US010385561B1

(12) **United States Patent**
**Hall et al.**

(10) **Patent No.: US 10,385,561 B1**
(45) **Date of Patent: Aug. 20, 2019**

(54) **AUTOMATIC PURIFIER SWITCH COVER**

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( * ) 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.: **16/191,606**

(22) Filed: **Nov. 15, 2018**

(51) **Int. Cl.**

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|---|---|
| ***E03D 9/052*** | (2006.01) |
| ***A47K 17/00*** | (2006.01) |
| ***E03D 5/10*** | (2006.01) |
| *H03K 17/945* | (2006.01) |

(52) **U.S. Cl.**
CPC ..... ***E03D 9/052*** (2013.01); ***A47K 17/00*** (2013.01); ***E03D 5/105*** (2013.01); *H03K 17/945* (2013.01); *H03K 2017/9455* (2013.01); *H03K 2217/960705* (2013.01)

(58) **Field of Classification Search**
CPC ..... H03K 2217/960705; A47K 3/005; A47K 17/00; E03D 9/052
USPC ..... 340/693.5; 200/305, 333; 206/320; 4/213–217
See application file for complete search history.

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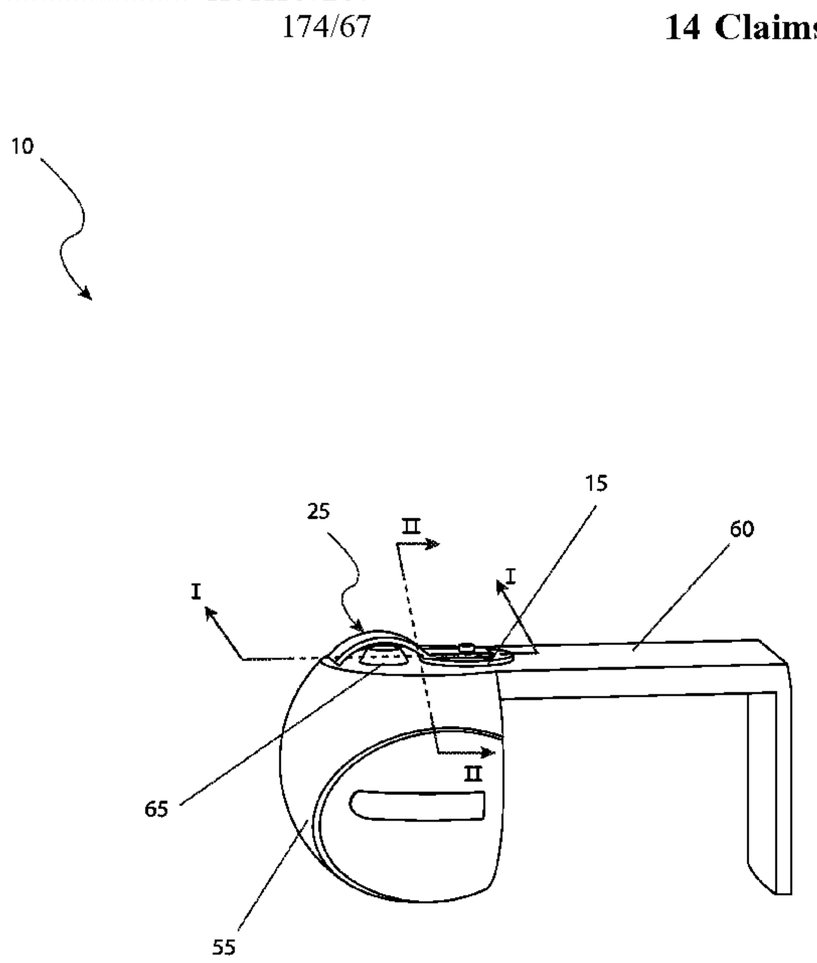
(57) **ABSTRACT**

An automatic purifier switch cover comprises a protective shield configured to be used in conjunction with the Cogswell™ Toilet Air Purifier. The switch cover shields the motion detector of the Cogswell™ Toilet Air Purifier from activation when the toilet is not in use.

**14 Claims, 4 Drawing Sheets**



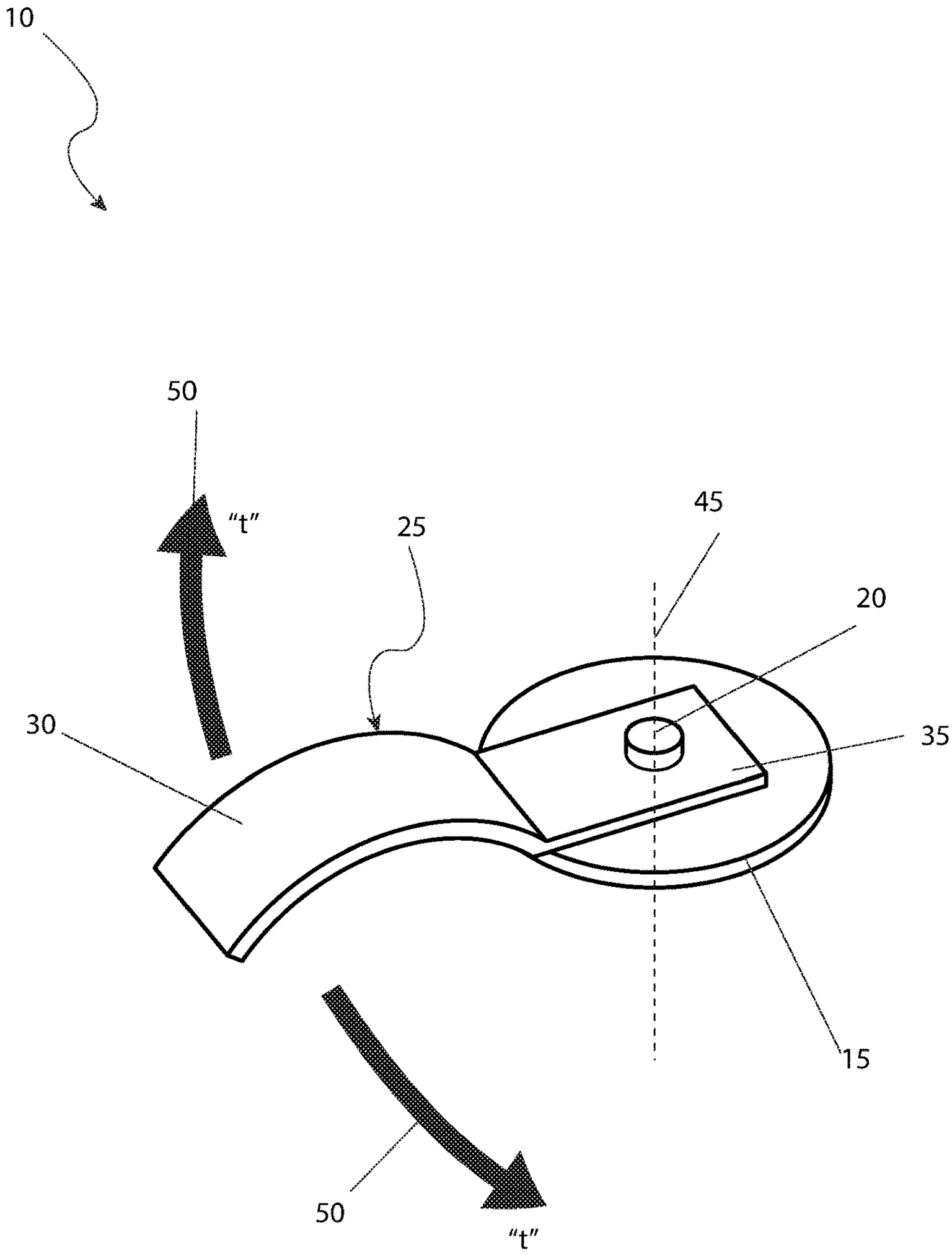



FIG. 1

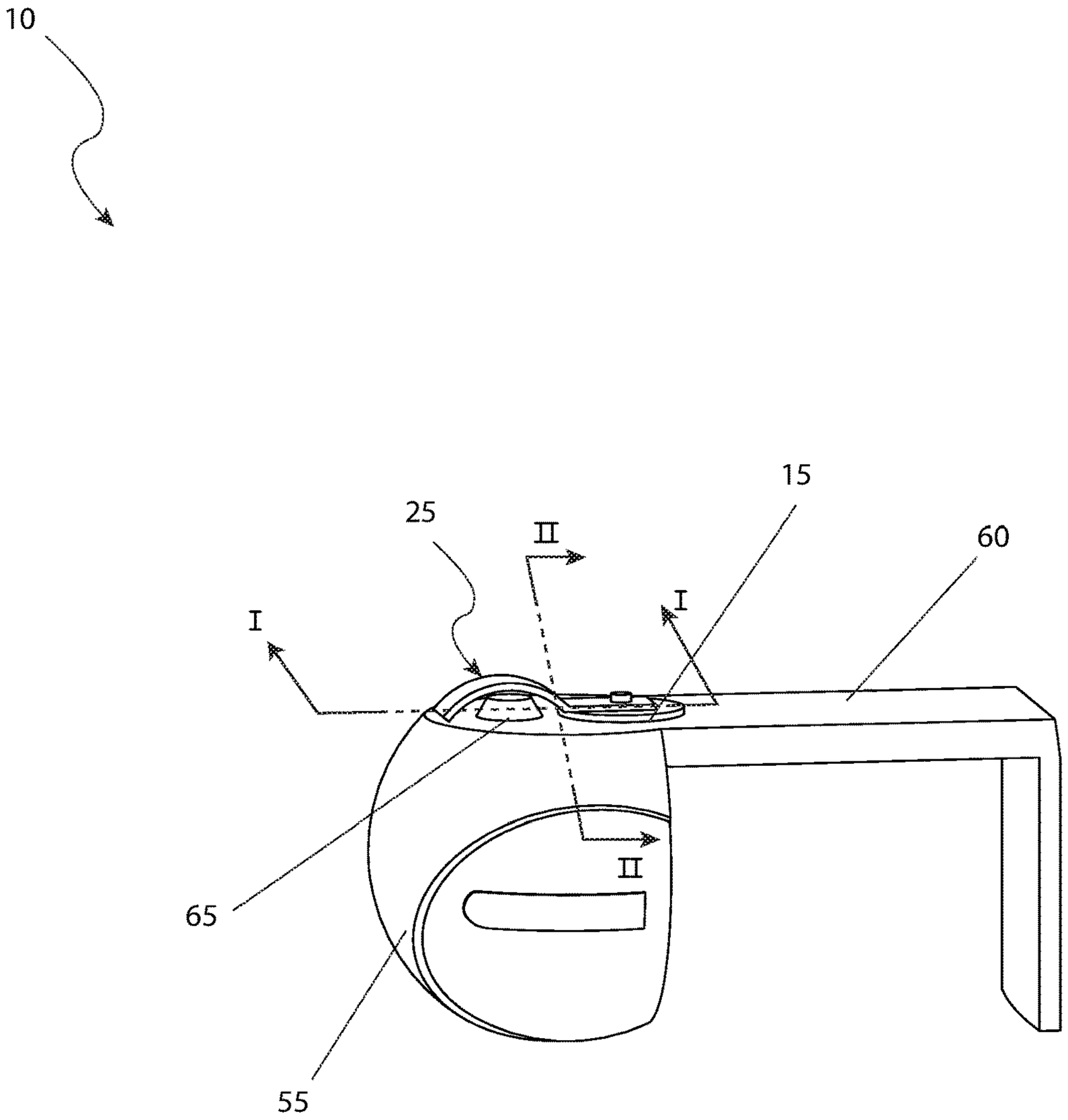



FIG. 2

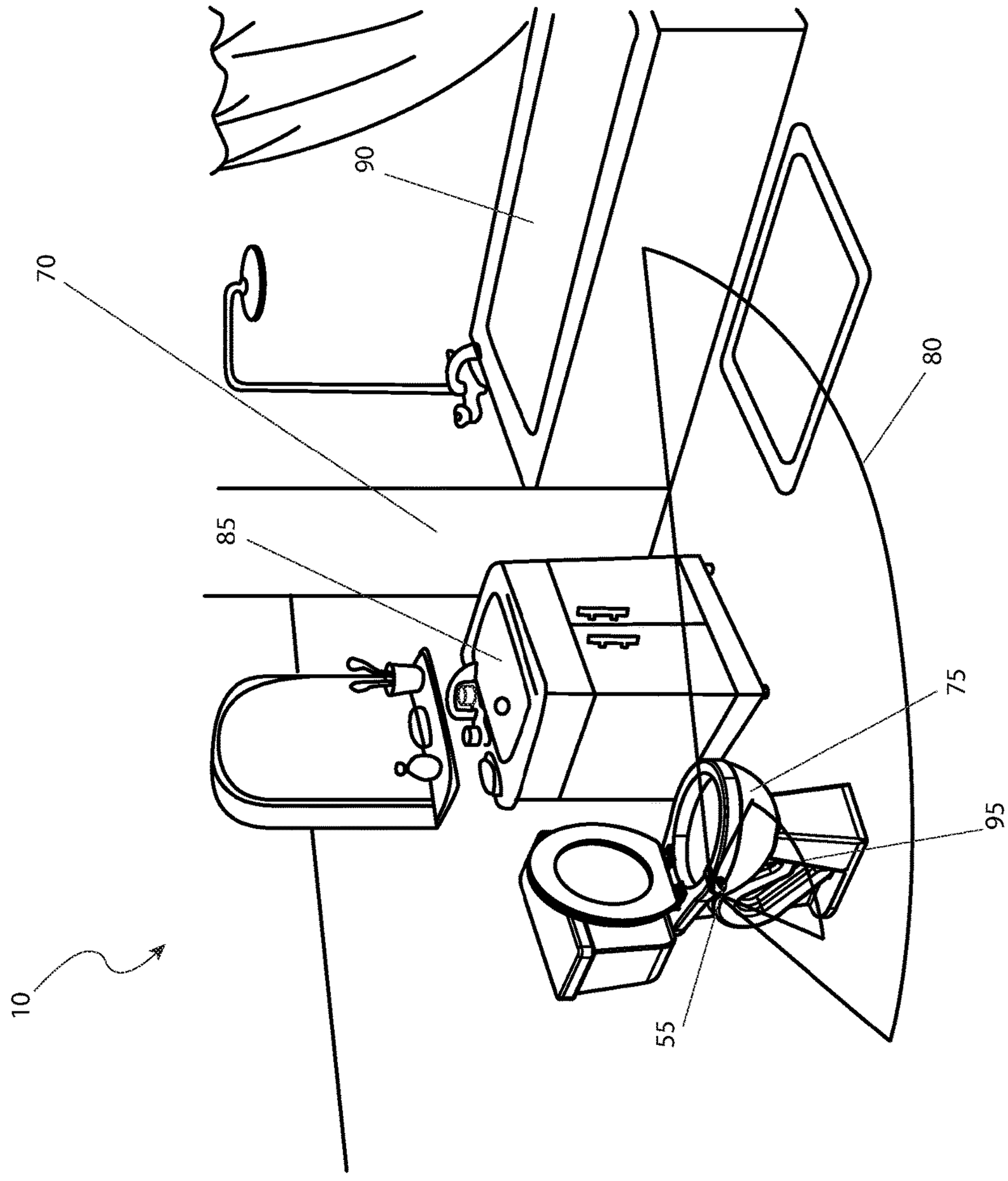



FIG. 3

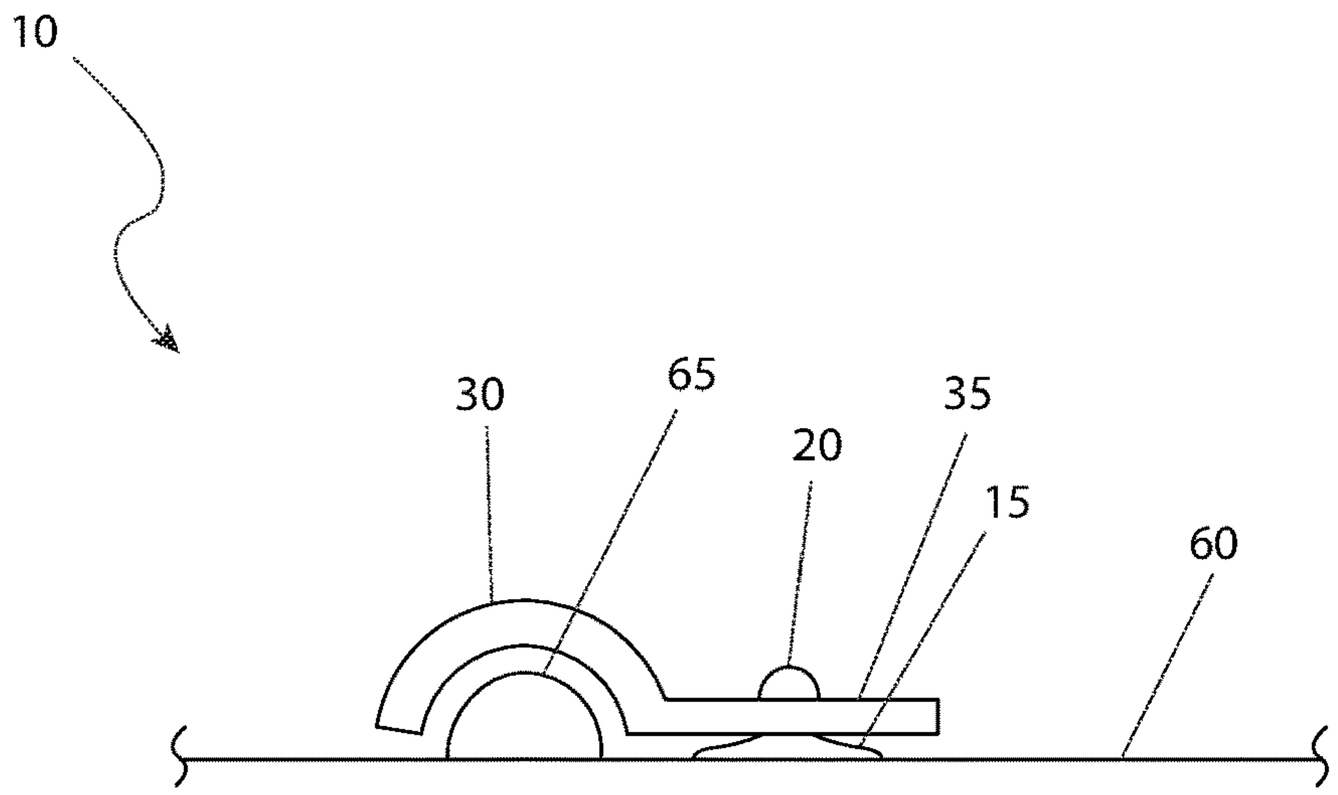



FIG. 4

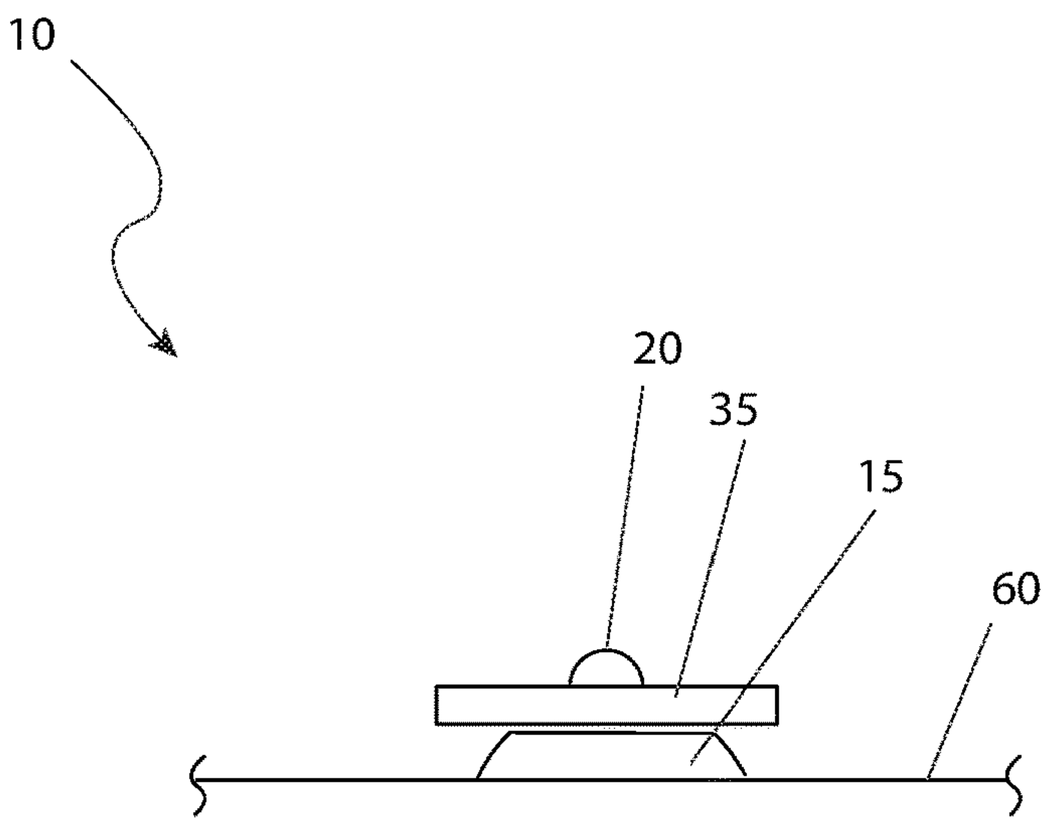



FIG. 5

# AUTOMATIC PURIFIER SWITCH COVER

## RELATED APPLICATIONS

Non-applicable.

## FIELD OF THE INVENTION

The presently disclosed subject matter is directed to automatic purifier switch covers.

## BACKGROUND OF THE INVENTION

The battle to keep bathrooms and public restrooms smelling clean and fresh is an everlasting one. The saturation of the market with air freshening sprays, and deodorizers is strong evidence of this battle. One recent style of product actually reduces the odors emanating from the toilet itself. The Cogswell® Toilet Air Purifier is an example of one such product. It utilizes an electronic motion sensor to activate fan, lights, and other electronics whenever a person uses the toilet.

Unfortunately, its detection range is very large causing activation of the unit whenever someone simply walks by toilet leading to inadvertent operation, unnecessary wear and tear, premature battery depletion and excessive filter replacement. Accordingly, there exists a need for a means by which electronic motion sensors can be restricted in their range to avoid the problems as described above. The development of the activation prevention device for toilet exhaust **10** fulfills this need.

## BRIEF SUMMARY OF THE INVENTION

The principles of the present invention provide for an activation prevention device for a toilet bowl odor control device of a toilet bowl, comprising a suction cup having a top mounted mounting appendage and a rotatable shield having a hemispherical cap and a flange. The flange is planar and is provided with a circular penetration through which the flange is routed, which provides a pivot point around which the rotatable shield moves back and forth along a reciprocating travel path as moved by a person. The suction cup is easily removed for cleaning of the toilet bowl odor control device. The suction cup may also be applied by the person to an upper surface such that the hemispherical cap uniformly covers the proximity sensor.

The hemispherical cap may be connected to the suction cup by use of the flange mounted upon the mounting appendage and once properly positioned to cover the proximity sensor and restrict its detection range. No further manipulation of the activation prevention device is required during its normal use.

The suction cup may be one inch in diameter and one-half inch tall. The rotatable shield encompasses a proximity sensor which provides for activation of the toilet bowl odor control device whenever the person uses the toilet upon which the toilet bowl odor control device is installed. The rotatable shield may cover the proximity sensor and greatly reduces or restricts a sensing range of the proximity sensor and thus prevents activation of the toilet bowl odor control device or only allows activation of the toilet bowl odor control device only when the person is present. The proximity sensor may be selected from the group consisting of an infrared sensor, an ultrasonic sensor, a capacitance sensor, or a laser-based sensor.



The toilet bowl odor control device is provided with a restricted detection range that provides for operation of the toilet bowl odor control device only if the person is present near the toilet bowl. The toilet bowl odor control device is provided with a restricted detection range that provides for operation of the toilet bowl odor control device if the person is seated upon the toilet bowl and would prevent operation for males that would be standing in front of the toilet bowl for urination, thus further eliminating unnecessary operation of the toilet bowl odor control device and extending its useful operating cycle time.

The rotatable shield is made of plastic in an injection molding process while the suction cup is may be made of silicone or rubber or any other flexible material. The toilet bowl odor control device is provided with a generally planar upper surface upon which the suction cup may be temporarily affixed.

## BRIEF DESCRIPTION OF THE DRAWINGS

The advantages and features of the present invention will become better understood with reference to the following more detailed description and claims taken in conjunction with the accompanying drawings, in which like elements are identified with like symbols, and in which:

FIG. **1** is a perspective view of the activation prevention device **10** for a toilet bowl odor control device **55**, according to the preferred embodiment of the present invention;

FIG. **2** is a perspective view of the activation prevention device **10**, attached to a toilet bowl odor control device **55**, according to the preferred embodiment of the present invention;

FIG. **3** is a perspective view of a bathroom **70**, showing the activation prevention device **10** in a utilized state, according to the preferred embodiment of the present invention;

FIG. **4** is a sectional view of the activation prevention device **10**, as seen along a line I-I, as shown in FIG. **2**, according to the preferred embodiment of the present invention; and,

FIG. **5** is a sectional view of the activation prevention device **10**, as seen along a line II-II, as shown in FIG. **2**, according to the preferred embodiment of the present invention.

## DESCRIPTIVE KEY

**10** activation prevention device
**15** suction cup
**20** mounting appendage
**25** rotatable shield
**30** hemispherical cap
**35** flange
**40** circular penetration
**45** pivot point
**50** reciprocating travel path "t"
**55** toilet bowl odor control device
**60** upper surface
**65** proximity sensor
**70** bathroom
**75** toilet bowl
**80** conventional detection range
**85** sink
**90** tub
**95** restricted detection range

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

The best mode for carrying out the invention is presented in terms of its preferred embodiment, herein depicted within FIGS. **1** through **5**. However, the invention is not limited to the described embodiment, and a person skilled in the art will appreciate that many other embodiments of the invention are possible without deviating from the basic concept of the invention and that any such work around will also fall under scope of this invention. It is envisioned that other styles and configurations of the present invention can be easily incorporated into the teachings of the present invention, and only one (1) particular configuration shall be shown and described for purposes of clarity and disclosure and not by way of limitation of scope. All of the implementations described below are exemplary implementations provided to enable persons skilled in the art to make or use the embodiments of the disclosure and are not intended to limit the scope of the disclosure, which is defined by the claims.

The terms "a" and "an" herein do not denote a limitation of quantity, but rather denote the presence of at least one (1) of the referenced items.

### 1. DETAILED DESCRIPTION OF THE FIGURES

Referring now to FIG. **1**, a perspective view of the activation prevention device for toilet exhaust **10**, according to the preferred embodiment of the present invention is disclosed. The activation prevention device **10** (herein also described as the "device") **10**, includes two (2) primary components. The first is a suction cup **15** with a top mounted mounting appendage **20**. It is envisioned that the suction cup **15** is approximately one inch (1 in.) in diameter and one-half inch (½ in.) tall. The second component of the device **10** is a rotatable shield **25**, comprising a hemispherical cap **30** and a flange **35**. The flange **35** is planar and is provided with a circular penetration **40** (not shown due to illustrative limitations) through which the flange **35** is routed. Such mounting provides a pivot point **45** around which the rotatable shield **25** moves back and forth along a reciprocating travel path "t" **50** as moved by the user. It is envisioned that the rotatable shield **25** would be made of plastic in an injection molding process. The suction cup **15** would be made of silicone, rubber or similar flexible material, also in an injection molding process.

Referring next to FIG. **2**, a perspective view of the device **10**, attached to a toilet bowl odor control device **55**, according to the preferred embodiment of the present invention is depicted. The toilet bowl odor control device **55** is shown as a Cogswell™ Toilet Air Purifier for purposes of illustration. However, it is noted that the device **10** can be utilized with other similar devices, and as such, the usage of the device **10** with any particular style of toilet bowl odor control device **55** should not be interpreted as a limiting factor of the present invention. As such, the general configuration and overall physical shape of the rotatable shield **25** will vary per the design of the toilet bowl odor control device **55** without affecting the overall claims and teachings of the device **10**. The toilet bowl odor control device **55** is provided with a generally planar upper surface **60** upon which the suction cup **15** can temporarily affix. The suction cup **15** can be easily removed for cleaning of the toilet bowl odor control device **55** as necessary. In its installed position as shown, the rotatable shield **25** of the device **10** encompasses a proximity sensor **65** which provides for the activation of the toilet bowl odor control device **55** whenever a person uses the toilet upon which the toilet bowl odor control device **55** is installed. The rotatable shield **25** covers the proximity sensor **65** and thus greatly reduces or restricts the sensing range of the proximity sensor **65** and thus prevents activation of the toilet bowl odor control device **55** or only allows activation of the toilet bowl odor control device **55** only when the user is present. It is envisioned that the proximity sensor **65** would be of the infrared variety, although other types of sensing devices such as ultrasonic, capacitance, laser-based and the like would be equally restricted by the device **10**, and as such, the particular usage of any type or style of sensing device should not be interpreted as a limiting factor of the present invention. Further description of the range restriction capabilities of the device **10** will be provided herein below.

Referring now to FIG. **3**, a perspective view of a bathroom **70**, showing the device **10** in a utilized state, according to the preferred embodiment of the present invention is shown. It is noted that the bathroom **70** is depicted as a typical bathroom **70** as found in a residence, although the device **10** will function in any similar environment such as a public restroom in an equally effective manner. The device **10** is installed upon the toilet bowl odor control device **55** which is in turn installed upon a toilet bowl **75** in a conventional manner. The toilet bowl odor control device **55**, without the device **10** installed provides for a normal conventional detection range **80** as shown. It is easily seen that anyone simply walking in the bathroom **70** to use a sink **85** or a tub **90** for example would trigger the operation of the toilet bowl odor control device **55**. As such, the internal battery of the toilet bowl odor control device **55** will be unnecessarily depleted as well as unnecessary wear, stress and strain be placed upon other components of the toilet bowl odor control device **55** such as filters, motors, bearings, and the like. With the device **10** installed as shown in FIG. **2**, the toilet bowl odor control device **55** is provided with a restricted detection range **95** as shown. This restricted detection range **95** provides for operation of the toilet bowl odor control device **55** only if a person or user is present near the toilet bowl **75**. Additionally, the device **10** may be positioned such that operation is allowed only if a user is seated upon the toilet bowl **75** and would prevent operation for males that would be standing in front of the toilet bowl **75** for urination, thus further eliminating unnecessary operation of the toilet bowl odor control device **55** and extending its useful operating cycle time.

Referring next to FIG. **4**, a sectional view of the device **10**, as seen along a line I-I, as shown in FIG. **2**, according to the preferred embodiment of the present invention is disclosed. This FIGURE presents the planar upper surface **60** and the proximity sensor **65** as provided as part of the toilet bowl odor control device **55** (as shown in FIG. **2**). The suction cup **15** is applied by the user to the upper surface **60** such that the hemispherical cap **30** uniformly covers the proximity sensor **65**. The hemispherical cap **30** is thus connected to the suction cup **15** by use of the flange **35** mounted upon the mounting appendage **20**. Once properly positioned to cover the proximity sensor **65** and restrict its detection range as shown in FIG. **3**, no further manipulation of the device **10** is required during its normal use.

Referring finally to FIG. **5**, a sectional view of the device **10**, as seen along a line II-II, as shown in FIG. **2**, according to the preferred embodiment of the present invention is depicted. This FIGURE presentation provides additional clarity on the mounting of the suction cup **15** to the upper surface **60** and its relationship with the mounting appendage

**20** and the flange **35**. It can be seen that the relationship is of a low-profile design and would not interfere with the usage of the toilet bowl **75** (as shown in FIG. **3**).

## 2. OPERATION OF THE PREFERRED EMBODIMENT

The preferred embodiment of the present invention can be utilized by the common user in a simple and effortless manner with little or no training. It is envisioned that the activation prevention device for toilet exhaust **10** would be constructed in general accordance with FIG. **1** through FIG. **5**. The user would procure the device **10** through normal procurement channels paying particular attention to the manufacturer, make, and model of toilet bowl odor control device **55** upon which the device **10** would be used. It is envisioned that various models of the device **10** would be made available with the only particular variation being the general shape and configuration of the rotatable shield **25**.

After procurement and prior to utilization, the device **10** would be prepared in the following manner: the device **10** would be positioned over the toilet bowl odor control device **55** such that the hemispherical cap **30** is centered over the proximity sensor **65**; the suction cup **15** be pressed into holding position upon the upper surface **60**; and final position adjustments made to the rotatable shield **25** by manipulating it along the reciprocating travel path "t" **50** until the restricted detection range **95** is obtained.

The operation of the toilet bowl odor control device **55** would then commence in a normal manner without the inadvertent operation previously permitted by accidental close proximity to the toilet bowl **75**. The device **10** may be removed for cleaning and then subsequently reinstalled following the above-mentioned process as necessary in a cyclical fashion.

The foregoing descriptions of specific embodiments of the present invention have been presented for purposes of illustration and description. They are not intended to be exhaustive or to limit the invention to the precise forms disclosed, and obviously many modifications and variations are possible in light of the above teaching. The embodiments were chosen and described in order to best explain the principles of the invention and its practical application, to thereby enable others skilled in the art to best utilize the invention and various embodiments with various modifications as are suited to the particular use contemplated.

The invention claimed is:

**1**. An activation prevention device for a toilet bowl odor control device of a toilet bowl, comprising:

a suction cup having a top mounted mounting appendage; and

a rotatable shield having a hemispherical cap and a flange, said flange is planar and is provided with a circular penetration through which said flange is routed, which provides a pivot point around which said rotatable shield moves back and forth along a reciprocating travel path as moved by a person;

wherein said rotatable shield encompasses a proximity sensor which provides for activation of said toilet bowl odor control device whenever said person uses said toilet upon which said toilet bowl odor control device is installed.



**2**. The activation prevention device according to claim **1**, wherein said suction cup is removed for cleaning of said toilet bowl odor control device.

**3**. The activation prevention device according to claim **1**, wherein said suction cup is applied by said person to an upper surface such that said hemispherical cap uniformly covers said proximity sensor.

**4**. The activation prevention device according to claim **3**, wherein said hemispherical cap is connected to said suction cup by use of said flange mounted upon said mounting appendage and once properly positioned to cover said proximity sensor and restrict its detection range, no further manipulation of said activation prevention device is required during its normal use.

**5**. The activation prevention device according to claim **1**, wherein said suction cup is one inch in diameter and one-half inch tall.

**6**. The activation prevention device according to claim **1**, wherein said rotatable shield covers said proximity sensor and reduces or restricts a sensing range of said proximity sensor and thus prevents activation of said toilet bowl odor control device or only allows activation of said toilet bowl odor control device only when said person is present.

**7**. The activation prevention device according to claim **1**, wherein said proximity sensor is selected from the group consisting of an infrared sensor, an ultrasonic sensor, a capacitance sensor, or a laser-based sensor.

**8**. The activation prevention device according to claim **1**, wherein said toilet bowl odor control device is provided with a restricted detection range that provides for operation of said toilet bowl odor control device only if said person is present near said toilet bowl when the shield covers said proximity sensor.

**9**. The activation prevention device according to claim **1**, wherein said toilet bowl odor control device is provided with a restricted detection range that provides for operation of said toilet bowl odor control device if said person is seated upon said toilet bowl and would prevent operation for males that would be standing in front of said toilet bowl for urination, thus further eliminating unnecessary operation of said toilet bowl odor control device and extending its useful operating cycle time when the shield covers said proximity sensor.

**10**. The activation prevention device according to claim **1**, wherein said rotatable shield is made of plastic in an injection molding process.

**11**. The activation prevention device according to claim **1**, wherein said suction cup is made of silicone.

**12**. The activation prevention device according to claim **1**, wherein said suction cup is made of rubber.

**13**. The activation prevention device according to claim **1**, wherein said suction cup is made of flexible material.

**14**. The activation prevention device according to claim **1**, wherein said toilet bowl odor control device is provided with a generally planar upper surface upon which said suction cup is temporarily affixed.

* * * * *