



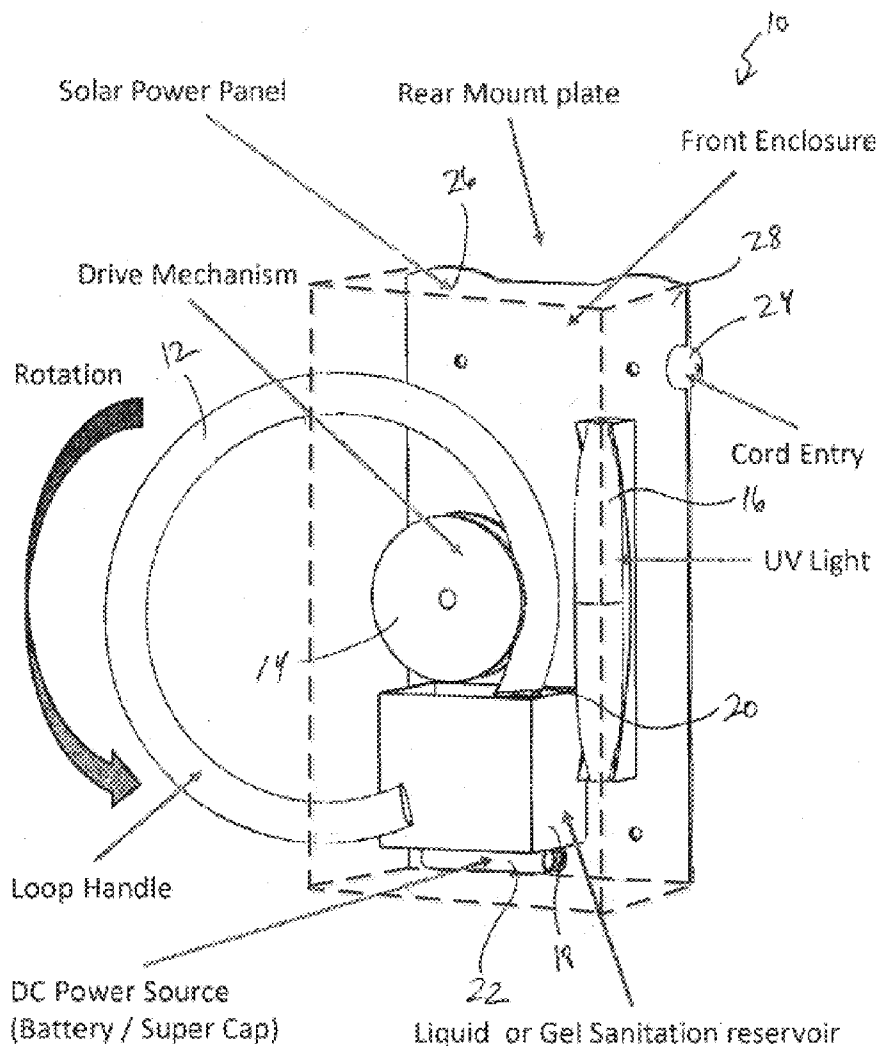
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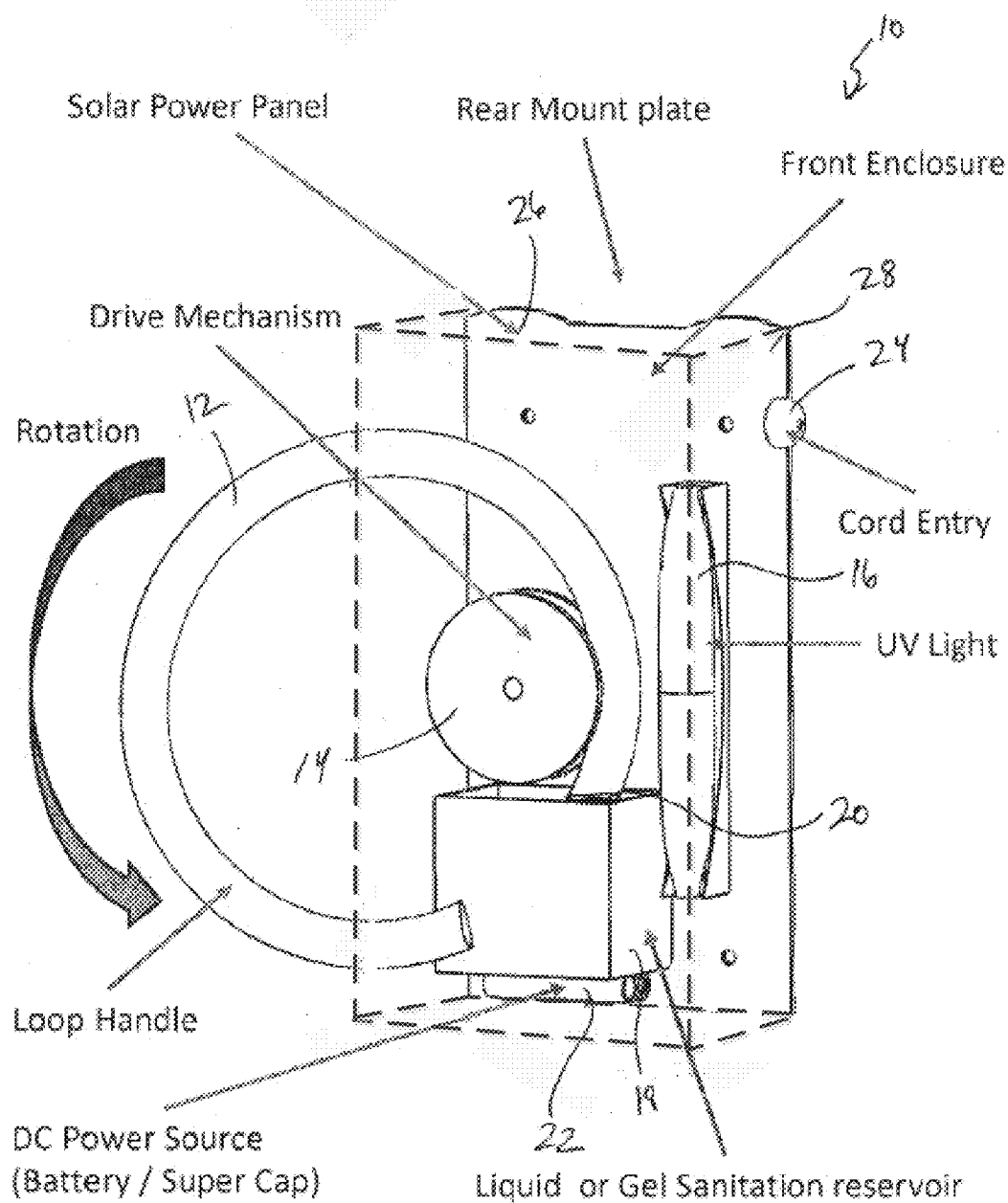
(19) **United States**(12) **Patent Application Publication**
Street(10) **Pub. No.: US 2014/0137369 A1**(43) **Pub. Date: May 22, 2014**(54) **SELF-SANITIZING DOOR HANDLE**(71) Applicant: **Brylin Innovations, LLC**, Deerfield
Beach, FL (US)(72) Inventor: **Brian Street**, Boca Raton, FL (US)(21) Appl. No.: **14/081,470**(22) Filed: **Nov. 15, 2013****Related U.S. Application Data**(60) Provisional application No. 61/726,905, filed on Nov.
15, 2012.**Publication Classification**(51) **Int. Cl.**
A47K 17/00 (2006.01)(52) **U.S. Cl.**CPC **A47K 17/00** (2013.01)USPC **16/111.1**

(57)

ABSTRACT

A self-sanitizing door handle includes a housing, a drive motor within the housing, and a pull engaged with the drive motor such that the drive motor causes the pull to rotate. The pull includes a portion within the housing and a portion external to the housing. A sanitizing solution reservoir within the housing contains a sanitizing solution, and the pull rotates through the sanitizing solution in the sanitizing solution reservoir when the drive motor is activated. The sanitizing solution reservoir includes a seal that scrapes excess sanitizing solution and bacterial particulates from the pull when the pull exits the sanitizing solution reservoir. An ultraviolet (UV) light source within the housing exposes the pull to UV light at least while the drive motor is activated. A power source configured to provide energy to the drive motor and UV light source.





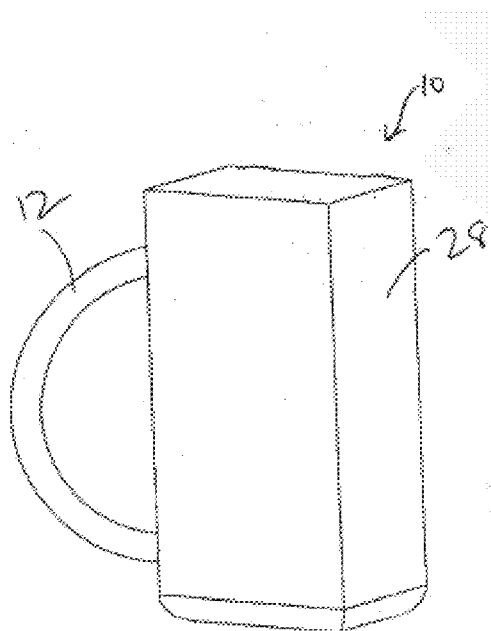


FIG. 2

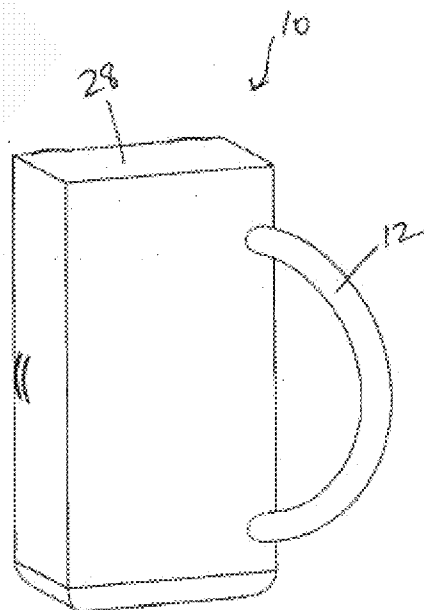


FIG. 3

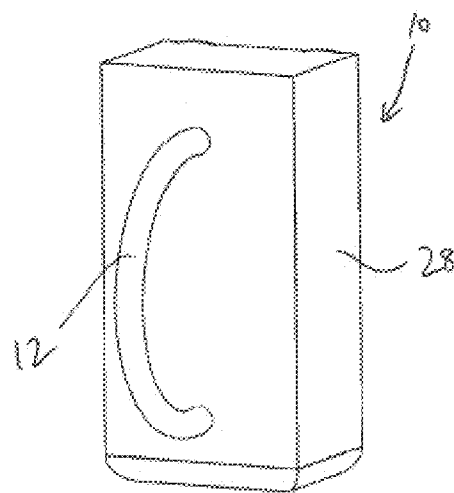


FIG. 4

SELF-SANITIZING DOOR HANDLE

RELATED APPLICATION

[0001] This application claims the benefit of U.S. Provisional Application Ser. No. 61/726,905, filed Nov. 15, 2012, which application is incorporated by reference herein in its entirety.

TECHNICAL FIELD

[0002] The present disclosure relates generally to hardware, and more specifically to a self-sanitizing door handle.

BACKGROUND

[0003] It is well known that bacteria and other microorganisms are the cause of many diseases and are easily transmitted from infected individuals to other persons if sanitary conditions are not maintained where such microorganisms thrive. Restrooms are places where bacteria, viruses and other disease-producing substances are found in great numbers. Indeed in public bathrooms the problem is particularly severe because these facilities are designed to dispose of large volumes of human waste, which contains up to 30% bacteria. It is not unusual to find disease causing organisms on a variety of surfaces in bathrooms, e.g., toilet seats, urinal and commode flush handles, faucet handles, door handles and knobs, push plates, etc. Urine, feces, and other body wastes which contain disease organisms can easily be left on such surfaces, usually by hand transmission. However, germs, particularly fecal bacteria, can also be sprayed into the air when a toilet flushes.

[0004] Individuals using bathrooms can protect themselves from these organisms by thorough washing and drying of their hands. However, the benefits of hand washing can be negated by subsequent contact with infected door handles when leaving the bathroom. The usual method of reducing microbiological activity on the surfaces of door handles is to spray or wipe them with strong disinfectant. However, this is inconvenient to do on a continuous basis, and a periodic wiping or spraying is not sufficient.

SUMMARY

[0005] A self-sanitizing door handle includes a pull that rotates through a reservoir of sanitizing solution and the presence of an ultraviolet (UV) light after being engaged or used by a user. The pull is engaged with a drive mechanism that causes the pull to rotate after the handle is pulled by the user. A rubber seal on the reservoir of sanitizing solution engages the handle as the pull rotates out of the reservoir to scrape excess sanitizing solution and bacterial particulates from the pull. The drive mechanism and/or the UV light are powered by a power source, such as an AC power source, a DC power source, or a solar panel and associated energy storage means.

[0006] While multiple embodiments are disclosed, still other embodiments of the present invention will become apparent to those skilled in the art from the following detailed description, which shows and describes illustrative embodiments of the invention. Accordingly, the drawings and detailed description are to be regarded as illustrative in nature and not restrictive.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] FIG. 1 is a schematic plan view of a self-sanitizing door handle, in accordance with some embodiments.

[0008] FIG. 2 is a schematic perspective view of the self-sanitizing door handle with the rotating handle arranged centrally on the left side of the housing, in accordance with some embodiments.

[0009] FIG. 3 is a schematic perspective view of the self-sanitizing door handle with the rotating handle arranged on the right side of the housing, in accordance with some embodiments.

[0010] FIG. 4 is a schematic perspective view of the self-sanitizing door handle with the rotating handle arranged centrally on the housing, in accordance with some embodiments.

[0011] While the invention is amenable to various modifications and alternative forms, specific embodiments have been shown by way of example in the drawings and are described in detail below. The intention, however, is not to limit the invention to the particular embodiments described. On the contrary, the invention is intended to cover all modifications, equivalents, and alternatives falling within the scope of the invention as defined by the appended claims.

DETAILED DESCRIPTION

[0012] FIG. 1 is a schematic plan view of a self-sanitizing door handle 10 in accordance with some embodiments. The self-sanitizing door handle 10 includes a pull 12. In some embodiments, as illustrated, the pull 12 has a loop shape and is configured to engage with a drive mechanism 14. In some embodiments, the drive mechanism 14 is sensor activated and is frictionally engaged with the pull 12. In some embodiments, the drive mechanism 14 is engaged with the pull 12 via a geared arrangement or assembly. When the pull 12 is activated, such as by an individual pulling on the pull 12 in order to open a door to which the self-sanitizing door handle 10 is attached, the drive motor 14 is activated. In some embodiments, as illustrated, the self-sanitizing door handle 10 includes an ultraviolet (UV) light 16. Optionally, activating the pull 12 causes the UV light 16 to turn on. In some embodiments, the UV light 16 includes a timer that controls how long the UV light 16 remains on.

[0013] The self-sanitizing door handle 10 includes a sanitizing fluid reservoir 18 that contains a sanitizing liquid or gel. Any of a variety of sanitizing liquids or gels may be used within the sanitizing fluid reservoir 18. In some embodiments, the sanitizing fluid reservoir 18 is configured to enable the sanitizing fluid reservoir 18 to be re-filled as it becomes empty. In some embodiments, the sanitizing fluid reservoir 18 is configured to be easily removed when empty and replaced with a new sanitizing fluid reservoir 18 that contains a fresh supply of sanitizing liquid or gel.

[0014] In some embodiments, as the pull 12 is released, the drive motor 14 turns the pull 12 so that the pull 12 rotates into the sanitizing fluid reservoir 18, passing by the UV light 16, killing germs and bacteria. In some embodiments, the sanitizing fluid reservoir 18 includes a seal 20 that effectively squeegees the pull 12. The seal 20 may, for example, be a rubber gasket. As the pull 12 continues its rotation through the sanitizing fluid reservoir 18, removing any residue from the handle and passes through the seal 20 to produce a germ free pull 12 for the next user.

[0015] The self-sanitizing door handle 10 can be powered by a variety of different power sources. Illustrative but non-

limiting examples of suitable power sources include a DC power source **22** (such as one or more batteries) or an AC power source such as a cord connection **24** that can be plugged into an outlet or hardwired to a power supply. In some embodiments, an integrated solar panel **26** can collect electrical energy from ambient light and can store the collected electrical energy in the DC power source **22** until needed.

[0016] In some embodiments, the dimensions of the outer case or housing **28** can be modified in shape to adapt to specific design criteria. The self-sanitizing door handle **10** of the present disclosure has many applications, including nursing homes, hospitals, public restrooms and schools.

[0017] FIG. **2** is a schematic perspective view of the self-sanitizing door handle **10** with the rotating pull **12** arranged on the left side of the housing **28**. FIG. **3** is a schematic perspective view of the self-sanitizing door handle **10** with the rotating pull **12** arranged on the right side of the housing **28**. FIG. **4** is a schematic perspective view of the self-sanitizing door handle **10** with the rotating pull **12** arranged centrally on the housing **28**.

[0018] The components of the self-sanitizing door handle described and illustrated herein, including the sanitizing reservoir, the sanitizing solution, UV light, handle, drive motor, housing, power source, and enclosure can include various characteristics and features. Examples of these components are described, for example, in U.S. Pat. No. 7,080,427, entitled "Self-Cleaning Door Handle for a Self-Closing Door," U.S. Pat. No. 6,874,697, entitled "Device for Disinfecting Door Handles," U.S. Patent App. Pub. No. 2010/0140499, entitled "Self-Powered Sanitizing Door Handle," and U.S. Patent App. Pub. No. 2005/0011042, entitled "Self-Cleaning Handle," each of which is incorporated by reference in its entirety for all purposes.

[0019] Various modifications and additions can be made to the exemplary embodiments discussed without departing from the scope of the present invention. For example, while the embodiments described above refer to particular features, the scope of this invention also includes embodiments having different combinations of features and embodiments that do not include all of the described features. Accordingly, the scope of the present invention is intended to embrace all such alternatives, modifications, and variations as fall within the scope of the claims, together with all equivalents thereof.

I claim:

1. A self-sanitizing door handle comprising:

a housing;

a drive motor within the housing;

a pull including a portion within the housing and a portion external to the housing, the portion within the housing engaged with the drive motor such that the drive motor causes the pull to rotate, wherein the drive motor is

activated a predetermined period of time after the portion external to the housing is pulled;

a sanitizing solution reservoir within the housing and containing a sanitizing solution, wherein the pull rotates through the sanitizing solution in the sanitizing solution reservoir when the drive motor is activated, the sanitizing solution reservoir including a seal that scrapes the pull when the pull exits the sanitizing solution reservoir; an ultraviolet (UV) light source within the housing that is activated at least while the drive motor is activated, the UV light source arranged to expose the pull to UV light while the drive motor is activated; and

a power source configured to provide energy to the drive motor and UV light source.

2. The self-sanitizing door handle of claim 1, wherein the power source comprises an AC power source.

3. The self-sanitizing door handle of claim 1, wherein the power source comprises a DC power source.

4. The self-sanitizing door handle of claim 3, wherein the DC power source comprises rechargeable batteries or a supercapacitor.

5. The self-sanitizing door handle of claim 4, further comprising:

a solar panel on an exterior of the housing, the solar panel configured to collect energy and to store collected energy in the rechargeable batteries or supercapacitor.

6. The self-sanitizing door handle of claim 1, wherein the seal is configured to remove excess sanitizing solution and bacterial particulates from the pull.

7. A self-sanitizing door handle comprising:

a housing;

a drive motor within the housing;

a pull including a portion within the housing and a portion external to the housing, the portion within the housing engaged with the drive motor such that the drive motor causes the pull to rotate when actuated;

a sanitizing solution reservoir within the housing and containing a sanitizing solution, wherein the pull rotates through the sanitizing solution in the sanitizing solution reservoir when the drive motor is activated;

an ultraviolet (UV) light source within the housing that is activated at least while the drive motor is activated, the UV light source arranged to expose the pull to UV light while the drive motor is activated; and

a power source configured to provide energy to the drive motor and UV light source.

8. The self-sanitizing door handle of claim 7, wherein the power source comprises an AC power source.

9. The self-sanitizing door handle of claim 7, wherein the power source comprises a DC power source.

10. The self-sanitizing door handle of claim 4, further comprising a solar panel on an exterior of the housing.

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