhile, because the number of pins (eight pins, sixteen pins or twenty four pins) of mobile communication terminals differs according to countries, if the number of pins of the universal charging terminal 41 does not correspond to that of a mobile communication terminal, the universal charging terminal 41 may be replaced with a different kind of universal charging terminal. There are two methods of replacing the universal charging terminal 41 with another.

[53] The first method of replacing the universal charging terminal 41 is illustrated in FIG. 5. The user grips the grip 51, which is placed at a junction between the universal charging terminal 41 and the cable 40, with one hand, and the user grips the universal charging terminal 41 with the other hand and rotates it counterclockwise. Then, the universal charging terminal 41 is removed from the cable 40, and the terminal 53, which extends a predetermined length outwards from the grip 51, is exposed to the outside. To couple another universal charging terminal 41 to the cable 40, the user rotates the new universal charging terminal 41 clockwise, but the rest of the operation is the same as that when the universal charging terminal 41 is removed from the cable 40.

[54] The second method of replacing the universal charging terminal 41 is illustrated in FIG. 6. The user pulls the internal socket 60, which extends a predetermined length from the universal charging terminal 41, from the external socket 61 which is provided on the end of the cable 40 extracted from the case 3 through the through hole 6. Then, the universal charging terminal 41 having the internal socket 60 is removed from the cable 40 having the external socket 60. To couple another universal charging terminal

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41 to the cable 40, an internal socket 60 of the new universal charging terminal 41 is forcibly fitted over the external socket 61 of the cable. Then, the internal socket 60 is hooked to the external socket 61, thus the internal socket 60 is not undesirably removed from the external socket 61.

[55] After the USB terminal of the mobile communication terminal for charging and data switching is coupled to the universal charging terminal 41 which is connected to the cable 40 through either of the two above-mentioned coupling structures, if the user further pulls the cable 40, which has been in the hooked state, and releases it, the cable 40 is freed from the hooked state. Thus, the cable 40 is retracted into the case 3 by the tension of the spiral spring 14, and the universal charging terminal 41 is seated in the seat depression 7. Simultaneously, the mobile communication terminal coupled to the universal charging terminal 41 is seated on the terminal mount 5, as shown in FIG. 9. In the present invention, as shown in FIGS. 7 and 8, the sheet 70 having a predetermined adhesive force may be attached to the seating surface of the terminal mount 5, or, alternatively, at least one suction cup 71 may be coupled at the lower end thereof to the seating surface of the terminal mount 5 such that the suction opening 72 of the suction cup 71 faces upwards. Therefore, the mobile communication terminal, which is seated on the terminal mount 5, is prevented from undesirably moving.

[56] After the mobile communication terminal is seated on the terminal mount 5, the case 3 is covered with the lid 2 to close the terminal mount 5. Thereafter, the control switch 8 is turned on. Then, the mobile communication terminal is sterilized for a desired time while being charged. After the desired time has passed, power, which has been applied to the ultraviolet lamp 4, is interrupted. Then, the sterilization is stopped, but the charging of the mobile communication terminal continues uninterrupted. After the charging is completed, an LED lamp (not shown) emits, for example, green light, or information is displayed on a display, thus indicating the completion of the charging of the mobile communication terminal to the user.

[57] Next, the user opens the lid 2 and pulls the mobile communication terminal from the terminal mount 5 by a predetermined distance. Then, the cable 40, which is coupled to the mobile communication terminal through the universal charging terminal 41, is extracted to the predetermined length and maintains the extracted state.

[58] Thereafter, the user removes the universal charging terminal 41 from the mobile communication terminal. Subsequently, when the user further pulls the cable 40 and releases it, the cable 40 is retracted into the case 3 and the universal charging terminal 41 is seated in the seat depression 7. Then, the sterilizing and charging apparatus of the present invention is returned to its original state for subsequent charging and sterilization.

Industrial Applicability

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[59] As described above, the present invention provides a sterilizing and charging apparatus for mobile communication terminals which sterilizes a mobile com munication terminal on which bacteria live, and which has a structure capable of replacing a universal charging terminal with a different kind of universal charging terminal, and in which a cable to which the universal charging terminal is coupled can be extracted from the terminal mount to a predetermined distance and retracted into the terminal mount so that the universal charging terminal is easily coupled to a USB (universal serial bus) terminal of the mobile communication terminal, and in which an adhesive sheet or a suction unit is provided on a seating surface of the terminal mount so that the mobile communication terminal can be stably seated on the terminal mount without moving.

[60] Although the preferred embodiment of the present invention has been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

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Claims

[1] A sterilizing and charging apparatus for a mobile communication terminal, comprising: a terminal mount provided in a case in which an ultraviolet lamp to be operated by a control switch is installed; and an openable lid mounted on the case, wherein the sterilizing and charging apparatus further comprises:
a universal charging terminal seat depression having a predetermined size and provided in the front of the terminal mount, with a through hole formed at a central portion in the universal charging terminal seat depression;
a cable guide roller vertically and rotatably provided below the through hole of the universal charging terminal seat depression, with a winding groove formed around a circumferential outer surface of the cable guide roller;
a stopper guide rod spaced apart from a lower surface of the case and supported at opposite ends thereof by a support unit while extending a predetermined length forwards and backwards;
a stopper fitted over the stopper guide rod such that the stopper guide rod passes through front and rear surfaces of the stopper, with a cable holding hole formed through the stopper and communicating with the front surface and with a first sidewall of the stopper, and a latch provided on a second sidewall of the stopper;
a spiral spring coupled at a first end thereof to the rear surface of the stopper and coupled at a second end thereof to the support unit to which a rear end of the stopper guide rod is coupled;
a cable removal preventing plate coupled to the lower surface of the case at a predetermined position spaced apart from the lower surface of the case, so that a space having a predetermined size is defined between the lower surface of the case and the cable removal preventing plate around the first sidewall of the stopper through which the cable holding hole communicates;
a latch guide groove formed in the lower surface of the case to guide the latch of the stopper forwards and backwards, the latch guide groove being parallel with the stopper guide rod;
a cable held at a predetermined portion thereof by the cable holding hole of the stopper and supported by the winding groove of the cable guide roller, the cable being extracted to an upper surface of the case through the through hole while a length of the cable is located in the space between the cable removal preventing plate and the lower surface of the case; and
a universal charging terminal coupled to an end of the cable extracted to the upper surface of the case.

[2] The sterilizing and charging apparatus according to claim 1, further comprising:

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a terminal socket coupled to the end of the cable and provided with a grip provided on an outer surface of the terminal socket, an external thread, and a terminal; and

an internal thread provided in a rear part of the universal charging terminal, so that the terminal socket of the cable removably engages with the internal thread of the universal charging terminal.

[3] The sterilizing and charging apparatus according to claim 1, further comprising:

an internal socket provided on an end of a separate cable which extends a predetermined length from the universal charging terminal; and

an external socket provided on the end of the cable extracted through the through hole of the case, so that the universal charging terminal is removably coupled to the cable by inserting the internal socket into the external socket.

[4] The sterilizing and charging apparatus according to claim 1, wherein the stopper comprises:

an upper stopper, comprising:

an upper cable holding groove formed on a lower surface of the upper stopper and communicating with a front surface and with a first sidewall of the upper stopper; and

a latch removal preventing piece extending a predetermined length downwards from a second sidewall opposite the first sidewall of the upper stopper; and

a lower stopper, comprising:

a lower cable holding groove formed on an upper surface of the lower stopper to correspond to the upper cable holding groove of the upper stopper, so that the upper and lower cable holding grooves form the cable holding hole of the stopper;

a spring support protrusion provided on a rear part of the lower stopper;

the latch extending a predetermined length outwards from a front portion of a sidewall of the lower stopper corresponding to the latch removal preventing piece, extending a predetermined length backwards, and bent downwards at an end thereof; and

a guide rod passing hole passing from a front surface to a rear surface of the lower stopper.

[5] The sterilizing and charging apparatus according to claim 1, wherein the latch guide groove 16 longitudinally extends a predetermined length in a straight line to form a first straight part, and is curved at a front end of the first straight part in an arc shape having a predetermined curvature, and longitudinally extends a predetermined length from a front end of the curved part in a straight line to form a second straight part, and the case comprises:

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a hook provided in the curved part of the latch guide groove; and

a release part, having a predetermined inclination, provided in the curved part of the latch guide groove at a predetermined position corresponding to the hook.

[6] The sterilizing and charging apparatus according to claim 1, further comprising:

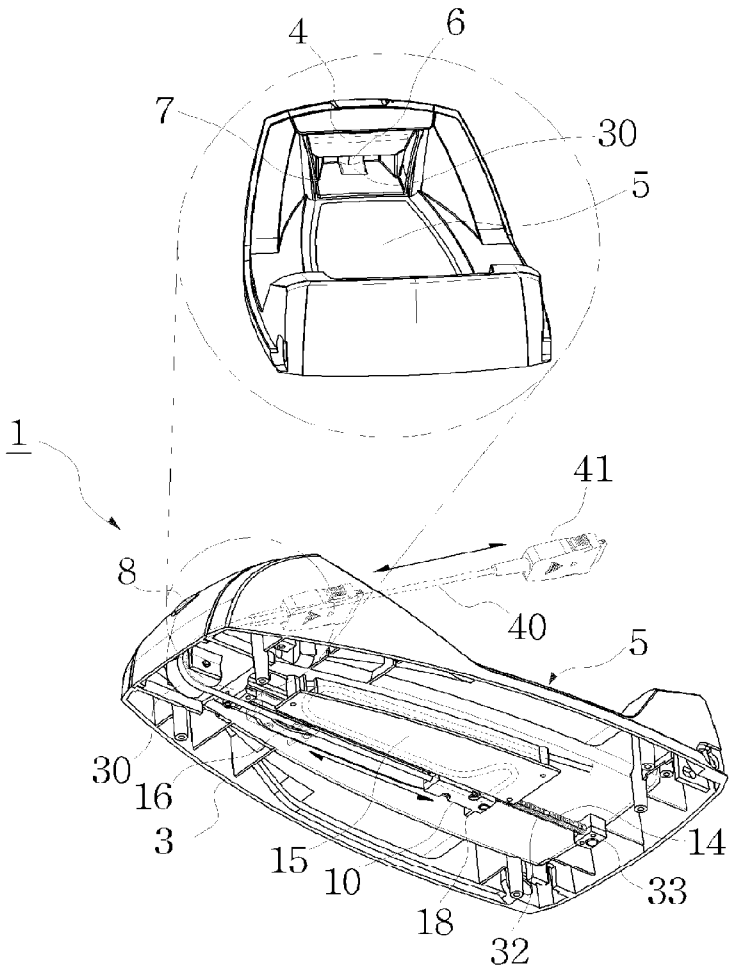
a sheet, having a predetermined adhesive force, provided on a seating surface of the terminal mount.

[7] The sterilizing and charging apparatus according to claim 1, further comprising:

at least one suction unit coupled at a lower end thereof to a seating surface of the terminal mount such that a suction opening of the suction unit faces upwards.

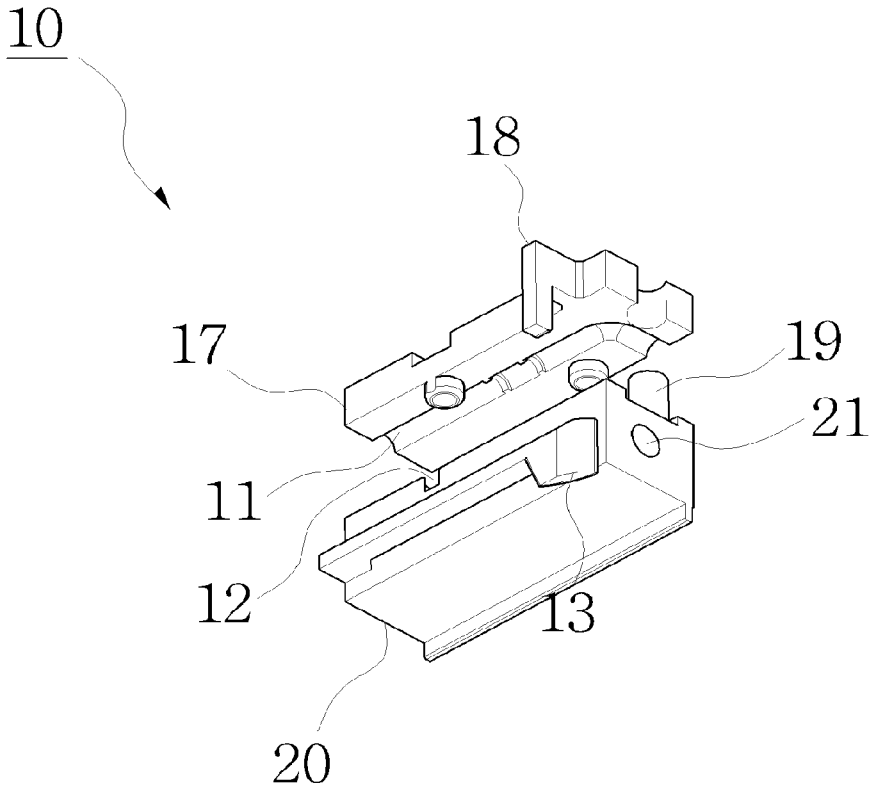
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[Fig. 1]

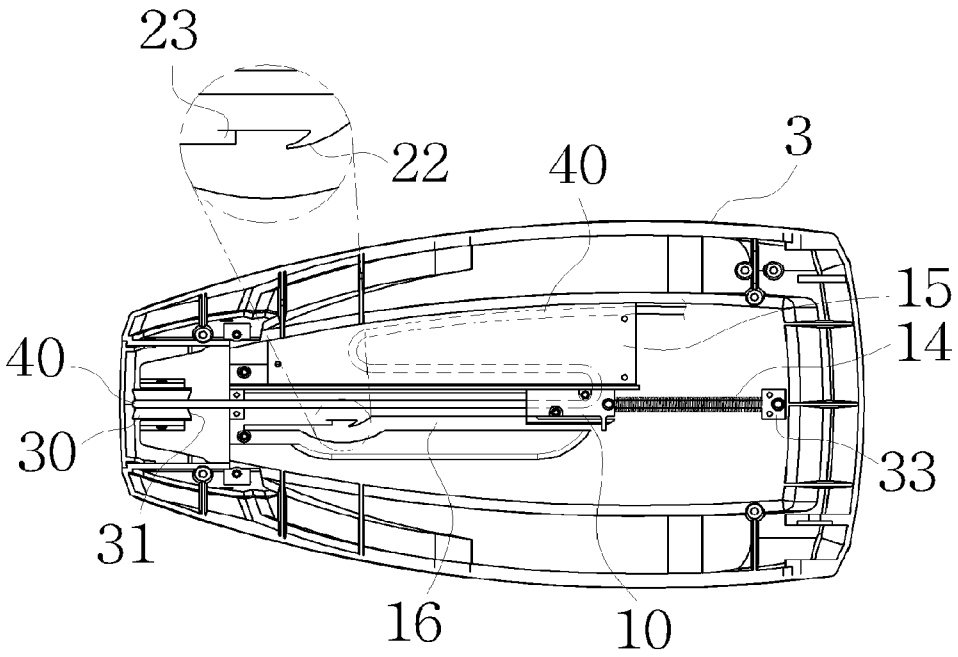


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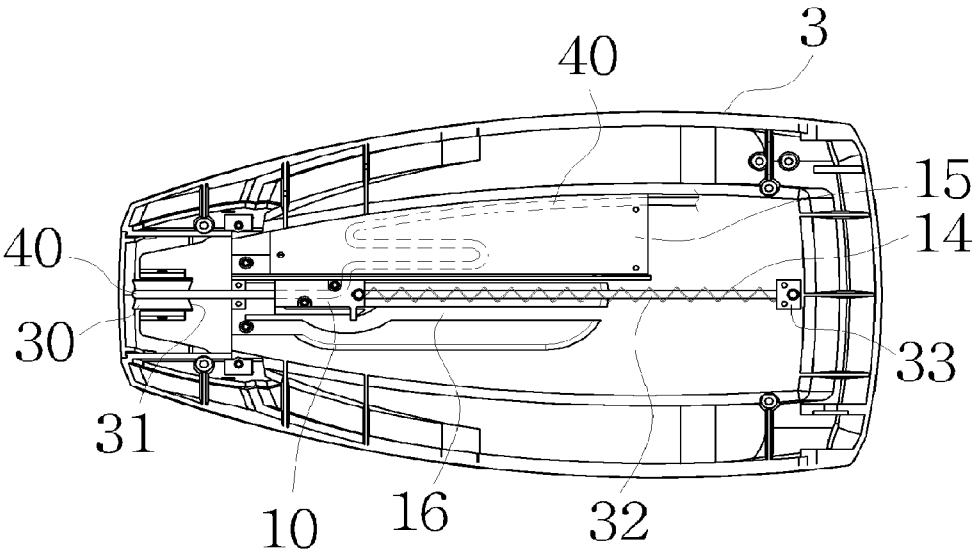
[Fig. 2]



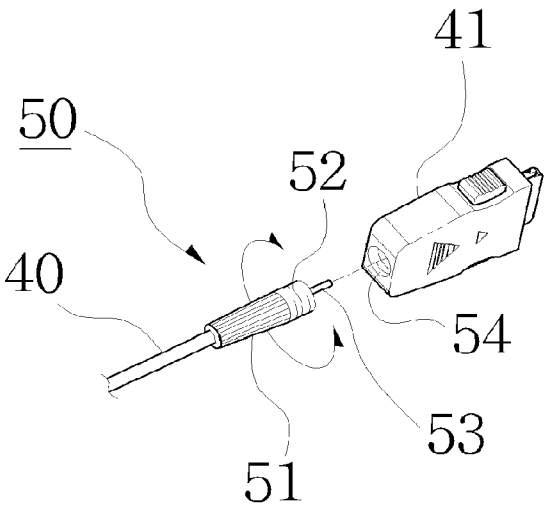
[Fig. 3]



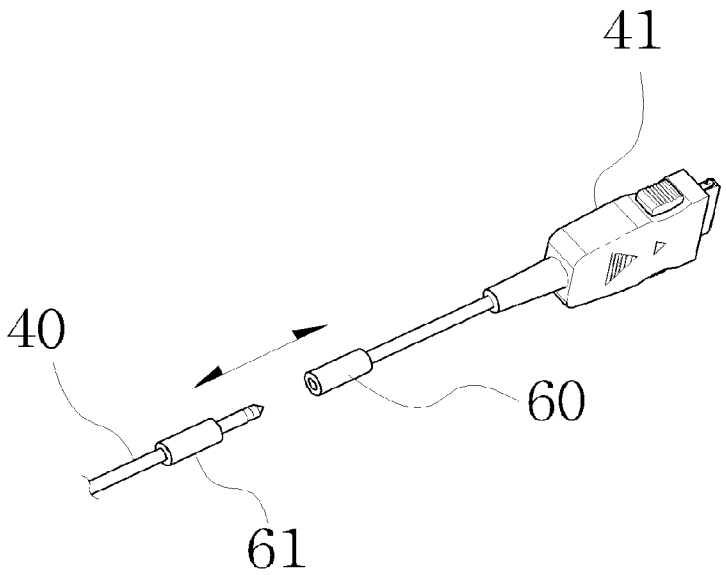
[Fig. 4]



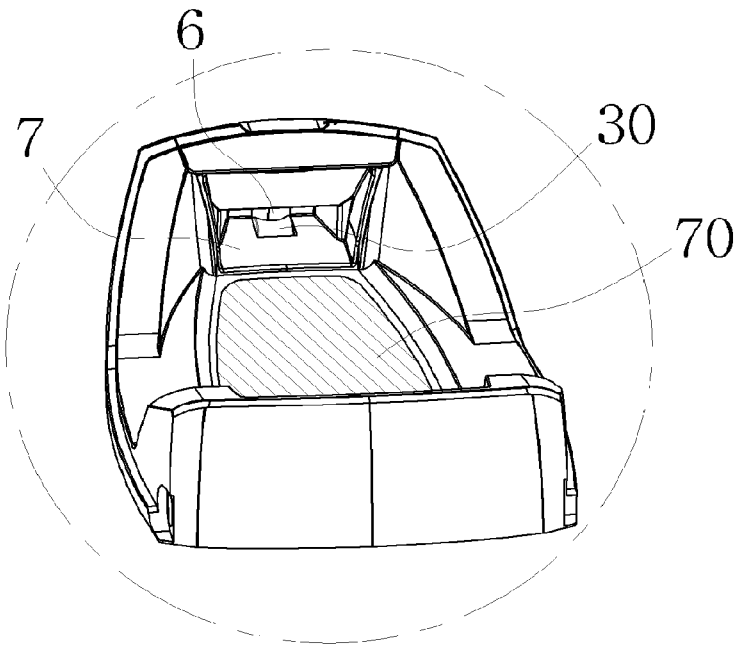
[Fig. 5]



[Fig. 6]

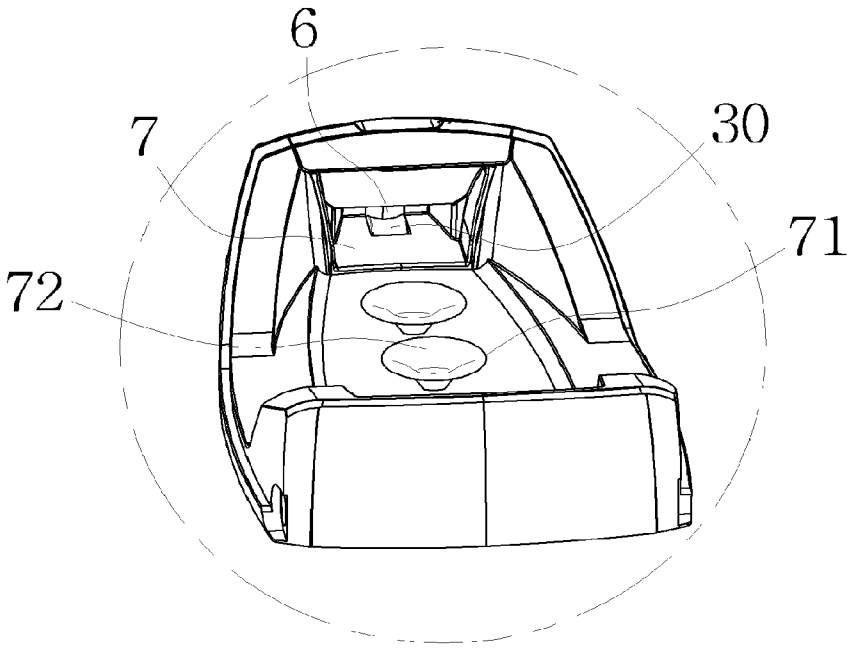


[Fig. 7]

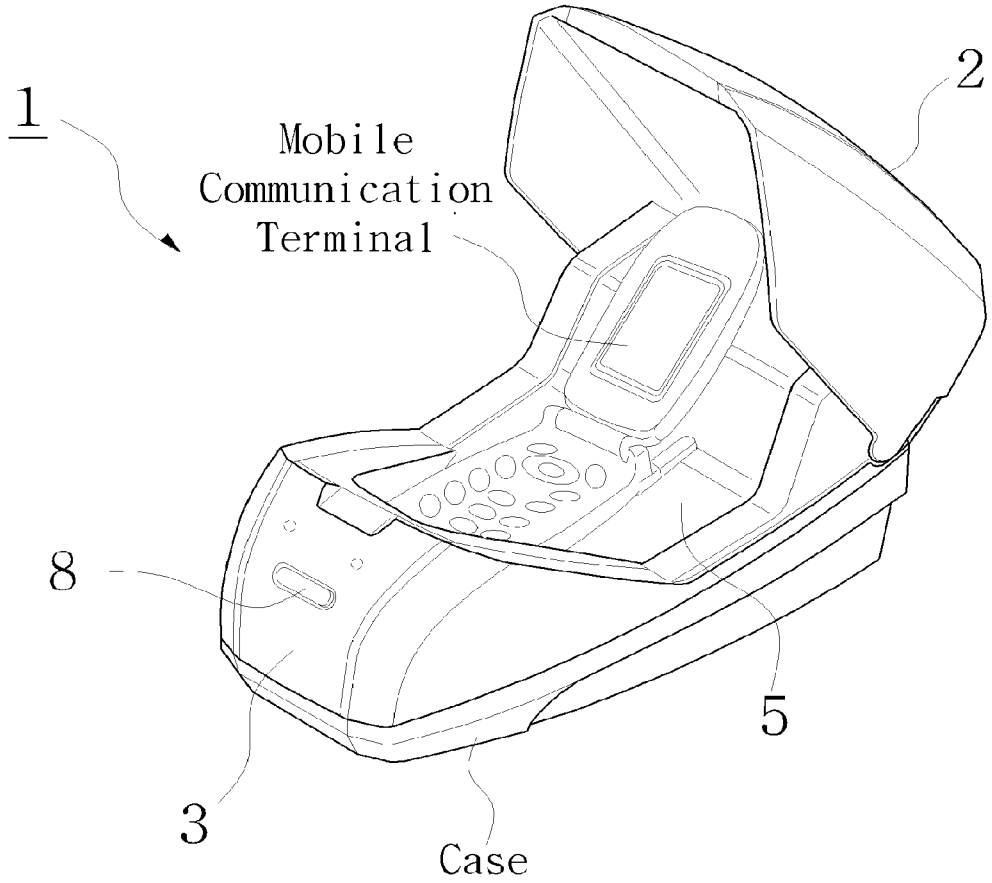


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[Fig. 8]



[Fig. 9]



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INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2006/000150

A. CLASSIFICATION OF SUBJECT MATTER

H02J 7/00(2006.01)i

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 8 H04B 1/00 H04M 1/00 H02J 7/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPAT, KR, JP as above IPC

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
(((cellular phone, handphone, mobile phone, pocket telephone, portable telephone) <and> (Filling teeth, backfill, charge, charging, filling, gobbing, stowing) <and> (disinfection, sterilization)) <in> AB)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X, P	KR 20-0374503 (Hyo-Jeong BAEK) 31 JAN 2005 See the abstracct; Claim 1 & 2	1
A	KR 2003-0033475 (SK TELETEC CO., LTD.) 1 MAY 2003 See claim 1; Figure 1	1 - 7
A	US 2004/0147293 A1 (SAMSUNG ELECTRONICS CO LTD) 29 JUL 2004 See the whole document	1 - 7

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
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"P" document published prior to the international filing date but later than the priority date claimed
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"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
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
20 APRIL 2006 (20.04.2006)	**21 APRIL 2006 (21.04.2006)**
Name and mailing address of the ISA/KR Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer PARK, Bong Ser Telephone No. 82-42-481-5585

Form PCT/ISA/210 (second sheet) (April 2005)

PS_000102

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/KR2006/000150

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
KR200374503	31.01.2005	WO2006022466A1	02.03.2006
KR1020030033475	01.05.2003	NONE	
US2004147293A1	29.07.2004	NONE	

Form PCT/ISA/210 (patent family annex) (April 2005)

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ABSTRACT KR200338371Y1

[]

The present invention relates to a mobile phone charging device capable of simultaneously performing a mobile phone charging function and a mobile phone sterilizing function as well as a lighting function, by positioning a sterilizing ultraviolet lamp and a mobile phone charging terminal inside a device that can be opened and closed by a transparent or translucent crystal lid, and is characterized by including: a sterilizing box (10) having a concave space in which the ultraviolet lamp (20) is installed; a charging terminal (11) provided on the bottom of the sterilizing box (10) and detachably connected to a battery terminal (2a) of the mobile phone; and a lid (30) made of a transparent or translucent crystal material so that the ultraviolet lamp (20) can be seen from the outside while being rotatably installed to open and close the sterilizing box (10).

Sterilization, UV, mobile phone, charging

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Patents KR200338371

electrical charging apparatus for mobile phone with disinfection and illumination ability

Abstract

The present invention is located inside the device that the charging terminal of the germicidal UV lamp and the mobile phone can be opened and closed by a transparent or translucent crystal lid, the mobile phone that can perform the charging function and sterilization function as well as lighting function at the same time A charging device, comprising: a sterilization box (10) having a concave space in which the ultraviolet lamp (20) is placed; A charging terminal 11 provided on a bottom surface of the sterilization box 10 and detachably connected to the battery terminal 2a of the mobile phone; It characterized in that it comprises a lid 30 made of a transparent or translucent crystal material so that the ultraviolet lamp 20 can be seen to the outside while rotatably installed to open and close the sterilization box (10).

KR200338371Y1
South Korea

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Other languages: Korean

Inventor: 권혁대

Worldwide applications

2003 KR

Application KR20030031349U events

2003-10-06 Application filed by 권혁대

2003-10-06 Priority to KR20030031349U

2004-01-14 Application granted

2004-01-14 Publication of KR200338371Y1

Info: Legal events, Similar documents, Priority and Related Applications

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Claims (5)

Hide Dependent

1. As a mobile phone charging device (1) for charging the mobile phone (2) by using a current of a different voltage previously classified in the power supply unit and to turn on the ultraviolet lamp 20,

   A sterilizer 10 having a concave space in which the ultraviolet lamp 20 is placed;

   A charging terminal 11 provided on a bottom surface of the sterilization box 10 and detachably connected to the battery terminal 2a of the mobile phone;

   Sterilization function and lighting function, characterized in that it comprises a lid 30 made of a transparent or translucent material so that the ultraviolet lamp 20 is visible to the outside while rotatably installed to open and close the sterilization box (10) Mobile phone charging device

   2. The method of claim 1,

      The ultraviolet lamp 20 is installed while being connected to the socket 21 provided on the inner bottom surface of the sterilization box 10 with the connection terminal 22 at the bottom,

      The charging terminal 11 is located higher than the socket 21 to increase the amount of irradiation of the transmitting unit 2b of the mobile phone 2 by ultraviolet rays,

      Inside the sterilization box (10) is supported in the standing state holding land (40) to keep the mobile phone (2) and the ultraviolet lamp 20 in an inclined state and standing in a stable state,

      Sterilization, characterized in that the inner wall of the sterilization box 10 is provided with a reflector 14 for reflecting the ultraviolet rays emitted from the ultraviolet lamp furnace 20 and irradiating the reflected ultraviolet rays to the back surface of the mobile phone 2. Mobile phone charger with function and lighting function.

   3. The method of claim 1,

      Cell phone having a sterilizing function and an illumination function, characterized in that it further comprises a limit switch 36 for applying a current to the ultraviolet lamp 20 by closing the lid 30 to turn on the ultraviolet lamp 20 Charging device.

   4. The method of claim 2,

      The entrance retainer 40 supports a plurality of partition walls that form a plurality of retaining frames 42, 44, 46 while being horizontally supported by the support jaw 12 provided on the inner wall of the sterilization box 10. 47)

      The plurality of retaining frames 42, 44, 46 includes one lamp holding frame 44 for holding the ultraviolet lamp 20 upright and one mobile phone holding frame for holding the mobile phone 2 inclined (42) and a mobile phone charging device having a sterilizing function and an illumination function, characterized in that it is composed of at least an auxiliary holding frame (46) for holding other mobile phones upright.

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5. The method according to any one of claims 1 to 4,

The mobile phone charging device having a sterilization function and an illumination function, characterized in that it further comprises an air purifying unit (60) provided below the sterilization box (10) to purify the outside air.

Description

Electrical charging apparatus for mobile phone with disinfection and illumination ability)

The present invention relates to a mobile phone charging device, and more specifically, the germicidal UV lamp and the charging unit of the mobile phone is located inside the device that can be opened and closed by a cover of transparent or translucent material, as well as the charging function and sterilization function of the mobile phone The present invention relates to a mobile phone charging device capable of simultaneously performing a lighting function.

As used herein, the term "mobile phone" refers to all kinds of portable devices, and may include not only general mobile phones but also PDAs, MP3s, and the like.

In general, the transmitting unit of the mobile phone receives the sender's voice signal and transmits it to the inside of the device. Due to its characteristics, it is easy to be contaminated by saliva coming from the sender's mouth, and bacteria are easily spread by the temperature and humidity of the mobile phone itself. It exists in a state.

In addition, mobile phone users generally hold the mobile phone main body with contaminated hands and store the mobile phone in a place where the mobile phone can be exposed to various germs such as a bag or a pocket. There is a lot of potential for contamination.

In response to this, a mobile phone charger has been proposed in which an ultraviolet lamp is irradiated to the vicinity of a transmitting part of a mobile phone when the mobile phone is seated for charging by improving an existing mobile phone charger. It is well disclosed in Korean Patent Application Publication No. 2003-34745 filed in Korea.

However, such a conventional mobile phone charger has a problem in that the sterilization range is limited to the transmitting part of the mobile phone, so that it is not possible to prepare for the bacteria contaminated in the main body of the mobile phone in the user's hand or storage area.

In addition, the manufacturing cost of the charger itself is increased due to the installation of the ultraviolet lamp, the function has a problem that the effectiveness of only having the sterilization function of the transmitter portion is reduced.

Therefore, the present invention, devised to solve the above problems of the prior art, the sterile ultraviolet lamp and the charging portion of the mobile phone is located inside the device that can be opened and closed by the lid of the transparent or translucent material to the ultraviolet lamp As a result, it is possible to sterilize the entire mobile phone as well as the transmission unit of the mobile phone, and to provide a mobile phone charging device that can use the ultraviolet light emitted through the crystal cap as an illumination.

1 is a perspective view showing a mobile phone charging device according to an embodiment of the present invention

Figure 2 is an exploded perspective view showing an exploded cell phone charging device of Figure 1;

3 is a cross-sectional view of the mobile phone charging device of FIGS.

4A and 4B are block diagrams each showing a power supply unit in the mobile phone charging device of the present invention for indoor use and vehicle.

5 is a perspective view showing a mobile phone charging device according to another embodiment of the present invention.

6 is an exploded perspective view illustrating an important part of the mobile phone charging device according to the fifth embodiment;

In order to achieve the above object, the present invention provides a mobile phone charging device that charges the mobile phone by using a current of a different voltage pre-sorted in the power supply unit and turns on the ultraviolet lamp, the mobile phone charging device, the ultraviolet lamp Sterilization having a concave space to be installed; A charging terminal provided on a bottom surface of the sterilization box and detachably connected to a battery terminal of the mobile phone; And a lid made of a transparent or translucent crystal material so that the ultraviolet lamp can be seen to the outside while being rotatably installed to open and close the sterilizer.

Here, the ultraviolet lamp is placed while connected to the socket provided on the inner bottom surface of the sterilization box with a connection terminal at the bottom, the charging terminal is located higher than the socket so that the transmitter of the mobile phone is irradiated by ultraviolet light In addition, the inside of the sterilization box is supported in a standing state for holding the mobile phone and the UV lamp in an inclined state and in a stable state in a horizontal state, and the inner wall of the sterilizer from the UV lamp It is preferable that a reflecting plate 14 for reflecting the emitted ultraviolet rays and irradiating the reflected ultraviolet rays to the back surface of the mobile phone is provided.

In addition, the mobile phone charging device of the present invention preferably further includes a limit switch for applying a current to the ultraviolet lamp to turn on the ultraviolet lamp by closing the lid.

In addition, the upright holding area is provided with a plurality of partitions for partitioning a plurality of retaining frame while being supported horizontally on the support jaw provided on the inner wall of the sterilization box, the plurality of retaining frame, the UV lamp standing upright It is preferable that it is composed of one lamp holding frame for holding the mobile phone, one mobile phone holding frame for holding the mobile phone inclined, and at least one auxiliary mobile phone holding frame for holding another mobile phone upright.

In addition, the mobile phone charging device of the present invention is preferably provided below the sterilization box further comprises an air purifying unit for purifying the outside air.

<Example>

Hereinafter, preferred embodiments of the present invention will be described in detail with reference to the accompanying drawings.

1 is a perspective view of a charging device of a mobile phone according to an embodiment of the present invention, Figure 2 shows an exploded perspective view of the charging device of Figure 1 mobile phone, Figure 3 is a cross-sectional view of the mobile phone charging device of Figure 1 and 2 Shows.

1 to 3, the mobile phone charging device 1 according to the present embodiment includes a sterilization box 10, an ultraviolet lamp 20 installed in the sterilization box 10, and the sterilization box. It includes a charging terminal 11 provided inside to allow charging of the mobile phone 2, and the lid 30 of the crystal material provided to open and close the sterilization box.

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In the present embodiment, the sterilization box 10 has a stand-shaped structure as a whole, and a concave space is formed in the inside thereof to allow the mobile phone 2 to be seated and the UV lamp 20 to be installed.

The ultraviolet lamp 20 in this embodiment is connected to the socket 21 provided in the inner bottom surface of the sterilization box 10, and has a structure which enters in the sterilization box 10. For this purpose, it connects only to one end. The terminal 22 is provided.

In addition, the ultraviolet lamp 20 has a structure in which the middle portion is maintained in the standing holding area 40 which will be described below to be more stably placed, and the standing holding area 40 is sterilized by Contributing to the maintenance of the ultraviolet lamp 20 while being supported horizontally on the support step 12 formed stepped on the inner wall, it is also involved in the maintenance of the mobile phone 2 and other sterilization objects (not shown) which will be described in detail below. .

On the other hand, the mobile phone 2 is maintained inclined by the mobile phone holding frame 42 provided inclined in the standing holding area 40, the charging terminal 11 provided on the bottom of the sterilization box 10 is a mobile phone (it can be charged by being detachably connected to the battery terminal 2a of 2). Here, although the mobile phone 2 is kept open for the exposure of the transmitter due to the characteristics of the folding mobile phone, this does not limit the present invention, for example, a mobile phone cover (or The flip) may be held by the holding frame 42 in an unopened state, which is obvious to those skilled in the art.

The charging terminal 11 is positioned so that the transmitter of the mobile phone 2 faces the ultraviolet lamp 20, while the ultraviolet lamp 20 is formed by the inner bottom of the stepped sterilizer 10. It is located higher than the socket 21, so that the transmission unit 2b of the mobile phone can be irradiated more by the ultraviolet lamp 20.

In addition, the inner wall of the sterilization box 10 is attached with a reflecting plate 14 capable of reflecting the ultraviolet rays emitted from the ultraviolet lamp 20, the reflecting plate 14 reflects the ultraviolet rays and direct ultraviolet light from the ultraviolet lamp 20 UV light can be irradiated to the back side of the mobile phone 2 that is not irradiated.

Looking in more detail with respect to the above-mentioned standing mouth 40, this standing mouth 40, as best shown in Figure 1, to maintain the lamp of the half moon type corresponding to the outer surface of the ultraviolet lamp 20 The frame 44, the mobile phone holding frame 42 is provided so that the mobile phone (2) can be inclined inclined, and the auxiliary holding frame 46 for holding and holding a mobile phone other than the mobile phone being charged, The retaining frames 42, 44, 46 are partitioned by a plurality of partitions 47 provided integrally in the standing holding area 40.

As briefly mentioned above, the mobile phone charging device 1 of the present embodiment includes a lid 30 made of a transparent or translucent crystal material that blocks ultraviolet rays, and the lid 30 has a hinge shaft provided on the rear side of the sterilization box. Rotating around the center 32, the user can be opened and closed by the user, and the front face is integrally provided with a finger catching part 34 so as to be easily lifted by the user.

The lid 30 serves to block harmful ultraviolet rays, and at the same time, allows the light from the ultraviolet lamp 20 to be used as lighting, thereby adding a function of a lighting lamp. It is possible to provide the user with the lighting of the pastel tone having.

In addition, the mobile phone charging device 1 of the present embodiment, the electric current to the ultraviolet lamp 20, or the ultraviolet lamp 20 and the charging terminal 11 only when the lid 30 is closed against the sterilization box 10. is to be energized, which is the limit switch 36 provided near the upper edge of the sterilization box 10 in contact with the lid 30, the ultraviolet lamp socket 21 and / or the mobile phone charging terminal 11 is applied by applying a current. At this time, the limit switch 36 of the present embodiment is configured to open and close an electrical contact (not shown) while being raised and lowered by a mechanical contact while being supported by a spring (not shown) as is widely known.

On the other hand, the mobile phone charging device of the present embodiment includes a power supply unit 50 or 50 ', which is used whether the mobile phone charging unit 1 of the present embodiment is used indoors or for vehicles. According to the configuration is different, it is obvious to those skilled in the art.

As shown in FIG. 3A, the indoor power supply unit 50 includes an input unit 52 that receives AC power through a known indoor plug (not shown), and an AC power output from the input unit 52. A / D converter 54 for receiving the input and converting the DC voltage, and a voltage dividing unit for receiving the DC voltage output from the A / D converter 54 to adjust the voltage for the mobile phone charging voltage and UV lamp And a current for the cell phone charging voltage and the current for the ultraviolet lamp from the voltage classifying unit 56, respectively, the charging terminal 11 for charging the cell phone and the socket 21 for turning on the ultraviolet lamp. Are applied to each).

In addition, the vehicle power supply unit 50 ', as shown in FIG. 3B, is input from an input unit 52 ' receiving DC power through a known cigar jack (not shown) and output from the input unit 52 '. And a voltage classifier 54 'that receives a DC power supply and adjusts the voltage to the cell phone charging voltage and the UV lamp voltage. The current is respectively applied to the charging terminal 11 for charging the mobile phone and the socket 21 for lighting the ultraviolet lamp.

In addition, the application of the current to the charging terminal 11 and the socket for the ultraviolet lamp 21 is made by a general manual ON / OFF switch 59 as well as the closing of the lid 30 mentioned above and thus the limit By the operation of the switch 36.

On the other hand, the mobile phone charging device 1 of the present embodiment is provided with a known timer 58, and after detecting the time that the mobile phone 2 is charged and / or the time the ultraviolet light is irradiated, the time and the set time and it is preferable to be notified to a user in comparison, but it is more preferable that it is a structure which can make an alarm sound or light an alarm light based on the detection time of the said timer 58.

On the other hand, Figures 4a and 4b is a view showing a mobile phone charging device 1 according to another embodiment of the present invention.

In the description of the present embodiment, the contents described in the previous embodiment have been omitted for duplication, and the same reference numerals as in the previous embodiment are used for the components having the same function as the previous embodiment.

As shown in Figs. 4A and 4B, the mobile phone charging device 1 of the present embodiment further includes an air purifying unit 60 at the bottom thereof, and the air purifying unit 60 is in parallel. A discharge electrode having a dust collecting electrode 62 having a plurality of arranged rectangular hollows 62a, and a plurality of discharge needles 64a inserted into the rectangular hollow 62a of the dust collecting electrode 62 and positioned at the center thereof. (64), an insulating housing (66) in which the dust collecting electrode (62) is detachably fitted, a prefilter (68) located in front of the filter to filter out large dust such as hair, and a discharge to suck the outside air. A known intake fan (not shown) located behind the electrode 64 is included.

Therefore, when the intake fan (not shown) is driven and the negative electrode voltage and the positive high voltage are applied to the dust collecting electrode 62 and the discharge electrode 64, the external turbid air is prefiltered. Through the square hole (62a) of the dust collecting electrode 62, and the dust (usually cations) in the turbid air passing through it is charged to adhere to the discharge electrode 62 having a negative (-) high voltage The dust is filtered out.

At this time, the cations generated in the discharge electrode 62 are neutralized by the negative high voltage of the dust collecting electrode 64, so that only negative ions are mixed with the outside air, which is beneficial to the body. To be discharged.

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On the other hand, the insulating housing 66 is made of an insulating material in order to prevent the negative high voltage applied to the collecting electrode 62 from being transferred to another part of the mobile phone charging device 1 or to the outside of the charging device 1. .

In addition, although not shown in the drawings, a hepa filter and / or an activated carbon filter may be further installed immediately behind the prefilter 68, which is obvious to those skilled in the art, and thus, the specification Detailed description has been omitted.

As described above, the mobile phone charging device according to the present invention can sterilize the entire mobile phone including the transmitter which is easily contaminated by bacteria at the same time as the charging of the mobile phone, so that the user can use the mobile phone hygienically. The UV lamp used is used as a lamp to provide a visual display effect.

In addition, the present invention is configured so that the ultraviolet lamp can be turned on only when the lid made of a crystal is closed, it has an effect that can prevent the user from being directly exposed to harmful ultraviolet rays.

In addition, the present invention, as well as the charging function of the mobile phone, the function of sterilization of the mobile phone and the illumination by the ultraviolet lamp, as well as the air purifier is provided on its own to remove the muddy air indoors or in the vehicle, thereby providing comfort to the user can do.

In addition, the present invention has the advantage that the sterilization of the mobile phone is being charged, as well as other cell phones can be maintained and sterilized, so that many mobile phones can be sterilized simultaneously.

Similar Documents

Publication	Publication Date	Title
US8964405B2	2015-02-24	Portable electronic device sanitizer
EP0966401B1	2006-04-05	Hand-held ultraviolet water purification system
US6753537B2	2004-06-22	Portable toothbrush case with UV lamp
DE112014001503T5	2015-12-17	Ultraviolet disinfection housing
CN202236462U	2012-05-30	Rotating door type multi-purpose ultraviolet disinfection device
US6629766B2	2003-10-07	Illuminating address indication device
US4710634A	1987-12-01	Sanitary door handle having an upper housing and a spacer element
CN202554545U	2012-11-28	Intelligent controller for ultraviolet sterilization lamps and intelligent control sterilization system
US20090123331A1	2009-05-14	Uv sterilization of user interface fomites
CN201418882Y	2010-03-10	Sterilizing device for mobile phone
CN102824628	2014-12-17	Mobile multimedia terminal having disinfection and sterilization functions
ES2746745T3	2020-03-11	Storage container for electric oral hygiene device
US8819708B2	2013-07-09	Sanitizer for portable electronic devices
DE60112969T2	2006-04-27	Uv pasteurizer
US20040140347A1	2004-07-22	Sanitizing secure and safe mail box
CN105972705B	2019-05-31	A kind of air disinfection and purification smart machine
EP1406340A4	2007-05-16	Storage battery device and power source apparatus comprising it
US9623136B2	2017-04-18	Systems and methods for surface decontamination
TW389675B	2000-05-11	Portable sterilizer
US6655577B2	2003-12-02	Sanitizing secure and safe mail box
AU2003206711A1	2003-07-30	Device for raising or cultivating cells in a container-like receptacle
EP1362540A3	2004-02-11	Cultivating apparatus with sterilizing lamp
JP2004299841A	2004-10-28	Garbage can
KR200387204Y1	2005-06-20	A light stand for multi fuction
WO2000038740A2	2000-07-06	Method and apparatus for sterilizing small objects

Priority And Related Applications

Parent Applications (1)

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Application	Priority date	Filing date	Relation	Title
KR1020030069281A	2003-10-06	2003-10-06	Division	electrical charging apparatus for mobile phone with disinfection and illumination ability

Priority Applications (1)

Application	Priority date	Filing date	Title
KR20030031349U	2003-10-06	2003-10-06	electrical charging apparatus for mobile phone with disinfection and illumination ability

Applications Claiming Priority (1)

Application	Filing date	Title
KR20030031349U	2003-10-06	electrical charging apparatus for mobile phone with disinfection and illumination ability

Legal Events

Date	Code	Title	Description
2003-10-06	U107	Dual application of utility model	
2004-01-03	REGI	Registration of establishment	
2004-01-26	T201	Request for technology evaluation of utility model	
2004-12-07	T701	Written decision to grant on technology evaluation	
2004-12-29	G701	Publication of correction	
2005-01-04	LAPS	Lapse due to unpaid annual fee	

Concepts

machine-extracted

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Name	Image	Sections	Count	Query match
illumination		title,claims,description	7	0.000
desinfective		title,description	2	0.000
sterilising		claims,abstract,description	40	0.000
materials		claims,abstract,description	7	0.000
air		claims,description	12	0.000
Jaw		claims,description	2	0.000
irradiating		claims,description	2	0.000
partition		claims	1	0.000
germicidal		abstract,description	2	0.000

Show all concepts from the description section

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(74) 대리인 김윤배

기초적요건 심사관 : 전용혜

기술평가청구 : 없음

(54)살균기능 및 조명기능을 갖는 휴대폰 충전장치

요약

본 고안은, 살균 자외선 램프와 휴대폰의 충전단자가 투명 또는 반투명의 크리스탈 뚜껑에 의해 개폐될 수 있는 장치 내부에 위치되어, 휴대폰의 충전기능 및 살균기능은 물론이고 조명기능을 동시에 수행할 수 있는 휴대폰 충전장치에 관한 것으로서, 상기 자외선 램프(20)가 부설되어지는 오목한 공간을 구비하는 살균함(10)과; 상기 살균함(10)의 저면에 마련되어 상기 휴대폰의 배터리단자(2a)와 분리가능하게 접속되는 충전단자(11)와; 상기 살균함(10)을 개폐하도록 회동가능하게 설치된 채 상기 자외선 램프(20)가 외부로 보여질 수 있도록 투명 또는 반투명 크리스탈 소재로 되어 있는 뚜껑(30)을 포함하는 것을 특징으로 한다.

대표도

도 3

색인어

살균, 자외선, 휴대폰, 충전

명세서

도면의 간단한 설명

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도 1은 본 고안의 일 실시예에 따른 휴대폰 충전장치를 도시한 사시도.

도 2는 도 1 휴대폰 충전장치를 분해하여 도시한 분해사시도.

도 3은 도 1 및 도 2 휴대폰 충전장치의 단면도.

도 4a 및 도 4b는 옥내용 및 차량용으로 되는 본 고안의 휴대폰 충전장치에 있어서의 전원공급부를 각각 도시한 블록도.

도 5는 본 고안의 다른 실시예에 따른 휴대폰 충전장치를 도시한 사시도.

도 6은 5 실시예에 따른 휴대폰 충전장치의 중요 부분을 분리하여 도시한 분리 사시도.

고안의 상세한 설명

고안의 목적

고안이 속하는 기술 및 그 분야의 종래기술

본 고안은 휴대폰 충전장치에 관한 것으로서, 보다 상세하게는, 살균 자외선 램프와 휴대폰의 충전부가 투명 또는 반투명 소재의 뚜껑에 의해 개폐될 수 있는 장치 내부에 위치되어, 휴대폰의 충전기능 및 살균기능은 물론이고 조명기능을 동시에 수행할 수 있는 휴대폰 충전장치에 관한 것이다.

본 명세서에서의 용어 "휴대폰"은 모든 종류의 휴대용 기기를 의미하는 것으로서, 일반적인 휴대폰은 물론이고, PDA, MP3 등을 모두 포함할 수 있는 의미의 것이다.

일반적으로, 휴대폰의 송신부는 송신자의 음성신호를 받아들여 기기 내부로 전달하는 기능을 하는데, 그 특성상 송신자의 입에서 나오는 타액에 의해 오염되기 쉽고 휴대폰 자체의 온도 및 이에 따른 습도에 의해 세균번식이 쉬운 상태로 존재하게 된다.

또한, 휴대폰 사용자들은, 휴대폰 본체를 오염된 손으로 잡아 사용하고, 휴대폰을 가방 또는 주머니와 같이 각종 세균에 노출될 수 있는 공간에 보관하는 것이 일반적이어서, 휴대폰은 그 송신부뿐만 아니라 본체부 또한 각종 세균에 의해 오염될 소지가 많다.

이에 대해, 기존의 휴대폰 충전기를 개량하여 휴대폰이 충전을 위해 안착되어질 때 안착된 휴대폰의 송신부 부근을 자외선 램프가 조사하도록 되어 있는 휴대폰 충전기가 제안된 바 있는데, 이 휴대폰 충전기는 2003년 5월 1일자 국내에서 출원되어 공개된 특허공개 제 2003-34745호에 잘 개시되어 있다.

하지만, 이러한 종래의 휴대폰 충전기는 살균의 범위가 휴대폰의 송신부에만 국한되어 사용자의 손 또는 보관장소에서 휴대폰의 본체부에 오염된 세균에 대해서는 대비하지 못하는 문제점을 가지고 있었다.

또한, 자외선 램프의 부설로 인해 충전기 자체의 제조비용이 상승하는 것에 비해 그 기능이 송신부의 살균기능만을 가져 그 효용성이 떨어진다는 문제점을 또 한 가지고 있었다.

고안이 이루고자 하는 기술적 과제

따라서, 본 고안은, 상기한 종래기술의 문제점을 해결하기 위해 안출된 것으로서, 살균 자외선 램프와 휴대폰의 충전부가 투명 또는 반투명 소재의 뚜껑에 의해 개폐될 수 있는 장치 내부에 위치되게 하여, 자외선 램프에 의해 휴대폰의 송신부는 물론이고 휴대폰 전체가 살균되어질 수 있도록 해주며, 크리스탈 뚜껑을 통과하여 나오는 자외선 빛을 조명으로 이용할 수 있는 휴대폰 충전장치를 제공하는 것을 그 목적으로 한다.

고안의 구성 및 작용

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상술한 목적을 달성하기 위해, 본 고안은, 전원공급부에서 미리 분류된 다른 전압의 전류를 이용하여 휴대폰을 충전시키고 자외선 램프를 점등시키는 휴대폰 충전장치를 제공하며, 상기 휴대폰 충전장치는, 상기 자외선 램프가 부설되어지는 오목한 공간을 구비하는 살균함과; 상기 살균함의 저면에 마련되어 상기 휴대폰의 배터리단자와 분리가능하게 접속되는 충전단자와; 상기 살균함을 개폐하도록 회동가능하게 설치된 채 상기 자외선 램프가 외부로 보여질 수 있도록 투명 또는 반투명 크리스탈 소재로 되어 있는 뚜껑을 포함하는 것을 특징으로 한다.,

여기에서, 상기 자외선 램프는 하단에 접속단자를 구비한 채 상기 살균함의 내측 저면에 마련된 소켓에 접속된 채 입설되어지며, 상기 충전단자는 상기 소켓보다 높게 위치하여 상기 휴대폰의 송신부가 자외선에 의해 조사되는 양을 증가시키며, 상기 살균함의 내부에는 상기 휴대폰 및 상기 자외선 램프를 경사진 상태 및 입설된 상태로 안정되게 유지시키는 입설유지구가 수평상태로 지지되어 있으며, 상기 살균함의 내벽에는 상기 자외선 램프로부터 나온 자외선을 반사하여 그 반사된 자외선을 상기 휴대폰의 배면에 조사하기 위한 반사판(14)이 마련되어진 것이 바람직하다.

또한, 본 고안의 휴대폰 충전장치는 상기 뚜껑의 닫힘에 의해 상기 자외선 램프에 전류를 인가시켜 그 자외선 램프를 점등시키는 리밋 스위치를 더 포함하는 것이 바람직하다.

또한, 상기 입설유지구는, 상기 살균함의 내벽에 마련된 지지턱에 수평되게 지지되어진 채, 복수의 유지틀을 구획형성하는 다수의 격벽을 구비하며, 상기 복수의 유지틀은, 자외선 램프를 직립 입설되게 유지하는 하나의 램프 유지틀과, 상기 휴대폰을 경사지게 유지시키는 하나의 휴대폰 유지틀과, 다른 휴대폰을 세워 유지시키는 적어도 하나의 보조 휴대폰 유지틀로 구성되어진 것이 바람직하다.

추가로, 본 고안의 휴대폰 충전장치는 상기 살균함의 아래쪽에 마련되어져 외부의 공기를 정화하는 공기정화유닛을 더 포함하는 것이 바람직하다.

<실시예>

이하에서는 첨부된 도면을 참조로 하여 본 고안의 바람직한 실시예들이 상세하게 설명되어질 것이다.

도 1은 본 고안의 일 실시예에 따른 휴대폰의 충전장치의 사시도를 도시하고, 도 2는 도 1 휴대폰의 충전장치의 분리사시도를 도시하며, 도 3은 도 1 및 도 2 휴대폰 충전장치의 단면도를 도시한다.

도 1 내지 도 3에 도시된 바와 같이, 본 실시예에 따른 휴대폰 충전장치(1)는, 살균함(10)과, 그 살균함(10) 내에 부설된 자외선 램프(20)와, 상기 살균함 내에 마련되어 휴대폰(2)의 충전을 허용하는 충전단자(11)와, 상기 살균함의 개폐시키도록 설치된 크리스탈 소재의 뚜껑(30)을 포함한다.

본 실시예에서, 상기한 살균함(10)은 전체적으로 스탠드형 구조를 이루고 있으며, 그 내부에는 휴대폰(2)의 안착 및 자외선 램프(20)의 부설을 허용하는 오목한 공간이 형성되어 있다.

본 실시예에서의 자외선 램프(20)는, 살균함(10)의 내측 저면에 마련된 소켓(21)에 접속되어 그 살균함(10) 내에서 입설되는 구조를 이루고 있으며, 이를 위해, 일단에만 접속단자(22)를 구비하고 있다.

또한, 상기 자외선 램프(20)는 이하 설명될 입설유지구(40)에 그 중간부분이 유지되어 보다 안정되게 입설되어지는 구조를 이루고 있으며, 이 입설유지구(40)는 살균함(10)의 내벽에 단차형성된 지지턱(12) 상에 수평되게 걸쳐 지지된 채 자외선 램프(20)의 유지에 기여하는 한편 이하 상세히 설명될 휴대폰(2) 및 기타 살균대상물(미도시됨)의 유지에도 관여한다.

한편, 상기한 휴대폰(2)은 상기한 입설유지구(40)에 경사지게 마련된 휴대폰 유지틀(42)에 의해 경사되게 유지된 채 살균함(10)의 저면에 마련된 충전단자(11)가 휴대폰(2)의 배터리단자(2a)와 분리가능하게 접속되는 것에 의해 충전되어질 수 있다. 여기에서, 상기한 휴대폰(2)이 폴더형 휴대폰의 특성상 송신부의 노출을 위해 휴대폰 커버가 열려진 채 유지되고 있지만, 이는 본 고안을 한정하는 것이 아니 며, 예를 들면, 플립형 휴대폰인 경우 휴대폰 커버(또는 플립)가 열려지지 않은 상태로 상기 유지틀(42)에 의해 유지될 수 있으며, 이는 당업자에게 자명한 사항이다.

상기의 충전단자(11)는, 휴대폰(2)의 송신부가 자외선 램프(20)를 향하도록 그 위치가 정해지는 한편, 단차진 살균함(10)의 내측 저면에 의해 상기한 자외선 램프(20)의 소켓(21)보다 높게 위치하여 휴대폰의 송신부(2b)가 자외선 램프(20)에 의해 보다 많이 조사될 수 있도록 되어 있다.

또한, 살균함(10)의 내벽에는 자외선 램프(20)로부터 나온 자외선을 반사시킬 수 있는 반사판(14)이 부착되어 있는데, 이 반사판(14)은 자외선을 반사하여 자외선 램프(20)로부터 직접 자외선을 조사받지 못하는 휴대폰(2)의 배면에까지 자외선이 조사될 수 있도록 해준다.

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앞서 언급된 입설유지구(40)에 대해 보다 구체적으로 살펴보면, 이 입설유지구(40)는, 도 1에 가장 잘 도시된 바와 같이, 자외선램프(20)의 외곽면에 상응하는 반원형의 램프 유지틀(44), 휴대폰(2)이 경사지게 끼워질 수 있게 마련된 휴대폰 유지틀(42), 그리고, 충전되는 휴대폰이 아닌 다른 휴대폰을 세워 유지시킬 수 있는 보조 유지틀(46)을 구비하고 있는데, 이 유지틀(42, 44, 46)들은 입설유지구(40)에 일체로 마련된 다수의 격벽(47)에 의해 구획형성되어지는 것이다.

앞서 간략히 언급된 바와 같이, 본 실시예의 휴대폰 충전장치(1)는 자외선을 차단하는 투명 또는 반투명의 크리스탈 소재로 된 뚜껑(30)을 포함하는데, 이 뚜껑(30)은 살균함의 배면에 마련된 힌지축(32)을 중심으로 회동되면서, 사용자에 의해 개폐될 수 있도록 되어 있으며, 그 정면에는 사용자에 의해 쉽게 들어올려질 수 있도록 손가락 걸림부(34)를 일체로 구비하고 있다.

이 뚜껑(30)은 유해 자외선을 차단하는 기능을 하는 동시에 자외선 램프(20)로부터 나온 빛을 조명으로 이용할 수 있게 하여 조명등의 기능을 부가시켜 주는데, 특히, 크리스탈 소재의 반투명 색상에 따라 다양한 분위기를 갖는 파스텔톤의 조명을 사용자에게 제공할 수 있다.

또한, 본 실시예의 휴대폰 충전장치(1)는, 뚜껑(30)이 살균함(10)에 대해 닫혀질 때에만 자외선 램프(20), 또는, 자외선 램프(20) 및 충전단자(11)에 전류가 통전되어일 수 있도록 되어 있는데, 이는 살균함(10)의 상단 모서리 부근에 마련된 리밋 스위치(36)가 뚜껑(30)과 접촉하여 자외선 램프용 소켓(21) 및/또는 휴대폰용 충전단자(11)에 전류 인가시키는 것에 의해 구현되어진다. 이 때, 본 실시예의 리밋 스위치(36)는 널리 알려진 바와 같이 스프링(미도시됨)에 의해 지지된 채 기계적 접촉에 의해 상승 및 하강하면서 전기 접점(미도시됨)을 개폐하도록 구성된 것이다.

한편, 본 실시예의 휴대폰 충전장치는 전원공급부(50 또는 50')를 포함하고 있는데, 이 전원공급부(50 또는 50')는 본 실시예의 휴대폰 충전장치(1)를 옥내용 또는 차량용으로 사용하는가에 따라 그 구성을 달리 하며, 이는 당업자에게 자명한 사항이다.

옥내용 전원공급부(50)는, 도 3a에 도시된 바와 같이, 공지의 옥내용 플러그(미도시됨)를 통해 교류전원을 입력받는 입력부(52)와, 그 입력부(52)로부터 출력되는 교류전원을 입력받아 직류전압으로 변환하는 A/D 변환부(54)와, 상기 A/D 변환부(54)로부터 출력되는 직류전압을 입력받아 휴대폰 충전용 전압 및 자외선 램프용 전압으로 조정하는 전압분류부(56)를 포함하며, 그 전압분류부(56)로부터 나온 휴대폰 충전용 전압의 전류 및 자외선 램프용 전압의 전류는 각각 휴대폰 충전을 위한 충전단자(11) 및 자외선 램프의 점등을 위한 소켓(21)에 각각 인가되어진다.

또한, 차량용 전원공급부(50')는, 도 3b에 도시된 바와 같이, 공지의 시거잭(미도시됨)을 통해 직류전원을 입력받는 입력부(52')와, 그 입력부(52')로부터 출력되는 직류전원을 입력받아 휴대폰 충전용 전압 및 자외선 램프용 전압으로 조정하는 전압분류부(54')를 포함하며, 그 전압분류부(54')로부터 나온 휴대폰 충전용 전압의 전류 및 자외선 램프용 전압의 전류는 각각 휴대폰 충전을 위한 충전단자(11) 및 자외선 램프의 점등을 위한 소켓(21)에 각각 인가되어진다.

덧붙여, 상기 충전단자(11) 및 자외선 램프용 소켓(21)에 대한 전류의 인가는 일반적인 수동식 ON/OFF 스위치(59)에 의해 이루어지는 것은 물론이고 앞서 언급된 뚜껑(30)의 닫힘 및 이에 따른 리밋 스위치(36)의 작동에 의해 이루어진다.

한편, 본 실시예의 휴대폰 충전장치(1)는, 공지의 타이머(timer;58)를 구비하여 휴대폰(2)이 충전되는 시간 및/또는 자외선이 조사된 시간을 감지한 후 그 시간을 설정시간과 비교하여 사용자에게 알려주도록 되어 있는 것이 바람직한데, 상기 타이머(58)의 감지시간을 기초로 하여, 경보음을 내거나 경보등을 점등시킬 수 있는 구조로 되어 있는 것이 보다 바람직하다.

한편, 도 4a 및 도 4b는 본 고안의 다른 실시예에 따른 휴대폰 충전장치(1)를 도시하는 도면이다.

본 실시예를 설명함에 있어서, 앞선 실시예에서 설명된 내용은 그 중복을 위해 생략되어졌고, 앞선 실시예와 같은 기능을 하는 구성요소에 대해서는 앞선 실시예와 같은 도면부호가 사용되어졌다.

도 4a 및 도 4b에 도시된 바와 같이, 본 실시예의 휴대폰 충전장치(1)는, 그 하부에 공기정화유닛(60)을 추가로 포함하고 있으며, 이 공기정화유닛(60)은, 병렬상으로 배열된 다수의 사각 중공(62a)을 갖는 집진전극(62)과, 그 집진전극(62)의 사각 중공(62a)에 삽입되어 그 중앙에 위치하는 다수의 방전침(64a)을 구비한 방전전극(64)과, 상기 집진전극(62)이 착탈가능하게 끼워지는 절연하우징(66)과, 전방에 위치하여 머리카락 등 큰 먼지를 걸러주는 프리필터(68)와, 외부의 공기를 빨아들이기 위해 방전전극(64) 뒤쪽에 위치하고 있는 공지의 흡기휀(미도시됨)을 포함하고 있다.

따라서, 흡기휀(미도시됨)이 구동되고 집진전극(62) 및 방전전극(64)에 각각 음(-)의 고전압 및 양(+)의 고전압이 걸리면, 외부의 탁한 공기가 프리필터(68)를 거쳐 집진전극(62)의 사각중공(62a)을 통과되는 동시에 그 통과되는 탁한

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공기 중의 먼지(통상 양이온을 띰)가 대전되어 음(-)의 고전압을 띠는 방전전극(62)에 고착되어 먼지가 걸러지게 된다.

이 때, 방전전극(62)에서 발생된 양이온은 집진전극(64)의 음(-)의 고전압에 의해 방전 중화되어, 음이온만이 외부의 공기와 혼합되어지게 되며, 이는 몸에 이로운 음이온이 외부로 배출되게 해주는 기능을 한다.

한편, 상기한 절연하우징(66)은 집진전극(62) 걸리는 음의 고전압이 휴대폰 충전장치(1)의 다른 부분 또는 그 충전장치(1)의 외부로 전달되는 것을 방지하기 위해 절연성 소재로 이루어져 있다.

추가로, 도면에는 도시되어 있지 않지만, 프리필터(68)의 바로 뒤쪽에 헤파필터(hepa filter) 및/또는 활성탄 필터 등을 추가로 설치할 수도 있는데, 이는 당업자에게 자명한 사항이며 따라서 본 명세서에서는 그 구체적인 설명이 생략되었다.

고안의 효과

상술한 바와 같이, 본 고안에 따른 휴대폰 충전장치는, 휴대폰의 충전과 동시에 세균에 의해 오염되기 쉬운 송신부를 포함한 휴대폰 전체를 살균할 수 있어, 사용자가 휴대폰을 위생적으로 사용할 수 있게 해주는 한편, 살균에 사용되는 자외선 램프를 조명등으로 이용하여 시각적인 디스플레이 효과 또한 제공한다.

또한, 본 고안은, 크리스탈로 되어 있는 뚜껑이 닫혀진 상태에서만 자외선 램프가 점등될 수 있게 구성되어 있어, 사용자가 유해 자외선에 직접 노출되는 것을 방지해줄 수 있는 효과를 갖는다.

또한, 본 고안은, 휴대폰의 충전기능, 휴대폰의 살균기능 및 자외선 램프에 의한 조명등으로서의 기능은 물론이고, 공기정화기가 자체에 마련되어 있어 옥내 또는 차량 내의 탁한 공기를 제거하고 이에 따라 사용자에게 안락함을 제공할 수 있다.

덧붙여, 본 고안은 충전되고 있는 휴대폰의 살균은 물론이고 기타 다른 휴대폰을 유지하여 살균시킬 수 있는 구조로 되어 있어 많은 휴대폰의 동시 살균도 가능하다는 이점을 갖는다.

(57) 청구의 범위

청구항 1.

전원공급부에서 미리 분류된 다른 전압의 전류를 이용하여 휴대폰(2)을 충전시키고 자외선 램프(20)를 점등시키는 휴대폰 충전장치(1)로서,

상기 자외선 램프(20)가 부설되어지는 오목한 공간을 내부에 구비하는 살균함(10)과;

상기 살균함(10)의 저면에 마련되어 상기 휴대폰의 배터리단자(2a)와 분리가능하게 접속되는 충전단자(11)와;

상기 살균함(10)을 개폐하도록 회동가능하게 설치된 채 상기 자외선 램프(20)가 외부로 보여질 수 있도록 투명 또는 반투명 소재로 되어 있는 뚜껑(30)을 포함하는 것을 특징으로 하는 살균기능 및 조명기능을 갖는 휴대폰 충전장치

청구항 2.

제 1항에 있어서,

상기 자외선 램프(20)는 하단에 접속단자(22)를 구비한 채 상기 살균함(10)의 내측 저면에 마련된 소켓(21)에 접속된 채 입설되어지며,

상기 충전단자(11)는 상기 소켓(21)보다 높게 위치하여 상기 휴대폰(2)의 송신부(2b)가 자외선에 의해 조사되는 양을 증가시키며,

상기 살균함(10)의 내부에는 상기 휴대폰(2) 및 상기 자외선 램프(20)를 경사진 상태 및 입설된 상태로 안정되게 유지시키는 입설유지구(40)가 수평상태로 지지되어 있으며,

상기 살균함(10)의 내벽에는 상기 자외선 램프로(20)부터 나온 자외선을 반사하여 그 반사된 자외선을 상기 휴대폰(2)의 배면에 조사하기 위한 반사판(14)이 마련되어진 것을 특징으로 하는 살균기능 및 조명기능을 갖는 휴대폰 충전

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장치.

청구항 3.
제 1항에 있어서,

상기 뚜껑(30)의 닫힘에 의해 상기 자외선 램프(20)에 전류를 인가시켜 그 자외선 램프(20)를 점등시키는 리밋 스위치(36)를 더 포함하는 것을 특징으로 하는 살균기능 및 조명기능을 갖는 휴대폰 충전장치.

청구항 4.
제 2항에 있어서,

상기 입설유지구(40)는, 상기 살균함(10)의 내벽에 마련된 지지턱(12)에 수평되게 지지되어진 채, 복수의 유지틀(42, 44, 46)을 구획형성하는 다수의 격벽(47)을 구비하며,

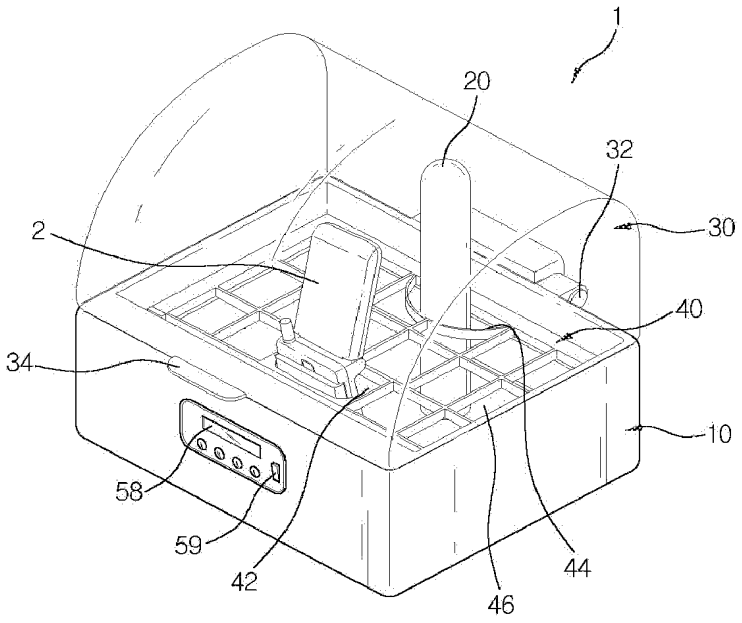
상기 복수의 유지틀(42, 44, 46)은, 자외선 램프(20)를 직립 입설되게 유지하는 하나의 램프 유지틀(44)과, 상기 휴대폰(2)을 경사지게 유지시키는 하나의 휴대폰 유지틀(42)과, 기타 다른 휴대폰을 세워 유지시키는 적어도 보조 유지틀(46)로 구성되어진 것을 특징으로 하는 살균기능 및 조명기능을 갖는 휴대폰 충전장치.

청구항 5.
제 1항 내지 제 4항 중 어느 한 항에 있어서,

상기 살균함(10)의 아래쪽에 마련되어져 외부의 공기를 정화하는 공기정화유닛(60)을 더 포함하는 것을 특징으로 하는 살균기능 및 조명기능을 갖는 휴대폰 충전장치.

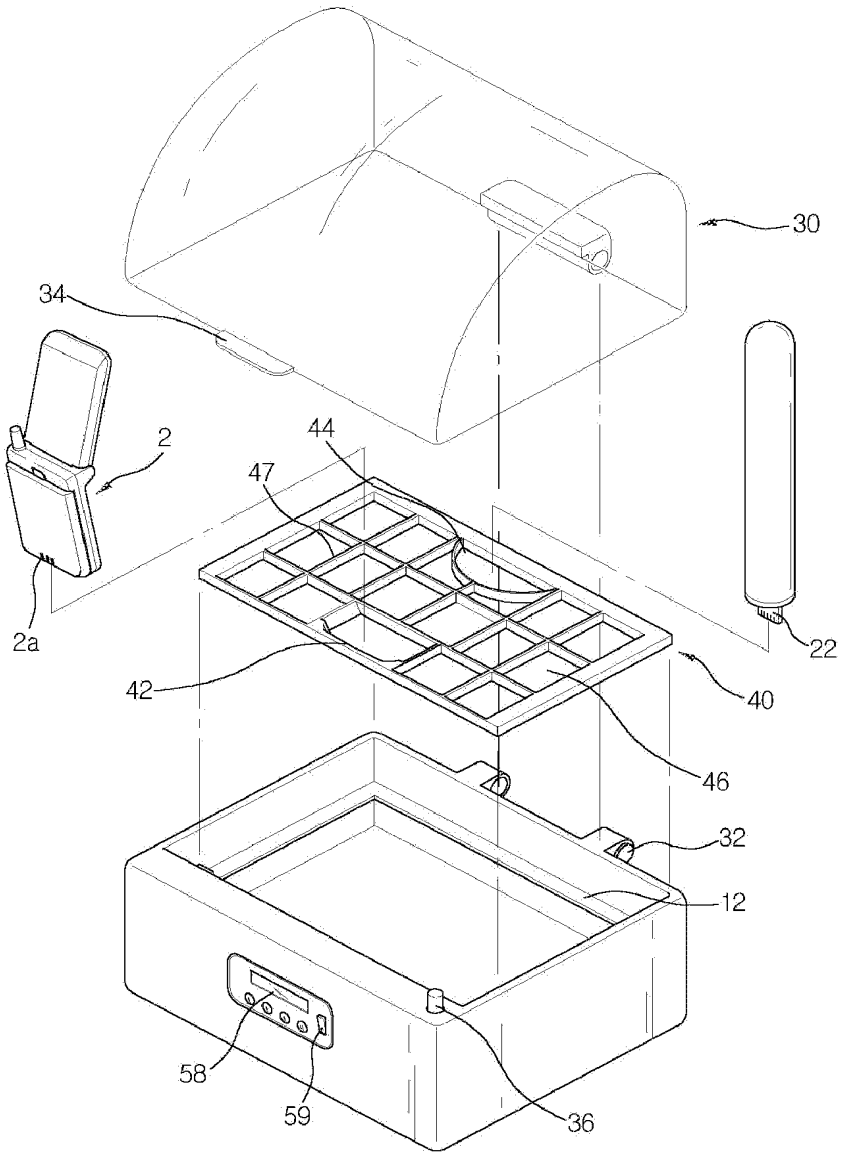
도면

도면1



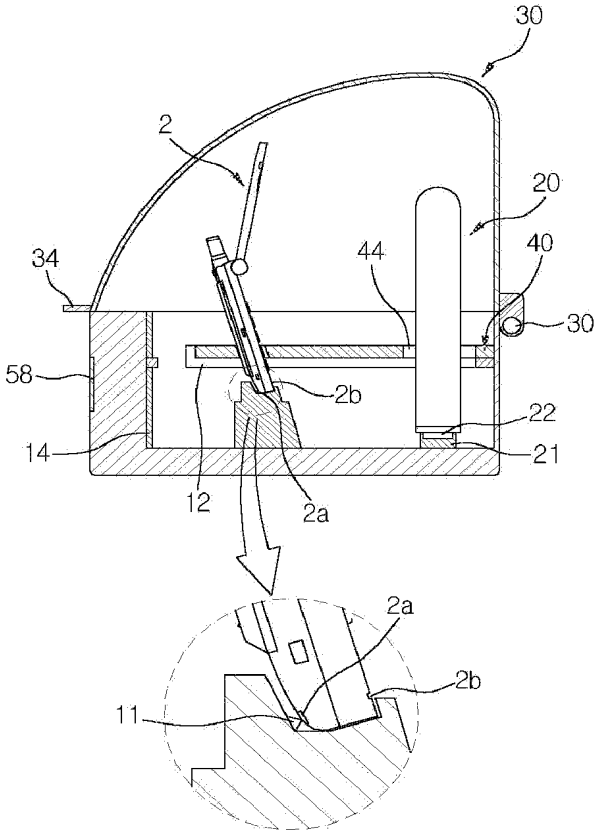
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도면2

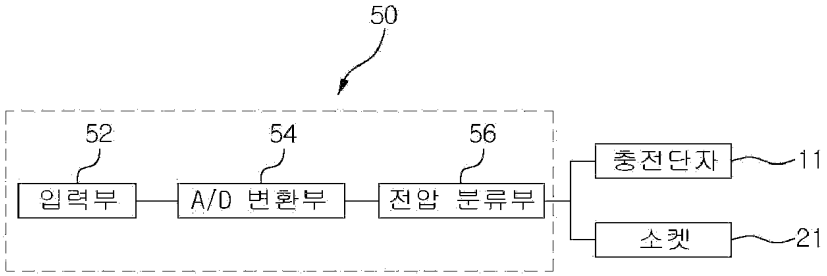


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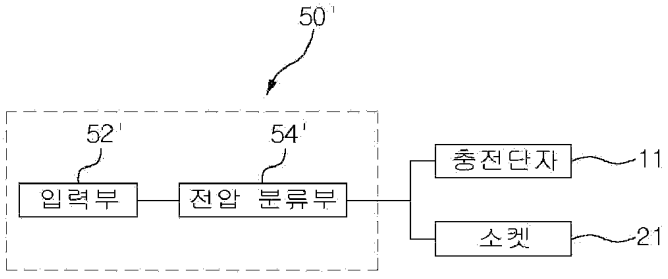
도면3



도면4a

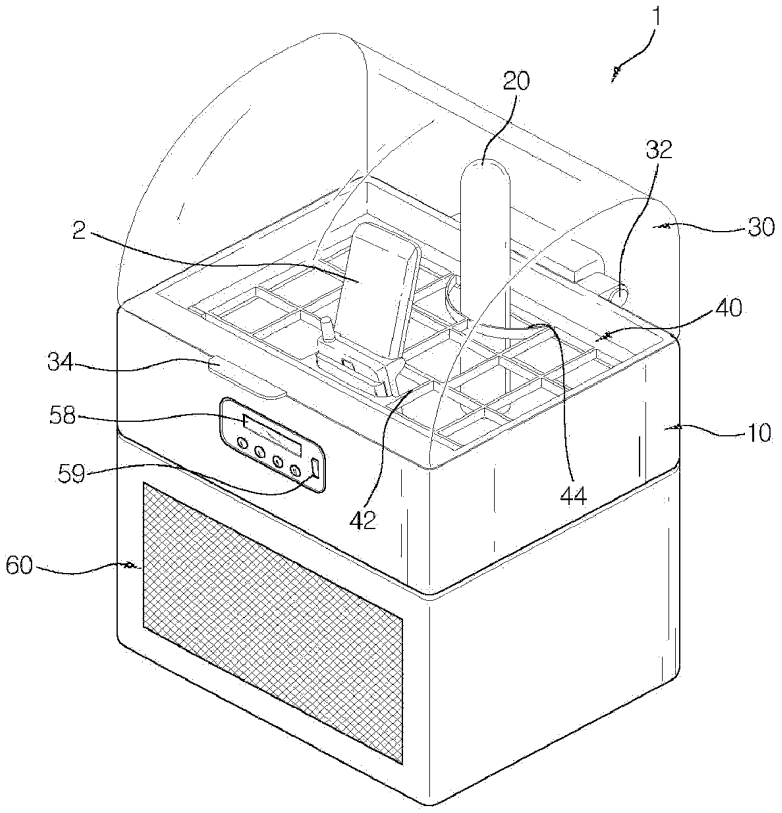


도면4b

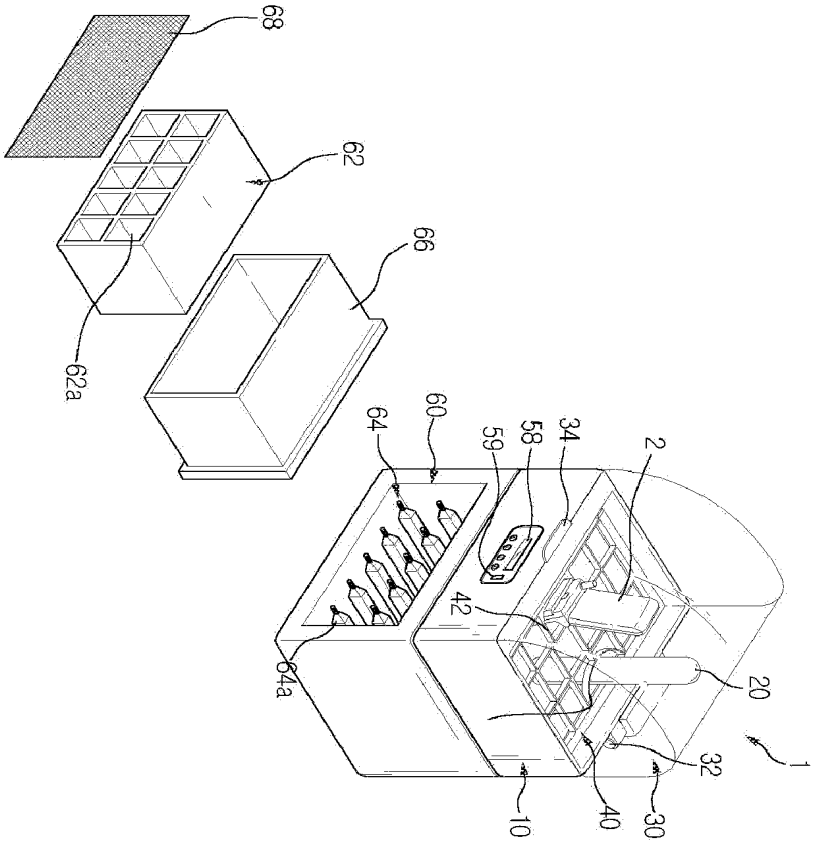


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도면5



도면6



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ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/804,396	**02/20/2025 04:50:26 PM Z ET**	**AGD0100.7**

Title of Invention

SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	7738	FILED BY	Kateryna Ilchyshyn
PATENT CENTER #	69270724	AUTHORIZED BY	Quincy Harrison
CUSTOMER #	62124	FILING DATE	08/14/2024
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Dean Schumacher

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
DA / 505080	**E20252JG50537574**	**Quincy Harrison**

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
2806	SUBMISSION OF AN INFORMATION DISCLOSURE STATEMENT	112.00	1	112.00
2832	FILING AN INFORMATION DISCLOSURE STATEMENT THAT CAUSES THE CUMULATIVE NUMBER OF APPLICANT-PROVIDED ITEMS OF INFORMATION TO EXCEED 50 BUT NOT EXCEED 100	200.00	1	200.00
			TOTAL AMOUNT:	**$312.00**

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.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for 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

National Stage of an International Application under 35 U.S.C. 371

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.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/804,396	08/14/2024	Dean Schumacher	AGD0100.7	7738

62124 7590 04/07/2025

QUINN IP Law
21500 Haggerty Road
Suite 300
Northville, MI 48167

EXAMINER
KO, JASON Y

ART UNIT	PAPER NUMBER
1711	

NOTIFICATION DATE	DELIVERY MODE
04/07/2025	ELECTRONIC

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

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USDocketing@quinniplaw.com
adomagala@quinniplaw.com

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CORRECTED ***Notice of Allowability***	**Application No.** 18/804,396	**Applicant(s)** Schumacher, Dean	
	Examiner JASON Y KO	**Art Unit** 1711	**AIA (FITF) Status** Yes

-- 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 2/20/25.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☑ The allowed claim(s) is/are 1-20 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

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

   Certified copies:

   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.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ 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. ☑ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 2/20/25.
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.
5. ☐ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☑ Other PTO-90C.

/JASON Y KO/
Primary Examiner, Art Unit 1711

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APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR/ PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
18/804,396	08/14/2024	Schumacher, Dean	AGD0100.7

		EXAMINER	
QUINN IP Law 21500 Haggerty Road Suite 300 Northville, MI 48167		JASON Y KO	
		ART UNIT	PAPER
		1711	20250402

DATE MAILED: _____

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

Commissioner for Patents

The IDS filed 2/20/25 has been considered and is attached to this communication.

/JASON Y KO/
Primary Examiner, Art Unit 1711

PTO-90C (Rev.04-03)

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (01-25)
Approved for use through 11/30/2027. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Application Number	18804396
Filing Date	2024-08-14
First Named Inventor	Dean Schumacher
Art Unit	1711
Examiner Name	Jason Y. Ko
Attorney Docket Number	AGD0100.7

U.S. PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Inventor of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1	4806770	A	1989-02-21	Hylton et al.	
	2	5023460	A	1991-06-11	Foster, Jr. et al.	
	3	6656424	B1	2003-12-02	Deal	
	4	6911177	B2	2005-06-28	Deal	
	5	7175806	B2	2007-02-13	Deal et al.	
	6	7424314	B2	2008-09-09	Park	
	7	7829016	B2	2010-11-09	Deal et al.	
	8	7838846	B2	2010-11-23	Pinsky	

PC.1.19.25

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /J.Y.K/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT		
	Application Number	18804396
	Filing Date	2024-08-14
	First Named Inventor	Dean Schumacher
	Art Unit	1711
	Examiner Name	Jason Y. Ko
	Attorney Docket Number	AGD0100.7

	9	8067750	B2	2011-11-29	Deal	
	10	8177383	B2	2012-05-15	Reuben	
	11	8203124	B2	2012-06-19	Havens et al.	
	12	8296493	B1	2012-10-23	Engelhardt et al.	
	13	8378323	B1	2013-02-19	Spann et al.	
	14	8522917	B1	2013-09-03	Oh et al.	
	15	8816301	B2	2014-08-26	Stibich et al.	

If you wish to add additional U.S. Patent citation information, please click the Add button. Add

U.S. PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Inventor or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear
	1	20020009195	A1	2002-01-24	Schon	
	2	20050023483	A1	2005-02-03	Fenc	

PC.1.19.25

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /J.Y.K/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Application Number	18804396
Filing Date	2024-08-14
First Named Inventor	Dean Schumacher
Art Unit	1711
Examiner Name	Jason Y. Ko
Attorney Docket Number	AGD0100.7

	3	20060147339	A1	2006-07-06	Hunter et al.	
	4	20060188389	A1	2006-08-24	Levy	
	5	20070274879	A1	2007-11-29	Millikin	
	6	20080175761	A1	2008-07-24	Thur et al.	
	7	20090191100	A1	2009-07-30	Deal	
	8	20100044582	A1	2010-02-25	Cooper et al.	
	9	20100096963	A1	2010-04-22	McLaughlin et al.	
	10	20100124040	A1	2010-05-20	Diebel et al.	
	11	20110002821	A1	2011-01-06	Hyde et al.	
	12	20110110819	A1	2011-05-12	Allen et al.	
	13	20110126370	A1	2011-06-02	Reuben	

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /J.Y.K/

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First Named Inventor	Dean Schumacher
Art Unit	1711
Examiner Name	Jason Y. Ko
Attorney Docket Number	AGD0100.7

	14	20120313014	A1	2012-12-13	Stibich et al.	
	15	20120313532	A1	2012-12-13	Stibich et al.	
	16	20130063922	A1	2013-03-14	La Porte et al.	
	17	20130224086	A1	2013-08-29	Stibich et al.	
	18	20130330235	A1	2013-12-12	Stibich et al.	
	19	20140183377	A1	2014-07-03	Bettles et al.	
	20	20140301893	A1	2014-10-09	Stroup et al.	
	21	20140341777	A1	2014-11-20	Deshays et al.	
	22	20160158395	A1	2016-06-09	Hughes et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] ¡	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T[5]

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /J.Y.K/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Application Number	18804396
Filing Date	2024-08-14
First Named Inventor	Dean Schumacher
Art Unit	1711
Examiner Name	Jason Y. Ko
Attorney Docket Number	AGD0100.7

	1	2236317	CN	Y	1996-10-02	HU SHUNYOU		☒
	2	1269602	CN	A	2000-10-11	GAOLITONG SCIENCE & TECHNOLOGY DEVELPMENT CO.		☒
	3	101951004	CN	A	2011-01-19	ZHU YALIN		☒
	4	07265394	JP	A	1995-10-17	OKAYA ELECTRIC IND CO LTD		☒
	5	2012216299	JP	A	2012-11-08	OLYMPUS CORP		☒
	6	20010053840	KR	A	2001-07-02	I & Q TECHNOLOGY CORPORATION CO., LTD		☒
	7	20030033475	KR	A	2003-05-01	SK TELETEC CO., LTD		☒
	8	200338371	KR	Y1	2004-01-14	KWON HYUK DAE		☒
	9	200357216	KR	Y1	2004-07-27	LEE HO-WON		☒
	10	200371154	KR	Y1	2004-12-24	AN SEONG-GYU		☒
	11	200375295	KR	Y1	2005-02-07	ALREADY KYUNG et al.		☒

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First Named Inventor	Dean Schumacher
Art Unit	1711
Examiner Name	Jason Y. Ko
Attorney Docket Number	AGD0100.7

	12	20060012144	KR	A	2006-02-07	PARK, JONG ON et al.		☒
	13	200410373	KR	Y1	2006-03-08	JEONG JUN-WON		☒
	14	20060115457	KR	A	2006-11-09	BAEK, HYO JEONG		☒
	15	200439969	KR	Y1	2008-05-15	AN CHANG-SEON et al.		☒
	16	100956373	KR	B1	2010-05-07	INSUNG CO., LTD.		☒
	17	20110024651	KR	A	2011-03-09	SHIN, DAE HYUN		☒
	18	2004080494	WO	A1	2004-09-23	FUJII et al.		☒
	19	2006022466	WO	A1	2006-03-02	BAEK, HYO-JEONG		☐
	20	2006075894	WO	A1	2006-07-20	BAEK, HYO-JEONG		☐
	21	2007010255	WO	A1	2007-01-25	JAMES et al.		☐
	22	2007036130	WO	A1	2007-04-05	NG, KING LUN		☒

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT		
	Application Number	18804396
	Filing Date	2024-08-14
	First Named Inventor	Dean Schumacher
	Art Unit	1711
	Examiner Name	Jason Y. Ko
	Attorney Docket Number	AGD0100.7

	23	2008040316	WO	A1	2008-04-10	SAIGER, LOTHAR		☒

If you wish to add additional Foreign Patent Document citation information, please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1		☐

If you wish to add additional non-patent literature document citation information, please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature	/JASON Y KO/	Date Considered	04/02/2025

*EXAMINER: Initial if reference considered and whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /J.Y.K/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Application Number	18804396
Filing Date	2024-08-14
First Named Inventor	Dean Schumacher
Art Unit	1711
Examiner Name	Jason Y. Ko
Attorney Docket Number	AGD0100.7

TIMING STATEMENT

Please see 37 CFR 1.97(e) to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☒ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached timing statement under 37 CFR 1.97(e).

☐ A timing statement under 37 CFR 1.97(e) is not submitted herewith.

TIMING FEE

☒ The fee set forth in 37 CFR 1.17(p) has been submitted herewith.

COPIES

☐ An identification of an earlier application pursuant to 37 CFR 1.98(d)(1) is attached.

SIZE FEE ASSERTION

Please see 37 CFR 1.17(v) and the IDS Auto-Load Instructions for completing this form to make the appropriate selection of an assertion under 37 CFR 1.98. For the information disclosure statement (IDS) submitted herewith, the applicant or patent owner certifies the following with respect to the cumulative number of applicant-provided or patent-owner provided items of information submitted to date including those in the accompanying IDS (select only one):

☐ No IDS size fee is required under 37 CFR 1.17(v) at this time.

☒ The IDS is accompanied by the IDS size fee under 37 CFR 1.17(v)(1).

☐ The IDS is accompanied by the IDS size fee under 37 CFR 1.17(v)(2).

☐ The IDS is accompanied by the IDS size fee under 37 CFR 1.17(v)(3).

SIGNATURE

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 11.18. Please see 37 CFR 1.4(d) for the form of the signature.

Signature	/Quincy J. Harrison/	Date (YYYY-MM-DD)	2025-02-20
Name/Print	Quincy J. Harrison	Registration Number	65374

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Application Number	18804396
Filing Date	2024-08-14
First Named Inventor	Dean Schumacher
Art Unit	1711
Examiner Name	Jason Y. Ko
Attorney Docket Number	AGD0100.7

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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.**

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /J.Y.K/

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these record s.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.

4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).

5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.

6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /J.Y.K/

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via the USPTO patent electronic filing system.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (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 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. **Because electronic patent issuance may occur shortly after issue fee payment, any desired continuing application should preferably be filed prior to payment of this issue fee in order not to jeopardize copendency.**

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

62124 7590 01/15/2025
QUINN IP Law
21500 Haggerty Road
Suite 300
Northville, MI 48167

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 transmitted to the USPTO via the USPTO patent electronic filing system or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/804,396	08/14/2024	Dean Schumacher	AGD0100.7	7738

TITLE OF INVENTION: SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$480	$0.00	$0.00	$480	04/15/2025

EXAMINER	ART UNIT	CLASS-SUBCLASS
KO, JASON Y	1711	250-492100

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/AIA/122 or PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or 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 Quinn IP Law
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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Dean Schumacher

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Orchard Lake, MI

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

4a. Fees submitted: ☑ Issue Fee ☑ Publication Fee (if required)

4b. Method of Payment: *(Please first reapply any previously paid fee shown above)*

☑ Electronic Payment via the USPTO patent electronic filing system ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 505080

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

☐ Applicant certifying micro entity status. See 37 CFR 1.29

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

☐ Applicant asserting small entity status. See 37 CFR 1.27

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

☐ Applicant changing to regular undiscounted fee status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Quincy J. Harrison/ Date 4/11/2025

Typed or printed name Quincy J. Harrison Registration No. 65374

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Page 674 of 701

UNITED STATES
PATENT AND TRADEMARK OFFICE

P.O. Box 1450
Alexandria, VA 22313 - 1450
www.uspto.gov

ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/804,396	**04/11/2025 04:30:26 PM Z ET**	**AGD0100.7**

Title of Invention

SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	7738	FILED BY	Kateryna Ilchyshyn
PATENT CENTER #	69972505	FILING DATE	08/14/2024
CUSTOMER #	62124	FIRST NAMED INVENTOR	Dean Schumacher
CORRESPONDENCE ADDRESS	-	AUTHORIZED BY	Quincy Harrison

Documents

TOTAL DOCUMENTS: 1

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
IF transmittal AGD0100.7.pdf	1	Issue Fee Payment (PTO-85B)	926 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
IF transmittal AGD0100.7.pdf	D0A6D67D3010C46D492616401F36F966CF403385582F553906841DD2BFED3EC7E9386B795CFD340FBB74029236EA4E1E51EEAD935F7B090845890DA85486D0EF

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.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for 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

National Stage of an International Application under 35 U.S.C. 371

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.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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ELECTRONIC PAYMENT RECEIPT

APPLICATION #	RECEIPT DATE / TIME	ATTORNEY DOCKET #
18/804,396	**04/11/2025 04:30:26 PM Z ET**	**AGD0100.7**

Title of Invention

SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT

Application Information

APPLICATION TYPE	Utility - Nonprovisional Application under 35 USC 111(a)	PATENT #	-
CONFIRMATION #	7738	FILED BY	Kateryna Ilchyshyn
PATENT CENTER #	69972505	AUTHORIZED BY	Quincy Harrison
CUSTOMER #	62124	FILING DATE	08/14/2024
CORRESPONDENCE ADDRESS	-	FIRST NAMED INVENTOR	Dean Schumacher

Payment Information

PAYMENT METHOD	PAYMENT TRANSACTION ID	PAYMENT AUTHORIZED BY
DA / 505080	**E20254AG31295571**	**Kateryna Ilchyshyn**

FEE CODE	DESCRIPTION	ITEM PRICE($)	QUANTITY	ITEM TOTAL($)
2501	UTILITY ISSUE FEE	480.00	1	480.00
			TOTAL AMOUNT:	**$480.00**

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submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
18/804,396	05/13/2025	12296061	AGD0100.7	7738

62124 7590 04/30/2025

QUINN IP Law
21500 Haggerty Road
Suite 300
Northville, MI 48167

ISSUE NOTIFICATION

The projected patent number and issue date are specified above. The patent will issue electronically. The electronically issued patent is the official patent grant pursuant to 35 U.S.C. § 153. The patent may be accessed on or after the issue date through Patent Center at https://patentcenter.uspto.gov/. The patent will be available in both the public and the private sides of Patent Center. Further assistance in electronically accessing the patent, or about Patent Center, is available by calling the Patent Electronic Business Center at 1-888-217-9197.

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

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

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 Center (https://patentcenter.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 Application Assistance Unit (AAU) of the Office of Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

INVENTOR(s) (Please see PATENT CENTER site https://patentcenter.uspto.gov for additional inventors):

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Ex. 1002
Page 680 of 701

United States of America

To Promote the Progress of Science and Useful Arts

The Director

of the United States Patent and Trademark Office has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this United States

Patent

grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America, and if the invention is a process, of the right to exclude others from using, offering for sale or selling throughout the United States of America, products made by that process, for the term set forth in 35 U.S.C. 154(a)(2) or (c)(1), subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b). See the Maintenance Fee Notice on the inside of the cover.

Acting Director of the United States Patent and Trademark Office

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If the application for this patent was filed on or after December 12, 1980, maintenance fees are due three years and six months, seven years and six months, and eleven years and six months after the date of this grant, or within a grace period of six months thereafter upon payment of a surcharge as provided by law. The amount, number and timing of the maintenance fees required may be changed by law or regulation. Unless payment of the applicable maintenance fee is received in the United States Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period.

Patent Term Notice

If the application for this patent was filed on or after June 8, 1995, the term of this patent begins on the date on which this patent issues and ends twenty years from the filing date of the application or, if the application contains a specific reference to an earlier filed application or applications under 35 U.S.C. 120, 121, 365(c), or 386(c), twenty years from the filing date of the earliest such application ("the twenty-year term"), subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b), and any extension as provided by 35 U.S.C. 154(b) or 156 or any disclaimer under 35 U.S.C. 253.

If this application was filed prior to June 8, 1995, the term of this patent begins on the date on which this patent issues and ends on the later of seventeen years from the date of the grant of this patent or the twenty-year term set forth above for patents resulting from applications filed on or after June 8, 1995, subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b) and any extension as provided by 35 U.S.C. 156 or any disclaimer under 35 U.S.C. 253.

Form PTO-377C (Rev 09/17)

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(12) **United States Patent**
Schumacher

(10) **Patent No.: US 12,296,061 B2**
(45) **Date of Patent: May 13, 2025**

(54) **SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT**

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(73) Assignee: **Dean Schumacher**, Orchard Lake, MI (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **18/804,396**

(22) Filed: **Aug. 14, 2024**

(65) **Prior Publication Data**

US 2024/0399003 A1 Dec. 5, 2024

Related U.S. Application Data

(63) Continuation of application No. 18/508,686, filed on Nov. 14, 2023, which is a continuation of application No. 17/496,237, filed on Oct. 7, 2021, now Pat. No. 11,813,373, which is a continuation of application No. 17/032,187, filed on Sep. 25, 2020, now Pat. No.
(Continued)

(51) **Int. Cl.**

A61L 12/10	(2006.01)
A47L 25/04	(2006.01)
A61L 2/10	(2006.01)
B08B 7/00	(2006.01)

(52) **U.S. Cl.**

CPC ***A61L 2/10*** (2013.01); ***A47L 25/04*** (2013.01); *A61L 2202/14* (2013.01); *B08B 7/0057* (2013.01)

(58) **Field of Classification Search**

CPC A61L 12/10

See application file for complete search history.

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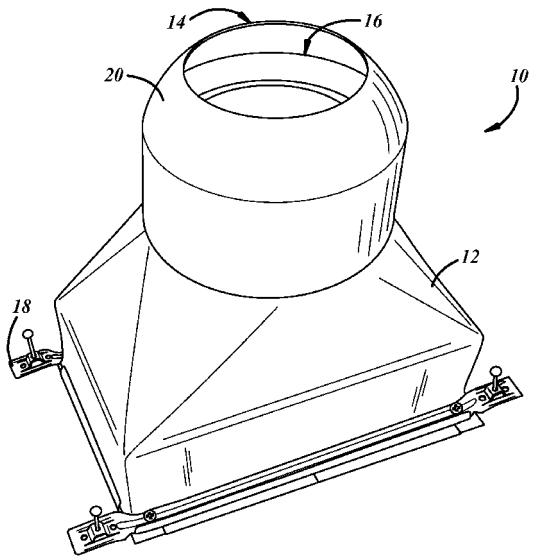
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Primary Examiner — Jason Y Ko
(74) *Attorney, Agent, or Firm* — Quinn IP Law

(57) **ABSTRACT**

An apparatus for sanitizing a point-of-contact surface may include a housing configured to be affixed about at least a portion of said point of contact. The housing may have an interior in or through which the point of contact may be accessed and an anterior opening for access to the interior. The apparatus may further include one or more sources of a sanitizing agent, such as germicidal light, configured to direct the sanitizing agent toward a location where at least a portion of the point-of-contact surface may be disposed. One or more of an anterior dome, an inner surface, and a posterior surface may also be configured to reflect the sanitizing agent toward the location where at least a portion of the point-of-contact surface may be disposed.

20 Claims, 9 Drawing Sheets



Related U.S. Application Data

11,400,174, which is a continuation of application No. 15/831,043, filed on Dec. 4, 2017, now Pat. No. 10,792,380, which is a continuation of application No. 14/299,815, filed on Jun. 9, 2014, now Pat. No. 9,833,525, which is a continuation-in-part of application No. 14/252,294, filed on Apr. 14, 2014, now abandoned, which is a continuation of application No. 13/070,044, filed on Mar. 23, 2011, now Pat. No. 8,698,100.

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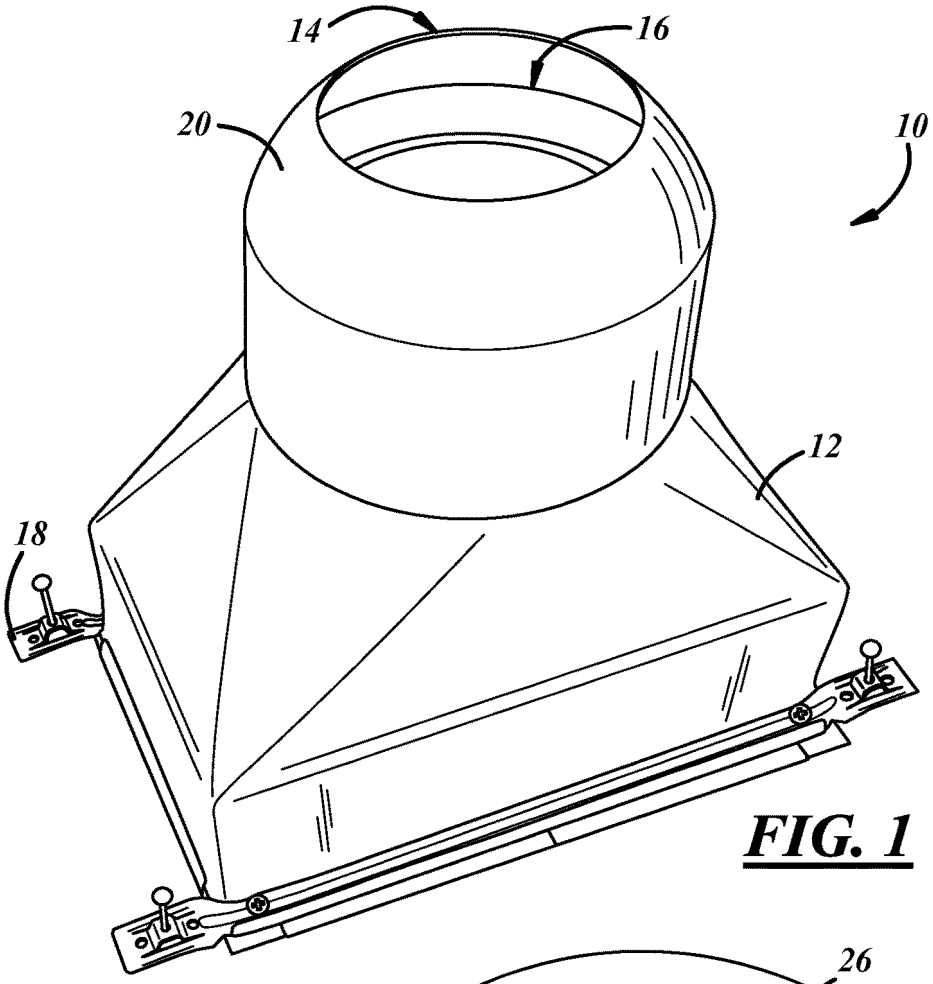


FIG. 1

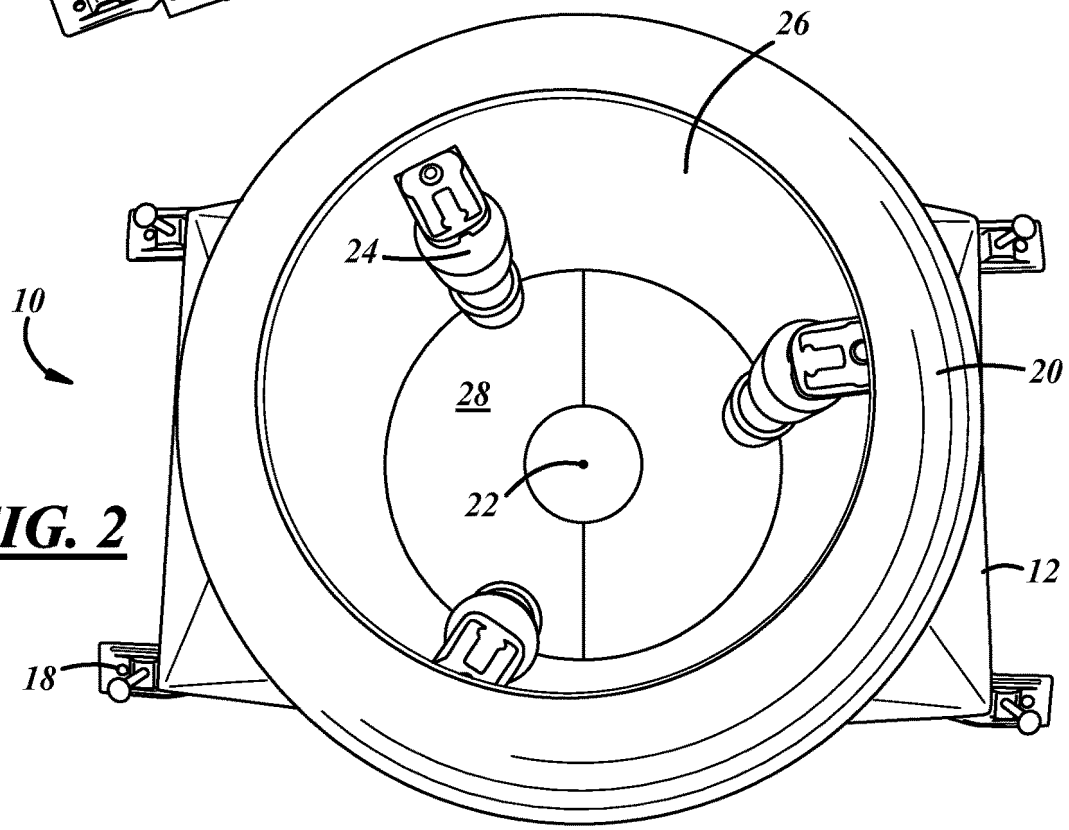


FIG. 2

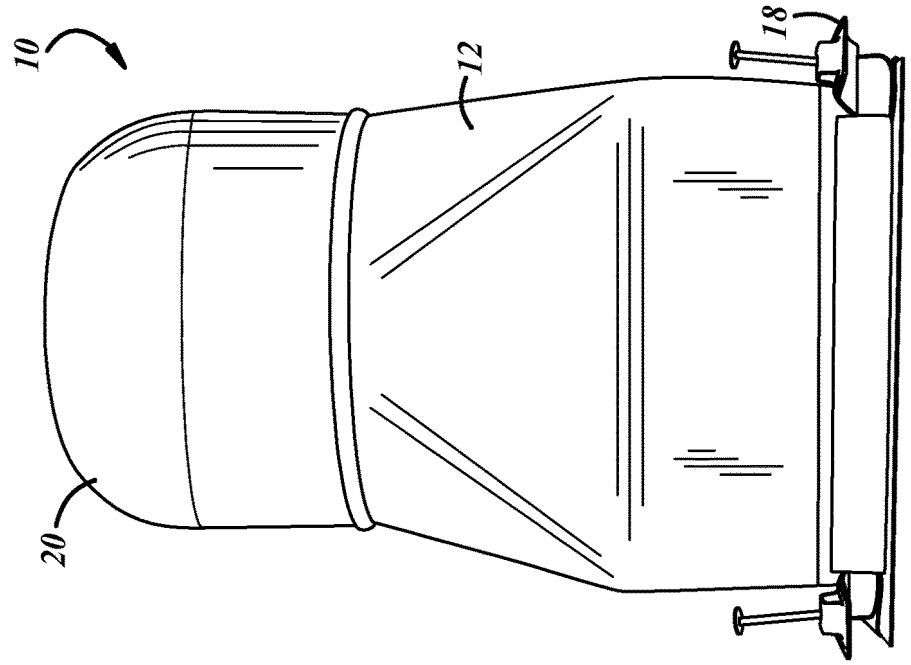


FIG. 4

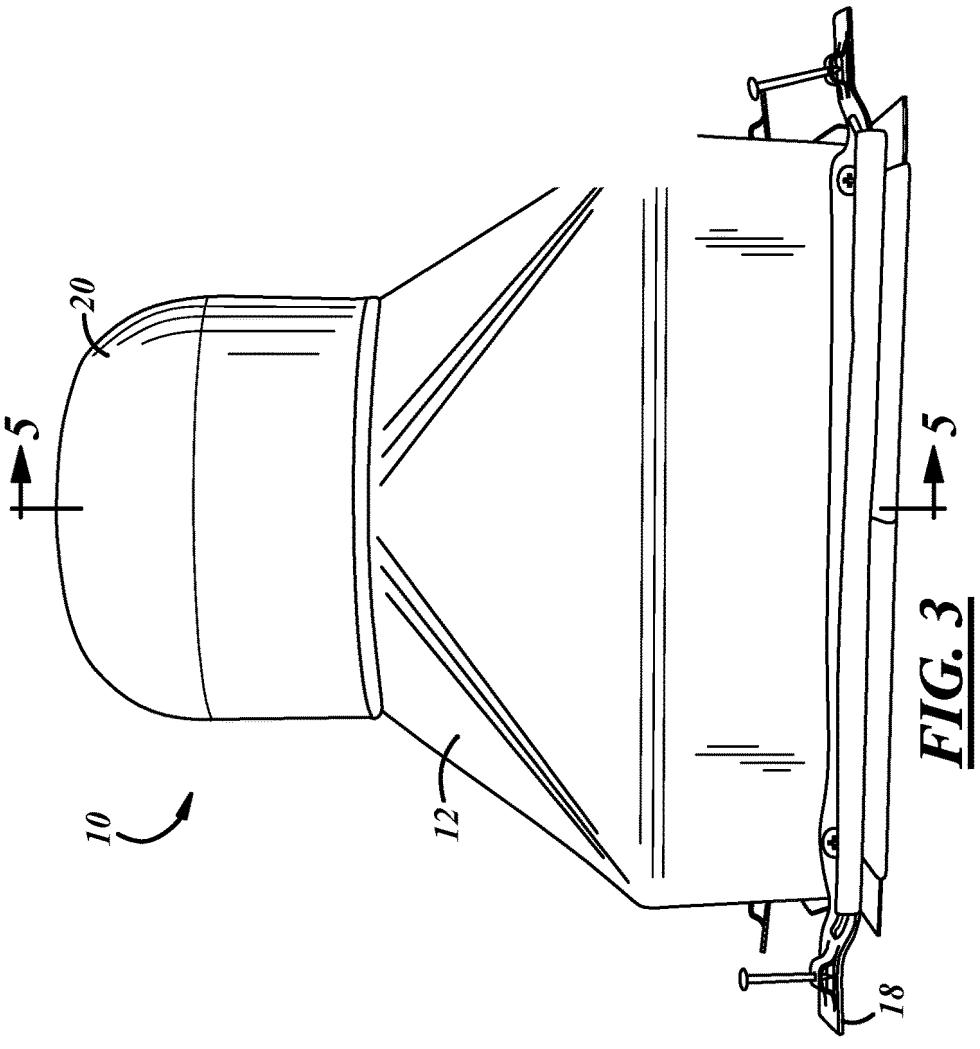


FIG. 3

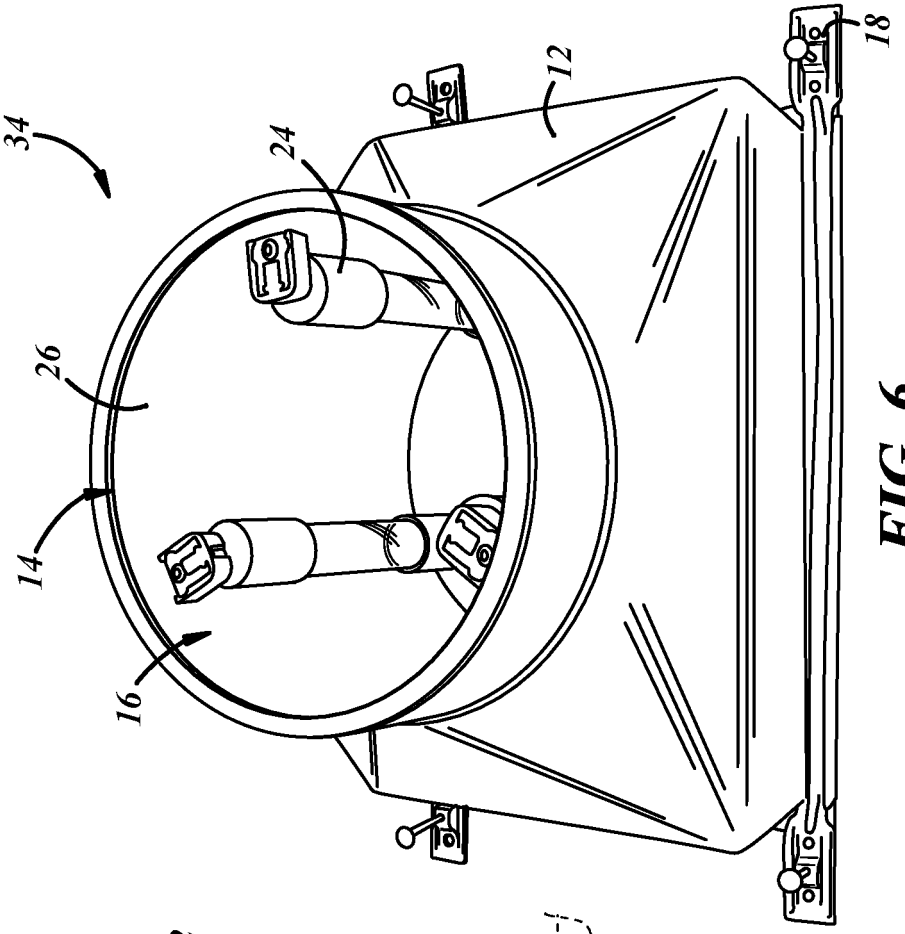


FIG. 6

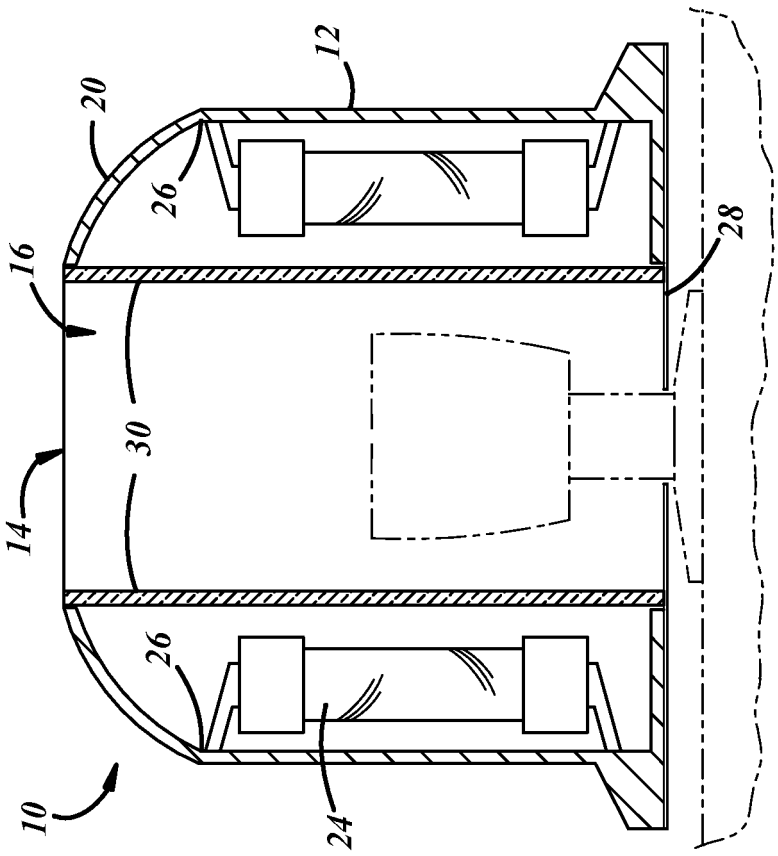


FIG. 5

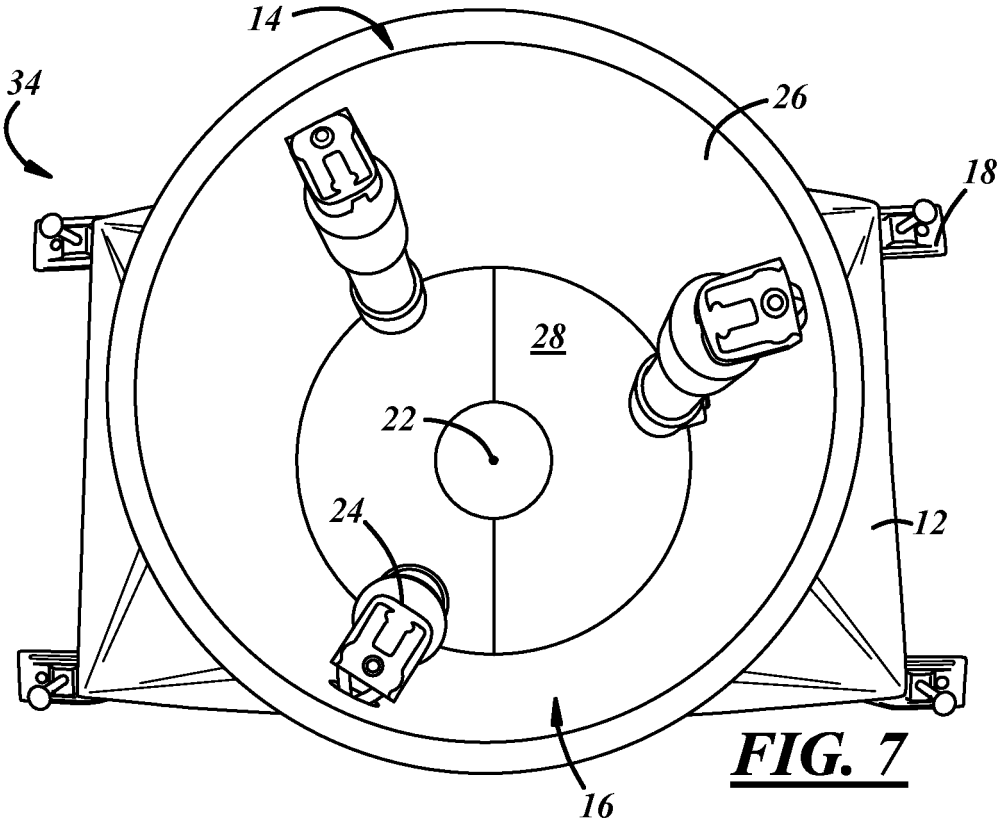


FIG. 7

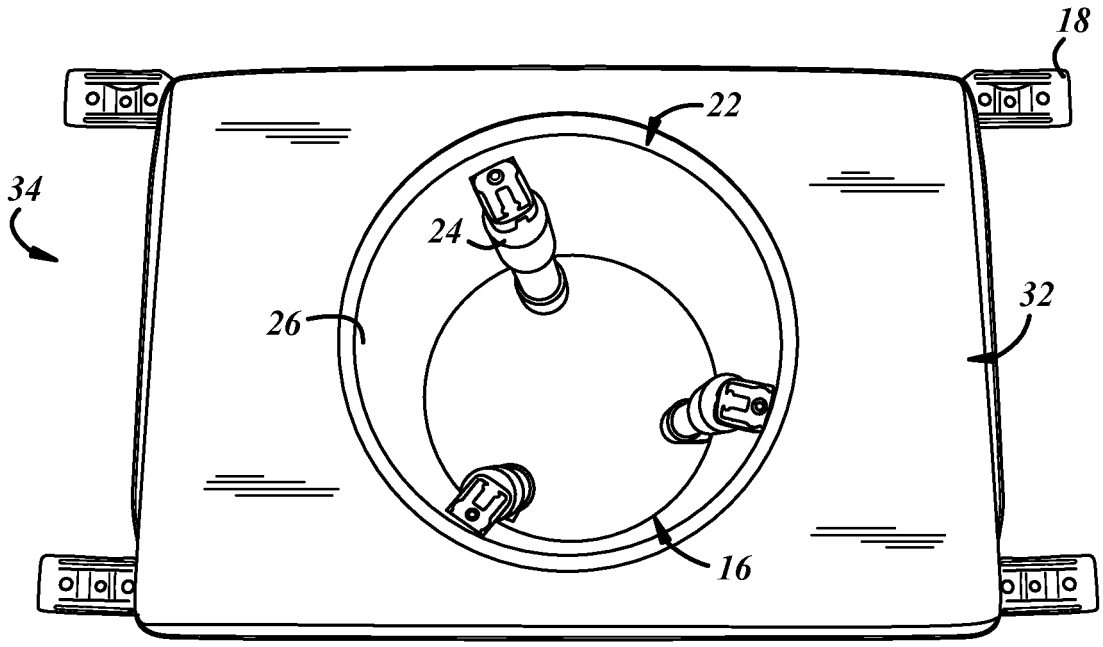


FIG. 8

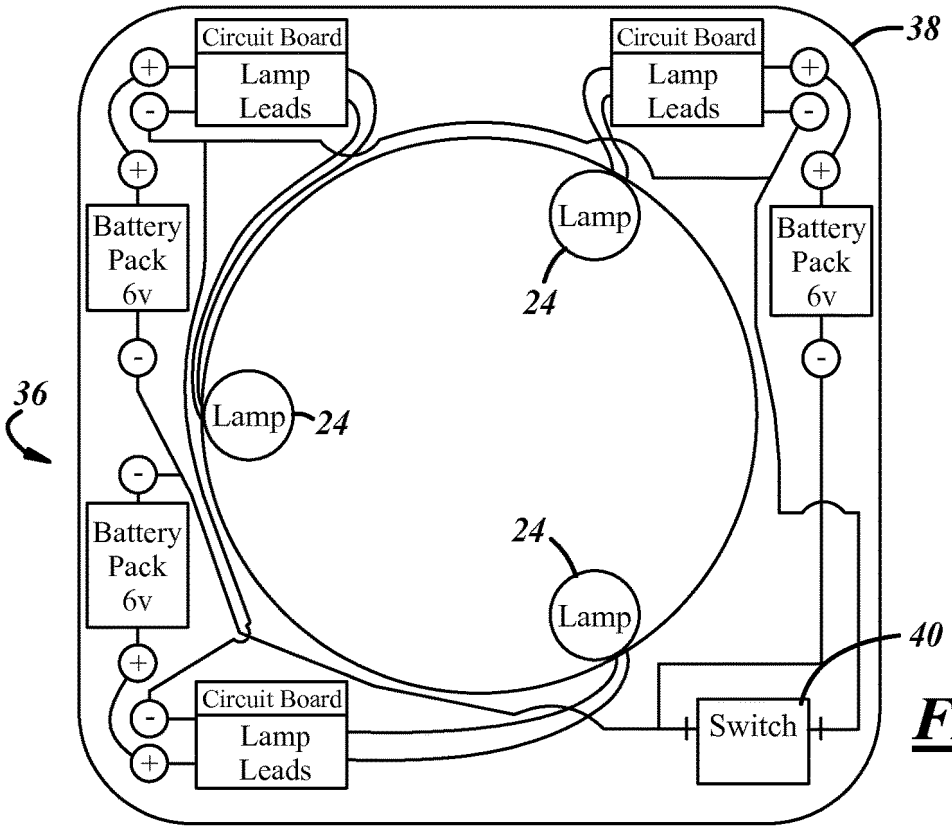

38
Circuit Board
Lamp
Leads
Circuit Board
Lamp
Leads
Battery
Pack
6v
Lamp
24
Battery
Pack
6v
36
Lamp
24
Battery
Pack
6v
24
Lamp
40
Circuit Board
Lamp
Leads
Switch

FIG. 9

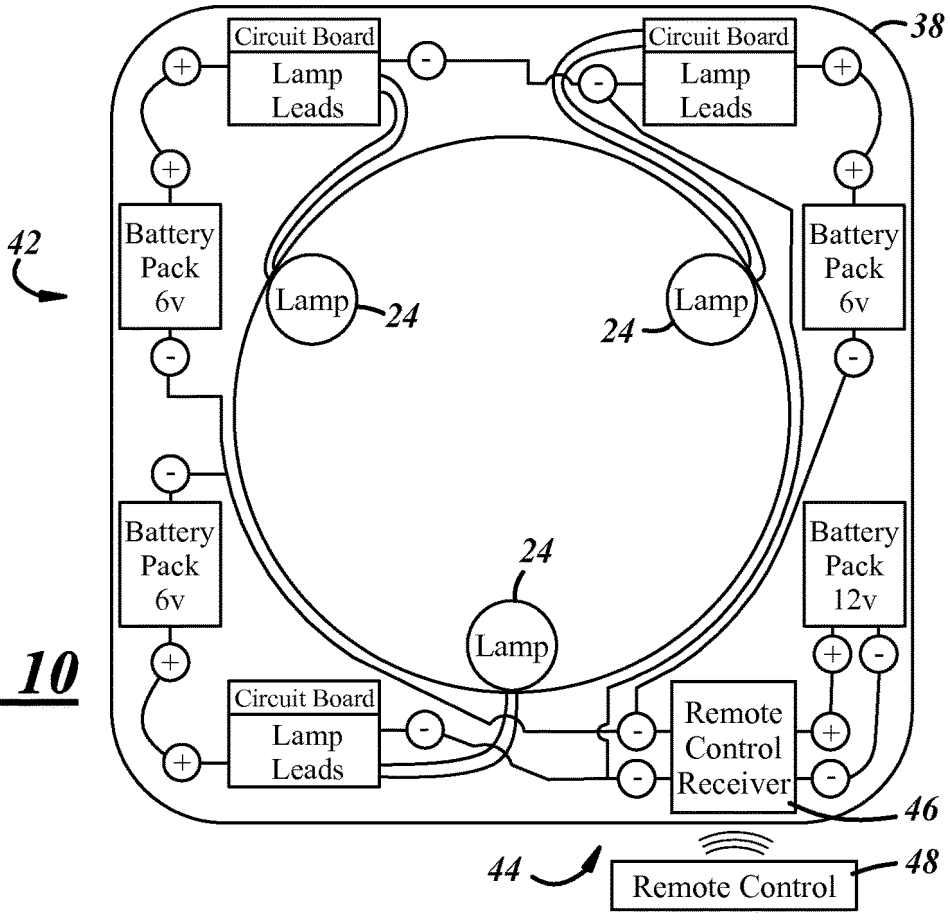

38
Circuit Board
Lamp
Leads
Circuit Board
Lamp
Leads
42
Battery
Pack
6v
Lamp
24
24
Lamp
Battery
Pack
6v
Battery
Pack
6v
24
Lamp
Battery
Pack
12v
Circuit Board
Lamp
Leads
Remote
Control
Receiver
46
44
Remote Control
48

FIG. 10

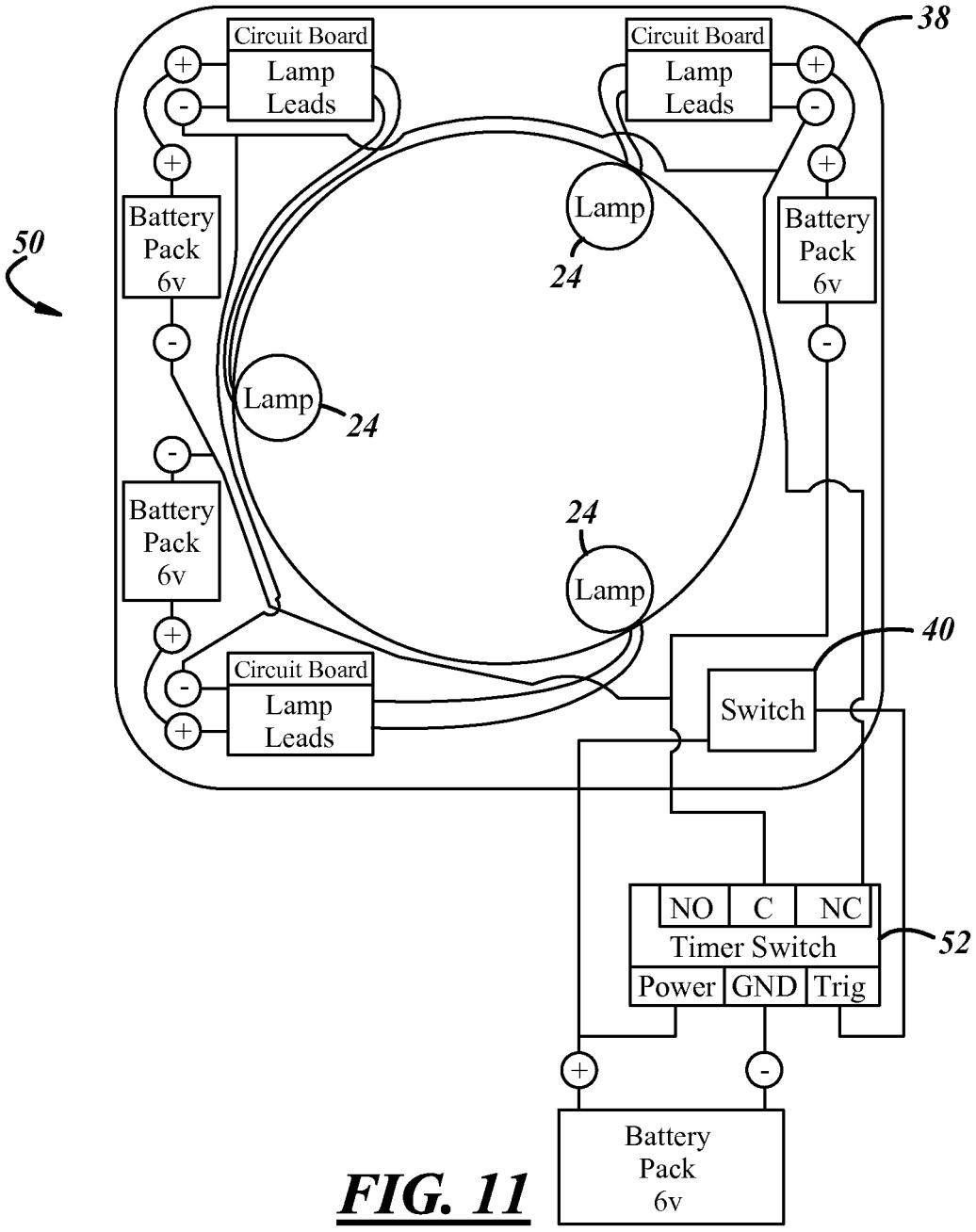

50
38
Circuit Board
Lamp
Leads
Circuit Board
Lamp
Leads
Battery
Pack
6v
Battery
Pack
6v
Lamp
24
Lamp
24
Battery
Pack
6v
24
Lamp
Circuit Board
Lamp
Leads
40
Switch
NO
C
NC
Timer Switch
Power
GND
Trig
52
Battery
Pack
6v

FIG. 11

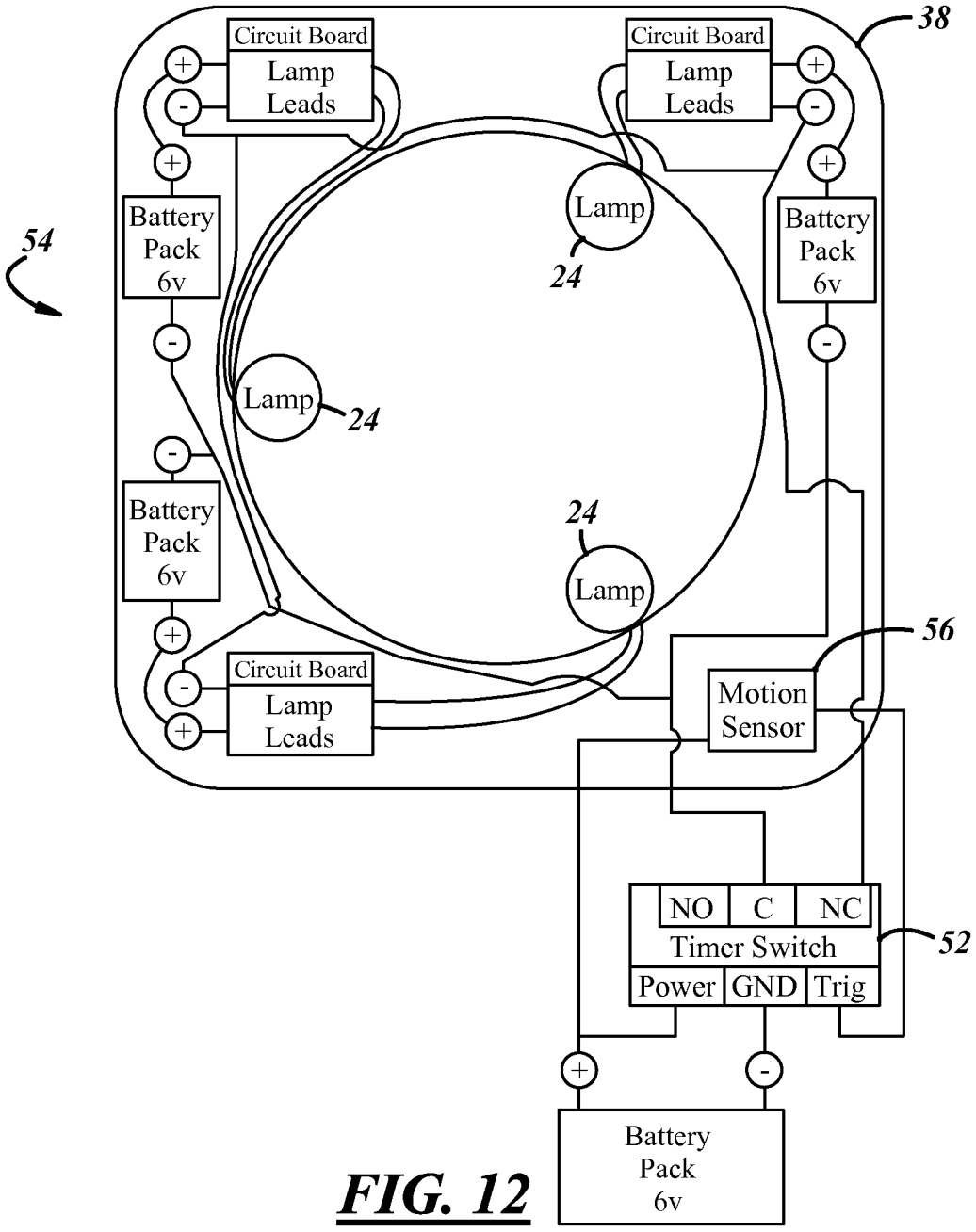

38
54
Circuit Board
Lamp Leads
Circuit Board
Lamp Leads
Battery Pack 6v
Battery Pack 6v
Lamp
24
Lamp
24
Battery Pack 6v
24
Lamp
Circuit Board
Lamp Leads
56
Motion Sensor
NO
C
NC
Timer Switch
Power
GND
Trig
52
Battery Pack 6v

FIG. 12

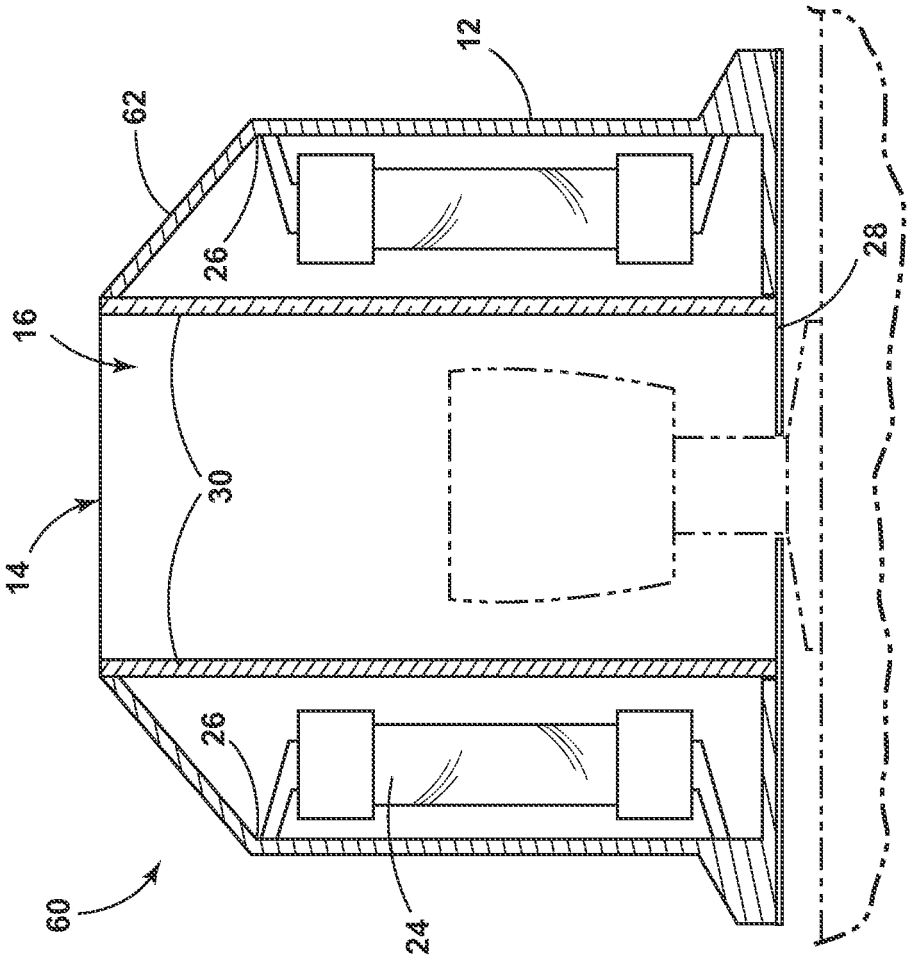


FIG. 13

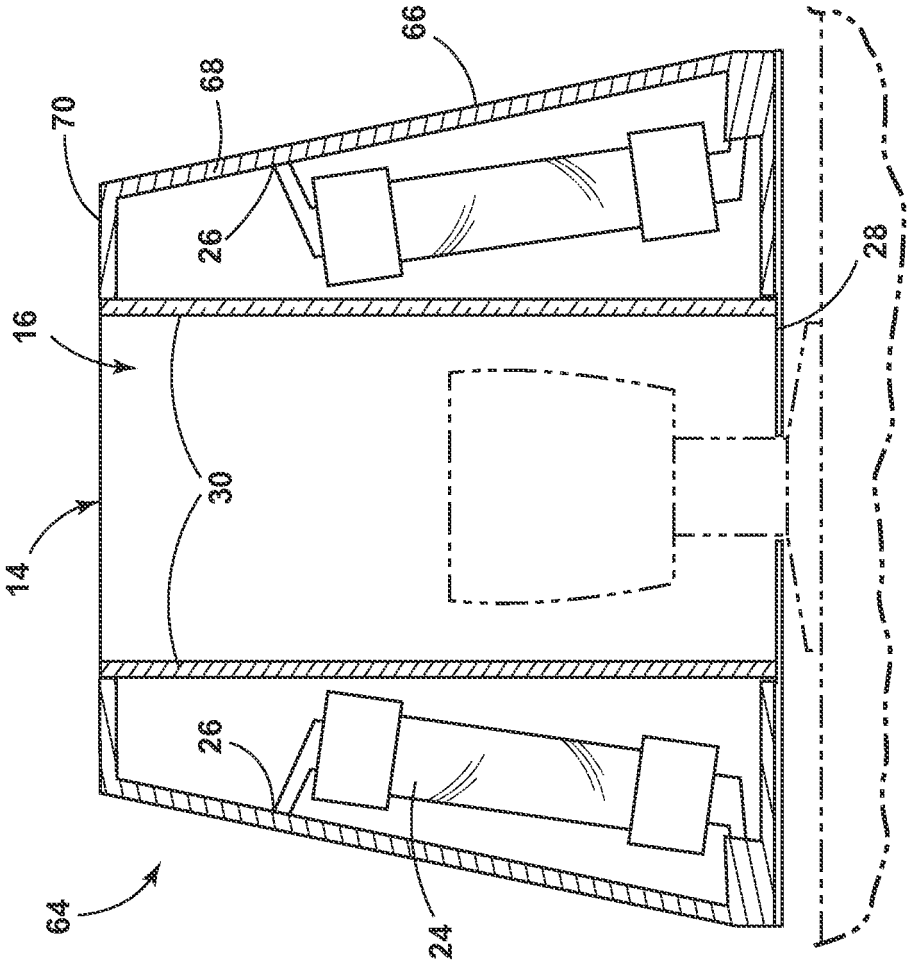


FIG. 14

SYSTEM AND APPARATUS FOR SANITIZING A DOOR OPENING DEVICE OR OTHER POINT OF CONTACT

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation of U.S. patent application Ser. No. 18/508,686, now pending, which is a continuation of U.S. patent application Ser. No. 17/496,237, issued as U.S. Pat. No. 11,813,373, which is a continuation of U.S. patent application Ser. No. 17/032,187, issued as U.S. Pat. No. 11,400,174 which is a continuation of U.S. patent application Ser. No. 15/831,043, issued as U.S. Pat. No. 10,792,380, which is a continuation of U.S. patent application Ser. No. 14/299,815, issued as U.S. Pat. No. 9,833,525, which is a continuation-in-part of U.S. patent application Ser. No. 14/252,294, now abandoned, which is a continuation of U.S. patent application Ser. No. 13/070,044, issued as U.S. Pat. No. 8,698,100, all of which are hereby incorporated by reference in their entireties.

BACKGROUND

a. Technical Field

The present disclosure relates to a system and apparatus for sanitizing a point of contact for multiple persons. More specifically, this disclosure relates to a system and apparatus for sanitizing a surface of a door opening device, an elevator control panel, an automatic teller machine, or another point of contact.

b. Background Art

Doorknobs, other door opening devices, and other points of contact for large groups of people, such as automatic teller machines (ATMs) and elevator buttons or control panels, can be involved in the spread of communicable germs. In hospitals, germs communicated through points of contact can lead to increased patient sickness. In an office environment, germs communicated through points of contact can lead to sick employees and lost productivity. In public spaces, germs communicated through points of contact can lead to a sick populace and spread of disease.

The effect of germs spread through points of contact can be significantly reduced by sterilizing or sanitizing the surface of the point of contact periodically, such as after each use of the point of contact. There is therefore a need for a system and apparatus to sanitize point-of-contact surfaces to eliminate one or more of the problems described above.

BRIEF SUMMARY

An apparatus for sanitizing a point-of-contact surface, such as, for example, a doorknob, other door opening device, automatic teller machine, or elevator buttons or control panels, may include a housing configured to be affixed about at least a portion of the point-of-contact surface. The housing may have an interior in or through which the point-of-contact surface may be accessed and an anterior opening for access to the interior. The apparatus may further include one or more sources of a sanitizing agent configured to direct the sanitizing agent toward the point-of-contact surface. At least one of the one or more sources of a sanitizing agent may be a source of germicidal ultraviolet (UV) light.

Another embodiment of an apparatus for sanitizing a point-of-contact surface may include a housing having an interior in or through which a point-of-contact surface may be accessed, a posterior opening through which at least a portion of the point-of-contact surface may extend into the interior, and an anterior opening for access to the interior. The apparatus may further include one or more sources of germicidal light configured to direct the germicidal light toward a location where at least a portion of the point-of-contact surface may be disposed. The apparatus may further include an anterior structure, affixed to or integral with the housing, configured to reflect the germicidal light toward a location where at least a portion of the point-of-contact surface may be disposed, the anterior structure defining the anterior opening through which the interior may be accessed, wherein at least a portion of the anterior structure extends in an anterior direction beyond an anterior-most portion of the point-of-contact surface, such that the apparatus is configured to sanitize the anterior-most portion of the point-of-contact surface.

Another embodiment of an apparatus for sanitizing a point-of-contact surface may include one or more sources of germicidal light configured to direct the germicidal light toward a location where at least a portion of the point-of-contact surface may be disposed. The apparatus may further include a housing in which the one or more sources of germicidal light are disposed, the housing configured to be affixed about at least a portion of the point-of-contact surface. The housing may include an interior in or through which the point-of-contact surface may be accessed, a posterior surface defining a posterior opening through which at least a portion of the point-of-contact surface may extend into the interior, the posterior surface configured to reflect light from the one or more sources of germicidal light towards a portion of the point-of-contact surface, and an anterior opening for access to the interior. A portion of the housing may extend in an anterior direction beyond an anterior-most portion of the point-of-contact surface.

Another embodiment of an apparatus for sanitizing a point-of-contact surface may include a housing having an interior in or through which a point-of-contact surface may be accessed, a posterior opening through which at least a portion of the point-of-contact surface may extend into the interior, and an anterior opening for access to the interior. The apparatus may further include one or more sources of germicidal light configured to direct the germicidal light toward a location where at least a portion of the point-of-contact surface may be disposed, wherein at least a portion of at least one of the one or more sources of germicidal light extends in the anterior direction beyond an anterior-most portion of the point-of-contact surface.

A system for sanitizing a point-of-contact surface may include an apparatus configured to be affixed about at least a portion of the point-of-contact surface. The apparatus may include one or more sources of a sanitizing agent and may have at least a first operating state in which the apparatus is configured to direct a first amount of the sanitizing agent toward the point-of-contact surface and a second operating state in which the apparatus is configured to direct a second amount of the sanitizing agent toward the point-of-contact surface. The system may further include a switch configured to change the operating state of the apparatus. The switch may comprise one or more of a manual switch, a motion sensor, a timer, and a remote activation system.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is an isometric view of a first embodiment of a sanitizing apparatus for a point-of-contact surface.

FIG. **2** is an anterior view of the first apparatus embodiment.

FIG. **3** is a first side view of the first apparatus embodiment.

FIG. **4** is a second side view of the first apparatus embodiment.

FIG. **5** is a cross-sectional view of the first apparatus embodiment, taken substantially along line **5**-**5** in FIG. **3**, with an exemplary point of contact shown in phantom.

FIG. **6** is an isometric view of a second embodiment of a sanitizing apparatus for a point-of-contact surface.

FIG. **7** is an anterior view of the second apparatus embodiment.

FIG. **8** is a posterior view of the second apparatus embodiment.

FIG. **9** is a schematic view of a first embodiment of a system for sanitizing a point-of-contact surface.

FIG. **10** is a schematic view of a second embodiment of a system for sanitizing a point-of-contact surface.

FIG. **11** is a schematic view of a third embodiment of a system for sanitizing a point-of-contact surface.

FIG. **12** is a schematic view of a fourth embodiment of a system for sanitizing a point-of-contact surface.

FIG. **13** is a cross-sectional view of a third embodiment of a sanitizing apparatus for a point-of-contact surface.

FIG. **14** is a cross-sectional view of a fourth embodiment of a sanitizing apparatus for a point-of-contact surface.

DETAILED DESCRIPTION

It is known in the art that certain sanitizing agents may be used to sanitize objects and surfaces, such as doorknobs, other door opening devices, automatic teller machines (ATMs), or elevator buttons and control panels. One type of sanitizing agent is electromagnetic energy of a particular frequency in the ultraviolet (UV) light spectrum. Ultraviolet light with a wavelength in the range of about 100 nanometers (nm) to about 280 nanometers (referred to herein as germicidal UV) is known to be deadly to bacteria and other micro-organisms, killing the micro-organisms, rendering them harmless, or eliminating their ability to reproduce. Germicidal UV with a wavelength of about 254 nanometers (a frequency of about 1.18 petahertz (PHz)) or about 185 nm is known to be particularly effective. In one embodiment of the present invention, germicidal UV may be used as an effective agent for sterilizing or sanitizing doorknobs, other door opening devices, automatic teller machines (ATMs), elevator buttons and control panels, and other devices and apparatus that may be points of contact for a large volume of people, referred to herein as "points of contact." Similarly, as used herein, a "point-of-contact surface" refers to any surface of a point of contact. A system and apparatus for sanitizing such point-of-contact surfaces may involve germicidal UV or other sanitizing agents.

In addition to germicidal UV, additional or alternative types of germicidal radiation may be used. For example, but without limitation, high-intensity, narrow-spectrum (HINS) radiation (e.g., in the visible light spectrum with a wavelength of or similar to, for example, 405 nm), blue light (e.g., having a wavelength of or similar to 415 nm), or another wavelength of radiation that is particularly well-suited to germicidal or antimicrobial applications.

Referring now to the drawings wherein like reference numerals are used to identify identical components in the various views, FIG. **1** is an isometric view of an embodiment **10** of a sanitizing apparatus for a point-of-contact surface. Apparatus **10** may include a housing **12** and one or more attachment structures **18**. Housing **12** may include an anterior opening **14** and an interior **16**. As used herein, "posterior" refers generally to the end of an apparatus or system, such as apparatus **10**, proximate to a point of contact or to a structure to which the point of contact is attached (e.g., a wall or door). "Anterior" refers generally to the end of the apparatus or system through or by which a human user may access the point of contact, such as by extension of a hand through anterior opening **14**. Housing **12** may contain one or more sources of a sanitizing agent, one or more surfaces to focus and reflect the sanitizing agent toward a point-of-contact surface, and wiring and circuitry enabling the one or more sanitizing agent sources to function. An anterior dome **20** or other anterior structure may be provided at the anterior end of housing **12** and may be configured to reflect or direct the sanitizing agent toward a location where the point-of-contact surface is to be disposed when apparatus **10** is installed. At least a portion of the point of contact may extend into interior **16** i.e., the point of contact may be accessed in or through interior **16**. Anterior opening **14** may provide user access to interior **16**—i.e., human access to the point of contact sanitized by apparatus **10**. Attachment structures **18** may be provided to attach housing **12** to a door, door frame, wall, or other structure to allow interior **16** to be disposed about a point-of-contact surface. Attachment structures **18** may be brackets and screws, as shown, or other functional attachment structures or devices.

FIG. **2** is an anterior view of apparatus **10** looking through anterior opening **14** and through interior **16** to a posterior opening **22**. A protective screen **30** (best shown in FIG. **5**) has been omitted for clarity. Interior **16** may be defined as the area within housing **12** between anterior opening **14** and posterior opening **22**. Posterior opening **22** may be provided for a portion of a doorknob, other door opening device, or other point of contact to extend into interior **16**. In an embodiment in which no point-of-contact surface extends into interior **16**, such as, for example, an ATM interface or a set of elevator buttons, posterior opening **22** may be the opening through which a sanitizing agent passes to reach the point-of-contact surface from interior **16**.

Interior **16** may contain one or more sources of a sanitizing agent. In apparatus **10**, the sources may be three ultraviolet (UV) light bulbs **24**. Bulbs **24** may operate at the germicidal range of the ultraviolet light spectrum and/or have a germicidal coating. In embodiments where bulbs **24** apply germicidal UV as a sanitizing agent, bulbs **24** may operate within a wide range of powers and exposure times, such as, for example, power in the range of about 4-65 watts and exposure times of about 2-10 seconds. However, it should be understood that less power may be used in conjunction with a longer exposure time, or more power in conjunction with a shorter exposure time. Bulbs **24** are not limited to germicidal UV as a sanitizing agent. Bulbs **24** may sanitize surfaces based on one or more of: (1) a particular characteristic of the agent or energy applied (e.g., germicidal UV); (2) the heat resulting from the application of the sanitizing agent or energy, or (3) the interaction of the agent with a particular characteristic of the surface or another substance applied to the surface.

In addition to or instead of germicidal UV, the light bulbs **24** may emit radiation of some other portion of the spectrum. For example, but without limitation, the light bulbs **24** may output high-intensity, narrow-spectrum (HINS) radiation (e.g., in the visible light spectrum with a wavelength of or similar to, for example, 405 nm), blue light (e.g., having a

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wavelength of or similar to 415 nm), or another wavelength of radiation that is particularly well-suited to germicidal or antimicrobial applications.

An inner surface **26** may be configured in shape and material to reflect or direct the sanitizing agent toward a location where the point-of-contact surface is to be disposed when apparatus **10** is installed, thereby increasing the exposure of the surface to the sanitizing agent. In an embodiment where the point of contact does not extend into interior **16** (i.e., no point-of-contact surface is within interior **16**), inner surface **26** may be configured to direct or reflect the sanitizing agent toward the posterior end of interior **16**. Inner surface **26** is shown as a cylinder, but inner surface **26** may have another shape adapted to a particular application. Inner surface **26** may comprise aluminum, glass, or another reflective material, and/or may be coated with a reflective layer. Inner surface **26** may be configured to support bulbs **24** or otherwise be coupled with bulbs **24**. Additionally, inner surface **26** may be a unitary surface or structure, as shown, or may comprise multiple pieces or surfaces.

A posterior surface **28** may also be provided and may be configured to reflect or direct the sanitizing agent toward a location where the point-of-contact surface is to be disposed once apparatus **10** is installed. Posterior surface **28** may be one or more plates or other insert placed at posterior opening **22**, as shown in FIG. **2**, and may be configured to conform to the geometry of the point of contact. A two-segment posterior surface **28** with a circular opening, as shown, may be appropriate for use with a point of contact having a cylindrical extension portion, such as a doorknob. Although shown as a separate piece from housing **12**, posterior surface **28** may also be integral with housing **12** and may have a hole or other cut-out portion forming posterior opening **22**. Posterior surface **28** may comprise aluminum, glass, or another reflective material, or may be non-reflective if reflection from the posterior end of apparatus **10** is not desired.

FIGS. **3** and **4** are side views of apparatus **10**. Apparatus **10** may have a "longer" side, as shown in FIG. **3**, and a "shorter" side, as shown in FIG. **4**. However, it should be understood that the geometry of apparatus **10** may be adapted to particular points of contact and particular manufacturing restraints. Additionally, the size of housing **12** (and the rest of apparatus **10**) may be adapted to a particular application or particular manufacturing constraints.

FIG. **5** is a cross-sectional view of apparatus **10**, taken substantially along line **5**-**5** in FIG. **3**. FIG. **5** includes an exemplary point-of-contact (shown as a doorknob) in phantom. Although a gap is shown between apparatus **10** and the phantom door, apparatus **10** may be configured to be flush with such a door or other structure or surface. FIG. **5** also includes a protective screen **30** not shown in FIGS. **1** and **2**. Protective screen **30** may be provided to separate bulbs **24** (or another source of a sanitizing agent) from anterior opening **14** and posterior opening **22**—i.e., screen **30** may be disposed between bulbs **24** and a central portion of interior **16**. In effect, protective screen **30** may divide interior **16** into two compartments-a first compartment containing bulbs **24** and a second compartment providing human access from anterior opening **14** to the point of contact. Protective screen **30** may be provided for many purposes. For example, one purpose may be to prevent irritating contact between a user of the point of contact and bulbs **24**, which may reach high temperatures and/or may be coated with a substance that may irritate human skin. Another exemplary purpose may be to prevent user contact with bulbs **24**, which may be fragile. Protective screen **30** may be of any suitable shape, material, and geometry configured to allow the sanitizing agent to pass from sources **24** to the point-of-contact surface (i.e., the protective screen **30** may be transparent or translucent to the sanitizing agent). For example only, screen **30** may be a relatively rigid plastic cylinder having the same diameter as anterior opening **14**, as shown. Screen **30** may include gaps, slits, or vents, or may be solid. Protective screen **30** also may be a unitary structure, or may comprise several segments and/or surfaces.

FIG. **6** is an isometric view of a second embodiment **34** of an apparatus for sanitizing a point-of-contact surface. Apparatus **34** is nearly identical to apparatus **10**, but apparatus **34** lacks an anterior dome. Apparatus **34** may extend less in the anterior direction from the point-of-contact surface than apparatus **10**, but apparatus **34** may still effectively sanitize the point-of-contact surface.

FIG. **7** is an anterior view of apparatus **34**. Lacking a anterior dome, housing **12** and interior **16** may be configured to extend no further in the anterior direction than do bulbs **24**. Bulbs **24** may also be configured in size, shape, and orientation in apparatus **34** or apparatus **10** for a particular point of contact. For example, rather than extending axially, as shown (i.e., substantially parallel to an axis of the apparatus extending from anterior opening **14** to posterior opening **22**), bulbs **24** may extend circumferentially, or otherwise normal to the apparatus axis.

FIG. **8** is a posterior view of apparatus **34** with posterior surface **28** removed. Apparatus **10** may appear substantially the same from the posterior perspective, except the interior of anterior dome **20** would be visible. Posterior opening **22** may be configured in size and shape to accommodate a particular point of contact.

FIG. **13** is a cross-sectional view of a third embodiment **60** of an apparatus for sanitizing a point-of-contact surface. The third apparatus **60** is substantially identical to the first apparatus **10**, but the dome **62** of the third apparatus may include a conical or frustoconical inner surface (i.e, as opposed to the hemispherical inner surface of the dome **20** of the first apparatus **10**) that is angled so as to reflect germicidal radiation towards the point-of-contact surface. Stated another way, the dome **62** may include a portion having a linear cross-section (i.e., as opposed to a curved cross-section, as in the dome **20** of the first apparatus **10**).

FIG. **14** is a cross-sectional view of a fourth embodiment **64** of an apparatus for sanitizing a point-of-contact surface. The fourth apparatus **64** is substantially identical to the first apparatus **10**, but the housing **66** of the fourth apparatus may include a reflective wall **68** that is disposed at an angle other than perpendicular to the posterior surface **28** so as to reflect germicidal radiation towards the point-of-contact surface. In an embodiment, the wall **68** may form a frustoconical housing portion. Such a frustoconical housing portion may have a narrower diameter at the anterior end of the portion, as shown in FIG. **14**. Alternatively, the frustoconical housing portion may have a narrower diameter at the posterior end of the portion, in an embodiment. The wall **68** may be substantially flat in cross-section (e.g., may extend in a substantially linear manner between its anterior and posterior ends, as shown in FIG. **14**), or may be curved in cross-section. The angled wall **68** may extend to meet the screen **30**, in an embodiment. In such an embodiment, or in another embodiment, the angled wall (e.g., the frustoconical housing portion) may define the anterior opening **14** of the housing. Alternatively, and as shown in FIG. **14**, the angled wall **68** may be coupled with a structure or surface **70** (e.g., a dome or a flat surface) configured to reflect sanitizing radiation towards the point-of-contact surface.

The first, third, and fourth sanitizing apparatus embodiments **10**, **60**, **64** all may include an anterior structure that is configured to be disposed anterior of the point-of-contact surface and to reflect germicidal radiation in a posterior direction towards the point-of-contact surface. The first apparatus **10** may include a dome **20** comprising a hemispherical portion, the third apparatus may include a dome **62** comprising a frustoconical portion, and the fourth apparatus **64** may include an angled wall that may form, for example, a frustoconical reflective housing portion.

FIG. **9** is a schematic view of a first embodiment of a system for sanitizing a point-of-contact surface, designated system **36**. System **36** may include an apparatus **38** for sanitizing a point-of-contact surface and a manual switch **40**. Apparatus **38** may be apparatus **10**, apparatus **34**, apparatus **60**, apparatus **64**, or another apparatus configured to sanitize a point-of-contact surface. Apparatus **38** includes an electrical circuit configured to control sanitizing agent sources **24**, shown again as bulbs or lamps. The electrical circuit may include one or more power supplies (shown as three 6-volt battery packs) and one or more circuit boards configured to electrically couple the power supplies with the sanitizing agent sources **24**, such as, for example, through a socket affixed to apparatus **38** into which lamp **24** may be removably placed. The power supply for the electrical circuit may also be an external source, such as, for example, from a wall socket through an appropriate cord. Additionally or alternatively, apparatus **38** or system **36** may include a generator to recharge batteries or battery packs within the circuit. The generator may be coupled to a door, door opening device, or other device such that the batteries are charged when the door is opened or closed, the door opening device is turned, or energy is otherwise imparted to the generator. Switch **40** may control the current flowing through the electrical circuit, thereby controlling the power applied to sanitizing agent sources **24** and thus controlling the amount of the sanitizing agent emitted by sanitizing agent sources **24**.

Apparatus **38** may have at least two operating states: a first state in which apparatus **38** directs a first amount of a sanitizing agent toward a location where a point-of-contact surface may be disposed after installation of apparatus **38**, and a second state in which apparatus **38** directs a second amount of the sanitizing agent toward the same location. Switch **40** may change the operating state of apparatus **38** by controlling the power applied to sanitizing agent sources **24**, as described above. Manual switch **40** may be integrated into apparatus **38** (such as in housing **12**), or may be located in close proximity to apparatus **38**. Switch **40** may be a button, lever, switch, other binary switching device, or a slider, dimmer, or other analog switching device.

Apparatus **38** may sanitize a point-of-contact surface when activated by switch **40**. For example, an individual may reach into apparatus **38**, turn a doorknob disposed within interior **16**, and open the attached door. After opening the door, the user may manually "flip" switch **40**, changing apparatus **38** from an "OFF" state to an "ON" state. In an "ON" state, the electrical circuit of apparatus **38** is configured to energize bulbs **24** such that bulbs **24** emit a non-zero amount of a sanitizing agent, such as germicidal UV, toward the doorknob. The shape and materials of interior **16** may reflect and direct the sanitizing agent (e.g., germicidal UV) onto the doorknob. Bulbs **24** may be deactivated (i.e., apparatus **38** may be changed from an "ON" state to an "OFF" state in which bulbs **24** emit a substantially zero amount of the sanitizing agent) upon a second manual "flip" of switch **40**. A user of the door may also flip switch **40** prior to using the doorknob to sanitize the doorknob before making contact with the doorknob, then flip switch **40** second time to deactivate bulbs **24** such that the user may safely extend a hand into apparatus **38**. In an alternative embodiment, apparatus **38** may have three discrete operating states: "HIGH," "LOW," and "OFF" which may be selected by "flipping" an appropriate switch. Apparatus **38** may also have four or more discrete operating states, or may have multiple operating states along an analog scale.

FIG. **10** is a schematic view of a second embodiment **42** of a system for sanitizing a point-of-contact surface. System **42** may include many of the same features and functionality as system **36**, but system **42** may change the state of apparatus **38** with a remote activation system **44**. Remote activation system **44** may include a remote receiver **46** integrated with apparatus **38** and a remote control **48**. Remote receiver **46** may have an independent power supply, as shown. Remote control **48** may communicate with remote receiver **46** wirelessly, such as by a radio frequency signal, or through a wired connection.

FIG. **11** is a schematic view of a third embodiment **50** of a system for sanitizing a point-of-contact surface. System **50** may include many of the same features and functionality as systems **36** and **42**, but system **50** may include a timer **52** for automatically deactivating apparatus **38**. Timer **52** may be coupled with manual switch **40** such that timer **52** automatically changes the operating state of (e.g., cuts power to) apparatus **38** after a set amount of time after switch **40** is "flipped." As a result, apparatus **38** may sanitize a surface for a pre-determined amount of time, such as, for example, 3-5 seconds, upon switch **40** being "flipped." Timer **52** may be configured to allow apparatus **38** to administer an effective dose of the sanitizing agent before de-energizing the electrical circuit. For example, timer **52** may allow the circuit of apparatus **38** to remain energized for about 5 seconds after switch **40** is "flipped."

FIG. **12** is a schematic view of a fourth embodiment **54** of a system for sanitizing a point-of-contact surface. System **54** may include many of the same features and functionality as systems **36**, **42**, and **50**, but system **54** may include a motion sensor **56** for automatically activating and/or deactivating apparatus **38**. Although not shown, motion sensor **56** may include an independent power supply. In an exemplary embodiment, after motion sensor **56** senses movement (e.g., a hand entering apparatus **38**), system **54** may wait about six seconds (i.e., enough time for a user to access the point-of-contact and remove the hand), then change the operating state of apparatus **38** (e.g., from a de-energized "OFF" state to an energized "ON" state) to sanitize the point of contact. Timer **52** may allow the circuit of apparatus **38** to remain energized for about 5 seconds before de-energizing the circuit. Such an exemplary embodiment may include two or more timers **52** (e.g., a first timer to count the passage of time between sensing movement and the energizing of the circuit, and a second timer to count the passage of time between the energizing of the circuit and the de-energizing of the circuit).

A system and apparatus for sanitizing a point-of-contact surface, such as, for example, a doorknob, other door opening device, ATM, or elevator buttons or control panel, as described herein has many advantages. The reduction of communicable germs in hospitals, where individuals may have weakened immune systems, may reduce loss of life and other illness resulting from transmitted germs. The reduction of communicable germs in the workplace and in schools may reduce lost work productivity and lost school days. The size and shape of the apparatus can be tailored to a particular application, so the apparatus need not unduly add to the bulk

of the point-of-contact and can function with many different points of contact. The shapes and materials of the apparatus (e.g., anterior dome **20**, anterior dome **62**, inner surface **26**, posterior surface **28**) may increase the efficiency and efficacy of the sources of a sanitizing agent—thereby lowering the necessary power consumption of the system and apparatus—by reflecting or directing the sanitizing agent toward a location where the point-of-contact may be disposed. Additionally, because the sanitizing system and apparatus may include one or more of, for example, a switch, timer, remote activation system, or motion sensor, the use and power consumption of the sanitizing system can be scaled to the frequency that sanitization is necessary for a particular point of contact.

Although numerous embodiments of this invention have been described above with a certain degree of particularity, those skilled in the art could make numerous alterations to the disclosed embodiments without departing from the spirit or scope of this invention. All directional references (e.g., plus, minus, upper, lower, upward, downward, left, right, leftward, rightward, top, bottom, above, below, vertical, horizontal, clockwise, and counterclockwise) are only used for identification purposes to aid the reader's understanding of the present invention, and do not create limitations, particularly as to the position, orientation, or use of the invention. Joinder references (e.g., attached, coupled, connected, and the like) are to be construed broadly and may include intermediate members between a connection of elements and relative movement between elements. As such, joinder references do not necessarily infer that two elements are directly connected and in fixed relation to each other. It is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative only and not limiting. Changes in detail or structure may be made without departing from the spirit of the invention as defined in the appended claims.

What is claimed is:

1. An apparatus for sanitizing an object, the apparatus comprising:

a housing at least partially defining an interior cavity configured to accept the object, wherein the object includes a sanitizing surface, the housing including:

a first end wall located at a first end of the interior cavity and having a first end wall interior surface at least partially defining the interior cavity;

a sidewall extending from and integral with at least a portion of the first end wall and having a sidewall interior surface at least partially defining the interior cavity; and

a second end wall on an opposite end of the interior cavity from the first end wall having a second end wall interior surface at least partially defining the interior cavity,

wherein the second end wall at least partially defines an opening into the interior cavity; and

at least one germicidal light source disposed within the interior cavity, wherein the germicidal light source provides germicidal light into the interior cavity.

2. The apparatus of claim **1**, wherein the germicidal light source is a first germicidal light source, further comprising a second germicidal light source disposed on an opposite side of the interior cavity from first germicidal light source.

3. The apparatus of claim **2**, wherein the first germicidal light source and the second germicidal light source each project from the sidewall interior surface into the interior cavity.

4. The apparatus of claim **2**, wherein at least one of the first germicidal light source or the second germicidal light source are cylindrical light sources.

5. The apparatus of claim **1**, wherein the at least one germicidal light source forms a projection into the interior cavity and is configured to direct the germicidal light with a field of view greater than 180 degrees into the interior cavity.

6. The apparatus of claim **1**, wherein the first end wall interior surface, the second end wall interior surface, and the sidewall interior surface are UV reflective and configured to reflect germicidal light from the at least one germicidal light source toward the object.

7. The apparatus of claim **6**, wherein the second end wall comprises a curved structure with the second end wall interior surface following a curvature of the curved structure.

8. The apparatus of claim **7**, wherein the curved structure is fixed relative to the germicidal light source.

9. The apparatus of claim **1**, wherein the at least one germicidal light source is attached to the sidewall and spaced from the first end wall and the second end wall and the sanitizing surface is a point-of-contact sanitizing surface.

10. The apparatus of claim **1**, wherein the first end wall is a posterior end wall, the second end wall is an anterior end wall, and the sidewall is coupled with the posterior end wall and projects in an anterior direction relative to the posterior end wall.

11. An apparatus for sanitizing an object, the apparatus comprising:

a housing at least partially defining an interior cavity configured to accept the object, wherein the object includes a sanitizing surface, the housing including:

a posterior wall located at a first end of the interior cavity, the posterior wall having a posterior wall interior surface at least partially defining the interior cavity;

a sidewall extending from and integral with at least a portion of the posterior wall, the sidewall having a sidewall interior surface at least partially defining the interior cavity; and

an anterior wall on an opposite end of the interior cavity from the posterior wall having an anterior wall interior surface at least partially defining the interior cavity,

wherein the anterior wall at least partially defines an opening into the interior cavity; and

at least one germicidal light source disposed within the interior cavity, wherein the germicidal light source provides germicidal light into the interior cavity, wherein the posterior wall interior surface, the anterior wall interior surface, and the sidewall interior surface are UV reflective and configured to reflect germicidal light from the at least one germicidal light source toward the object.

12. The apparatus of claim **11**, wherein the germicidal light source is a first germicidal light source, further comprising a second germicidal light source disposed on an opposite side of the interior cavity from first germicidal light source.

13. The apparatus of claim **12**, wherein the first germicidal light source and the second germicidal light source each project from the sidewall interior surface into the interior cavity.

14. The apparatus of claim **11**, wherein the at least one germicidal light source is attached to the sidewall and spaced from the posterior wall and the anterior wall and the sanitizing surface is a point-of-contact sanitizing surface.

15. The apparatus of claim **11**, wherein the at least one germicidal light source is configured to direct the germicidal light with a field of view greater than 180 degrees into the interior cavity.

16. The apparatus of claim **11**, wherein the anterior wall comprises a curved structure with the anterior wall interior surface following a curvature of the curved structure.

17. The apparatus of claim **16**, wherein the curved structure is fixed relative to the germicidal light source.

18. An apparatus for sanitizing an object, the apparatus comprising:

a housing at least partially defining an interior cavity configured to accept the object, wherein the object includes a sanitizing surface, the housing including:

a first end wall located at a first end of the interior cavity and having a first end wall interior surface at least partially defining the interior cavity;

a sidewall extending from and integral with at least a portion of the first end wall and having a sidewall interior surface at least partially defining the interior cavity; and

a second end wall on an opposite end of the interior cavity from the first end wall, the second end wall having a curved structure and a second end wall interior surface at least partially defining the interior cavity, wherein the second end wall at least partially defines an opening into the interior cavity; and

at least one germicidal light source disposed within the interior cavity, wherein the germicidal light source provides germicidal light into the interior cavity.

19. The apparatus of claim **18**, wherein the at least one germicidal light source is configured to direct the germicidal light with a field of view greater than 180 degrees into the interior cavity.

20. The apparatus of claim **19**, wherein the first end wall interior surface, the second end wall interior surface, and the sidewall interior surface are configured to reflect germicidal light from the at least one germicidal light source toward the object and the sanitizing surface is a point-of-contact sanitizing surface.

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