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(54) Title: SWITCHING DEVICE

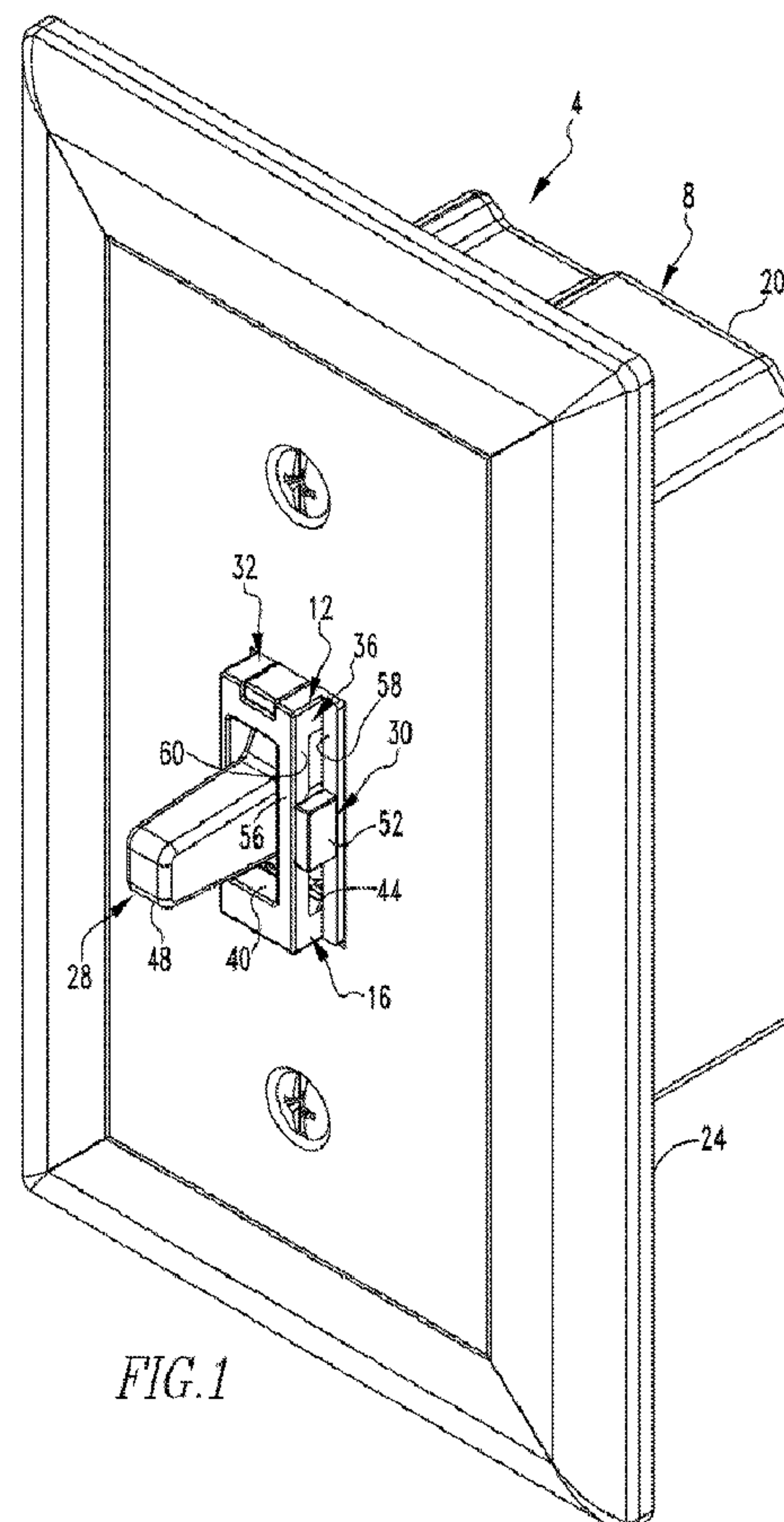


FIG.1

(57) Abrégé/Abstract:

A switching apparatus (4) is structured to be electrically connected with a circuit and includes a housing (8) and a switch assembly (12). The switch assembly includes a toggle switch (28), a slider switch (30), and a toggle housing (32), with the toggle housing

(57) **Abrégé(suite)/Abstract(continued):**

including at least a first wall (36) having an abutment (56) and a ledge (58), and with the ledge being situated relatively closer to the housing than the abutment. The slider switch includes a slider element (52) that is situated at a location spaced from the housing and disposed generally between the abutment and the ledge. The abutment is structured to resist unintended engagement of the slider element when the toggle switch is being moved between a first orientation and a second orientation.

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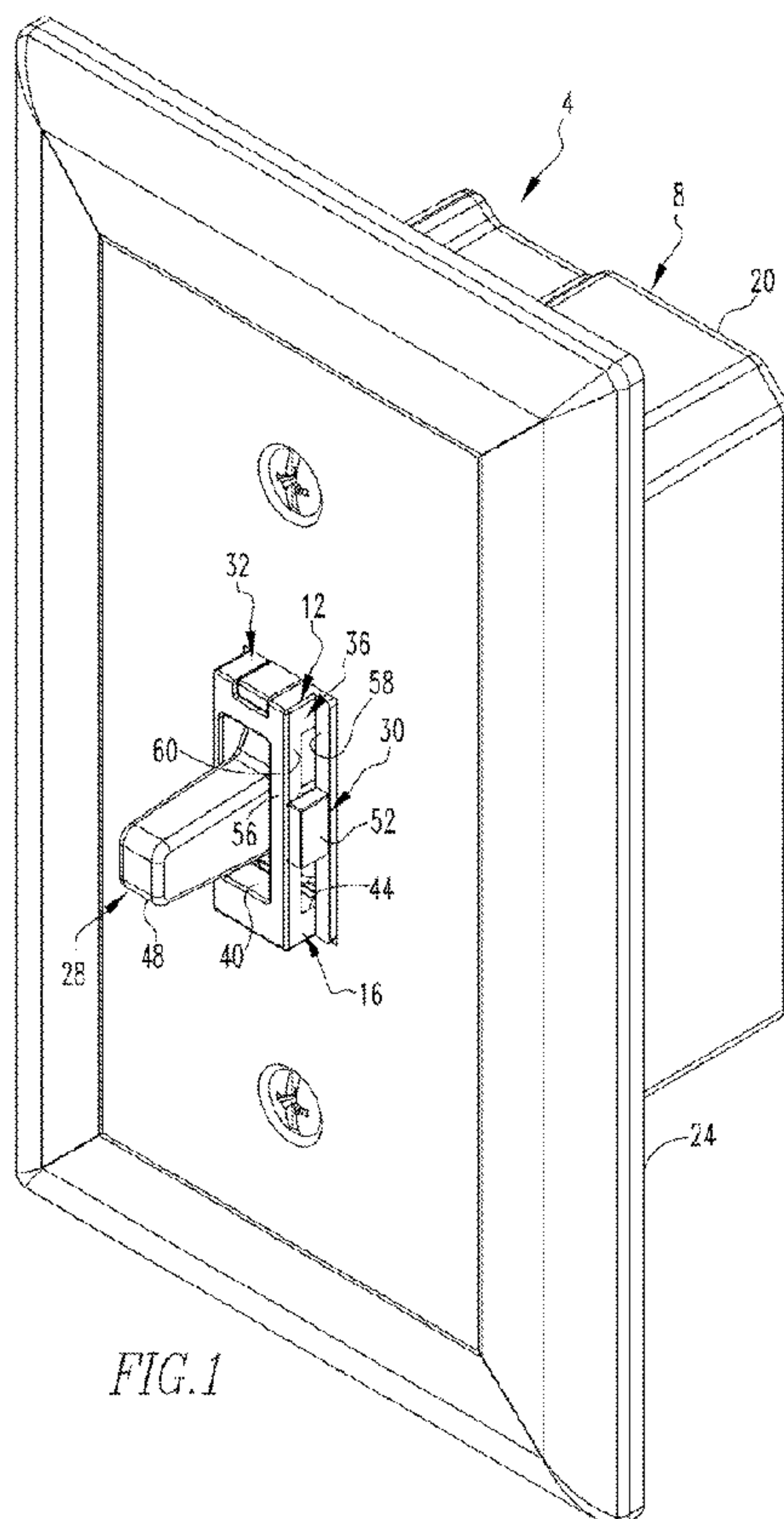


FIG. 1

(57) Abstract: A switching apparatus (4) is structured to be electrically connected with a circuit and includes a housing (8) and a switch assembly (12). The switch assembly includes a toggle switch (28), a slider switch (30), and a toggle housing (32), with the toggle housing including at least a first wall (36) having an abutment (56) and a ledge (58), and with the ledge being situated relatively closer to the housing than the abutment. The slider switch includes a slider element (52) that is situated at a location spaced from the housing and disposed generally between the abutment and the ledge. The abutment is structured to resist unintended engagement of the slider element when the toggle switch is being moved between a first orientation and a second orientation.

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SWITCHING DEVICE

CROSS-REFERENCE TO RELATED APPLICATION

The instant application claims priority from U.S. Provisional Patent
5 Application Serial No. 62/095,908 filed December 23, 2014, the disclosures of which
are incorporated herein by reference.

BACKGROUND

Field

The disclosed and claimed concept relates generally to electrical
10 switches and, more particularly, to a switch that includes both a toggle switch and a
slider switch.

Related Art

Electrical switches of numerous types are well known in the related art.
Some switches, such as those used to turn lights between an ON state and an OFF
15 state, include a dimming function in addition to the ON / OFF function. For instance,
a dimmer might change the light in the ON state between a HIGH (bright) condition
and a LOW (dim) condition in a well understood fashion. While such dimmer-type
switches have been generally effective for their intended purposes, they have not been
without limitation.

20 As with many things, such dimmer switches have been designed to
provide a compromise between aesthetic considerations and functional considerations.
Some dimmer-type switches have employed a single pushbutton switch that is
additionally rotatable to provide the dimming function, but such switching devices
have had limitations since the dimming function has sometimes been inadvertently
25 performed by slightly and unintentionally rotating the switch when actuating it as a
pushbutton. Other switches have provided a conventional toggle switch and have
additionally provided a sliding dimmer switch, both on the same housing, but such
dimming slider switches have sometimes been difficult to manually access. Such
difficulty in accessing the slider switch has been primarily due to the fact that the
30 slider is spaced from the toggle a sufficient distance that unintended operation of the
slider is avoided, but this spacing has been at the cost of sometimes making the slider
difficult to access. Improvements thus would be desirable.

SUMMARY

An improved switching apparatus is structured to be electrically connected with a circuit and includes a housing and a switch assembly. The switch assembly includes a toggle switch, a slider switch, and a toggle housing, with the toggle housing including at least a first wall having an abutment and a ledge, and with the ledge being situated relatively closer to the housing than the abutment. The slider switch includes a slider element that is situated at a location spaced from the housing and disposed generally between the abutment and the ledge. The abutment is structured to resist unintended engagement of the slider element when the toggle switch is being moved between a first orientation and a second orientation.

Various aspects of the disclosed and claimed concept are provided by an improved switching device that is structured to be electrically connected with a circuit and to be situated on a wall. The switching device can be generally stated as including a housing that can be generally stated as including a hidden portion that is structured to be at least partially recessed in the wall, a switch assembly, the switch assembly being disposed on the housing, the switch assembly can be generally stated as including a toggle switch, a slider switch, and a toggle housing, the toggle switch can be generally stated as including a toggle that is structured to be movable with respect to the toggle housing between a first orientation and a second orientation to switch the switching device and thus the circuit between an ON state and an OFF state, the slider switch can be generally stated as including a slider element that is structured to be movable along a continuum between a first position and a second position to adjust the ON state of the switching device between a LOW condition of the ON state and a HIGH condition of the ON state, the toggle and the toggle housing both protruding from the housing, the toggle housing can be generally stated as including at least a first wall that at least partially surrounds the toggle, the at least first wall can be generally stated as including an abutment that is elongated and is situated generally parallel with and extends substantially along the longitudinal extent of the continuum, the abutment being situated adjacent the toggle in the first orientation and in the second orientation and being spaced from the housing, the at least first wall can be generally stated as further including a ledge that is elongated and is situated generally parallel with and extends substantially along the longitudinal extent of the along the continuum, the ledge being situated between and spaced from

the housing and the abutment, the ledge being disposed relatively closer to the housing than the abutment, and the slider element being situated at a location spaced from the housing and disposed generally between the abutment and the ledge.

BRIEF DESCRIPTION OF THE DRAWINGS

5 A further understanding of the disclosed and claimed concept can be gained from the following Description wherein:

FIG. 1 is a perspective view of an improved switching device in accordance with the disclosed and claimed concept;

10 FIG. 2 is a side view of the switching device of FIG. 1 installed on a schematically-depicted wall;

FIG. 3 is a perspective view of a portion of the switching apparatus of FIG. 1; and

FIG. 4 is a side view of the portion of the switching device that is depicted in FIG. 3.

15 Similar numerals refer to similar parts throughout the specification.

DESCRIPTION

An improved switching device 4 is depicted in FIG. 1 and is configured to be electrically connectable with a controlled portion of a circuit. The switching device 4 can generally be described as comprising a housing 8, a bracket 10
20 (FIGS. 2-4), and a switch assembly 12. The bracket 10 is situated on the housing 10.

The switching device 4 is depicted in FIG. 2 as being mounted to a wall 16. That is, portions of the bracket 10 that are not depicted in FIG. 2 are affixed to the wall 16 or to an electrical box that is mounted to the wall 16.

25 The housing 8 more particularly includes a hidden portion 20 that is recessed within the wall 16 and further includes a plate 24 that is situated generally on or at an exterior surface 26 of the wall 16. The plate 24 and the hidden portion 20 are typically attached to one another after installation on the wall 16 where the plate 24 is positioned to overlie and thus conceal the hidden portion 20.

30 The switch assembly 12 is more particularly depicted in FIGS. 3 and 4, and it includes a toggle switch 28, a slider switch 30, and a toggle housing 32. The toggle switch 28 includes a toggle 48 that is movable between two different orientations (as at 48A and 48B in FIG. 4) to switch the switching device 4 and the circuit connected therewith between an ON state and an OFF state. The slider switch

30 includes a slider element 52 that is continuously slidable along a continuum between a first position (as at 52A in FIG. 4) and a second position (as at 52B in FIG. 4) to change the ON state of the switching device 4 between a HIGH condition of the ON state and a LOW condition of the ON state, respectively. The continuum is
5 elongated and linear in the depicted embodiment and is generally defined by the first and second positions 52A and 52B.

The slider switch 30 is operable as a dimmer to change a light that is connected with the switching device 4 between a relatively bright (i.e., HIGH) setting in the ON state and a relatively dim (i.e., LOW) setting in the ON state. The slider
10 switch 30 is, in the depicted exemplary embodiment, continuously adjustable along the continuum to continuously adjust the condition of the ON state, such as in the fashion of an actual or a virtual rheostat.

The toggle housing 32 can be said to include at least a first wall 36 that at least partially surrounds the toggle 48 or is situated adjacent thereto. In the
15 depicted exemplary embodiment, the wall 36 completely surrounds the toggle 48 such that the wall 36 forms a receptacle 40 within which the toggle 48 is situated. The wall 36 additionally has formed therein an opening in the form of an elongated slot 44 within which the slider element 52 is slidable between the first and second positions, as are indicated at the numerals 48A and 48B in FIG. 4, respectively.

20 The wall 36 advantageously includes an elongated abutment 56 which in FIGS. 1-4 is a portion of the wall 36 that protrudes from the hidden portion 20. The wall further advantageously includes a ledge 58 which in FIGS. 1-4 is a portion of the wall 36 that protrudes from the hidden portion 20 a distance less than the abutment 56. That is, the ledge 58 is situated relatively closer to the hidden portion
25 20 than the abutment 56. The ledge 58 is therefore spaced from each of the abutment 56 and the hidden portion 20 and is situated generally therebetween.

It can be seen that the slider element 52 is spaced from the hidden portion 20, and the slider element 52 is disposed generally between the hidden portion 20 and the abutment 56. It can also be seen that the slider element 52 is disposed
30 generally between the abutment 56 and the ledge 58. The abutment 56 is situated generally adjacent the toggle 48.

The abutment 56 advantageously resists unintended engagement of the slider element 52 when the toggle 48 is moved between its two orientations, such as

when the switching device 4 is moved between its ON and OFF states. That is, the abutment 56 protrudes from the hidden portion 20 a greater distance than the ledge 58 such that the slider element 52 is effectively recessed in the region generally between the abutment 56 and the ledge 58. The abutment 56 includes an abutment surface 64 which, in the depicted exemplary embodiment, is substantially planar and is elongated and is situated generally parallel with and extends substantially along the longitudinal extent of the continuum. As such, when a user manually engages the toggle 48 to switch the switching device 4 between its ON and OFF states, the user's fingers will at most unintentionally engage only the abutment 56 during such switching operation. Such engagement with the abutment 56 will retain the user's fingers without engaging the slider element 52, which thus resists unintended movement of the slider element 52 during switching of the toggle 48. The user can, of course, manually engage the slider element 52 when it is desired to change the ON state between the HIGH and LOW conditions.

It is noted that the toggle 48 and the toggle housing 32 both protrude outwardly from the hidden portion 20 in generally the same direction from the hidden portion 20. However, the slider element 52 protrudes from the wall 36 in a generally transverse to the direction in which the toggle 48 and the toggle housing 32 protrude from the hidden portion 20. That is, the wall 36 has a connecting wall 36 that extends generally between the abutment 56 and the ledge 58, and the slot 44 extends into the connecting wall 36 in a direction from the ledge 58 generally toward the toggle 48. The slider element 52 is at least partially received in the slot 44. This further resists unintended engagement of the slider element 52 when the toggle 48 is being moved between its two orientations to switch the switching device 4 between its ON and OFF states. It is further noted that the ledge 58 has a ledge surface 68 and that the connecting wall 60 has a connecting wall surface 72. In the depicted exemplary embodiment, the ledge surface 68 is substantially planar and is parallel and spaced apart from the abutment surface 64. The connecting wall surface 72 is oriented substantially perpendicular to the abutment surface 64 and the ledge surface 68.

It is noted that other embodiments of the switching device 4 are disclosed herein as including toggle housings that are of a different configuration than the toggle housing 32. It is expressly noted, however, that each of the alternative toggle housings includes an abutment that operates in the same fashion as the

abutment 56 with respect to the slider element 52 to resist unintended engagement of the slider element 52 during switching of the switching device 4 between its ON and OFF states.

It is additionally noted that additional relevant subject matter is disclosed, for example, in U.S. Patent Application Publication 2014/0151203 and U.S. Patent Application Publication 2014/0251774, the disclosures of which are incorporated herein by reference.

While specific embodiments of the disclosed concept have been described in detail, it will be appreciated by those skilled in the art that various modifications and alternatives to those details could be developed in light of the overall teachings of the disclosure. Accordingly, the particular arrangements disclosed are meant to be illustrative only and not limiting as to the scope of the disclosed concept which is to be given the full breadth of the claims appended and any and all equivalents thereof.

CLAIMS

What is claimed is:

1. A switching device 4 structured to be electrically connected with a circuit and to be situated on a wall 16, the switching device comprising:
 - a housing 8 that comprises a hidden portion 20 that is structured to be at least partially recessed in the wall;
 - a switch assembly 12, the switch assembly being disposed on the housing;
 - the switch assembly comprising a toggle switch 28, a slider switch 30, and a toggle housing 32;
 - the toggle switch comprising a toggle 48 that is structured to be movable with respect to the toggle housing between a first orientation 48A and a second orientation 48B to switch the switching device and thus the circuit between an ON state and an OFF state;
 - the slider switch comprising a slider element 52 that is structured to be movable along a continuum between a first position 52B and a second position 52A to adjust the ON state of the switching device between a LOW condition of the ON state and a HIGH condition of the ON state;
 - the toggle and the toggle housing both protruding from the housing;
 - the toggle housing comprising at least a first wall 36 that at least partially surrounds the toggle;
 - the at least first wall comprising an abutment 56 that is elongated and is situated generally parallel with and extends substantially along the longitudinal extent of the continuum, the abutment being situated adjacent the toggle in the first orientation and in the second orientation and being spaced from the housing;
 - the at least first wall further comprising a ledge 58 that is elongated and is situated generally parallel with and extends substantially along the longitudinal extent of the along the continuum, the ledge being situated between and spaced from the housing and the abutment, the ledge being disposed relatively closer to the housing than the abutment; and
 - the slider element being situated at a location spaced from the housing and disposed generally between the abutment and the ledge.
2. The switching device of Claim 1 wherein the at least first wall has formed therein an opening 44 that is elongated and that is situated generally parallel

with and extends substantially along the longitudinal extent of the along the continuum, the opening being situated generally between the abutment and the ledge, the slider element being received in the opening and being movable therein between the LOW and HIGH conditions.

3. The switching device of Claim 2 wherein the at least first wall further comprises a connecting wall 60 that extends between the abutment and the ledge, the opening being an elongated slot 44 that is formed in the connecting wall.

4. The switching device of Claim 3 wherein the slot extends from the ledge into the connecting wall in a direction generally toward the toggle.

5. The switching device of Claim 1 wherein the slider element is situated adjacent the abutment, and wherein the abutment is structured to resist unintended engagement of the slider element when the toggle is being moved between the first and second orientations during switching of the switching device between the ON and OFF states.

6. The switching device of Claim 1 wherein the housing further comprising a plate 24, the plate being structured to be situated on the wall and to be positioned to overlie the hidden portion

7. The switching device of Claim 1 wherein at least a portion of the slider element is disposed generally between the abutment and the plate.

8. The switching device of Claim 3 wherein the abutment has an abutment surface 64 that faces generally away from the at least first wall, the ledge has a ledge surface 68 that faces generally away from the at least first wall, and the connecting wall has a connecting wall surface 72 that faces generally away from the at least first wall, and wherein the connecting wall surface is oriented substantially perpendicular to the abutment surface and the ledge surface.

9. The switching device of Claim 8 wherein the slider element protrudes from the connecting wall in a direction generally transverse to the direction in which the toggle protrudes from the housing.

10. The switching device of Claim 1 wherein the slider element protrudes from the at least first wall in a direction generally transverse to the direction in which the toggle protrudes from the housing.

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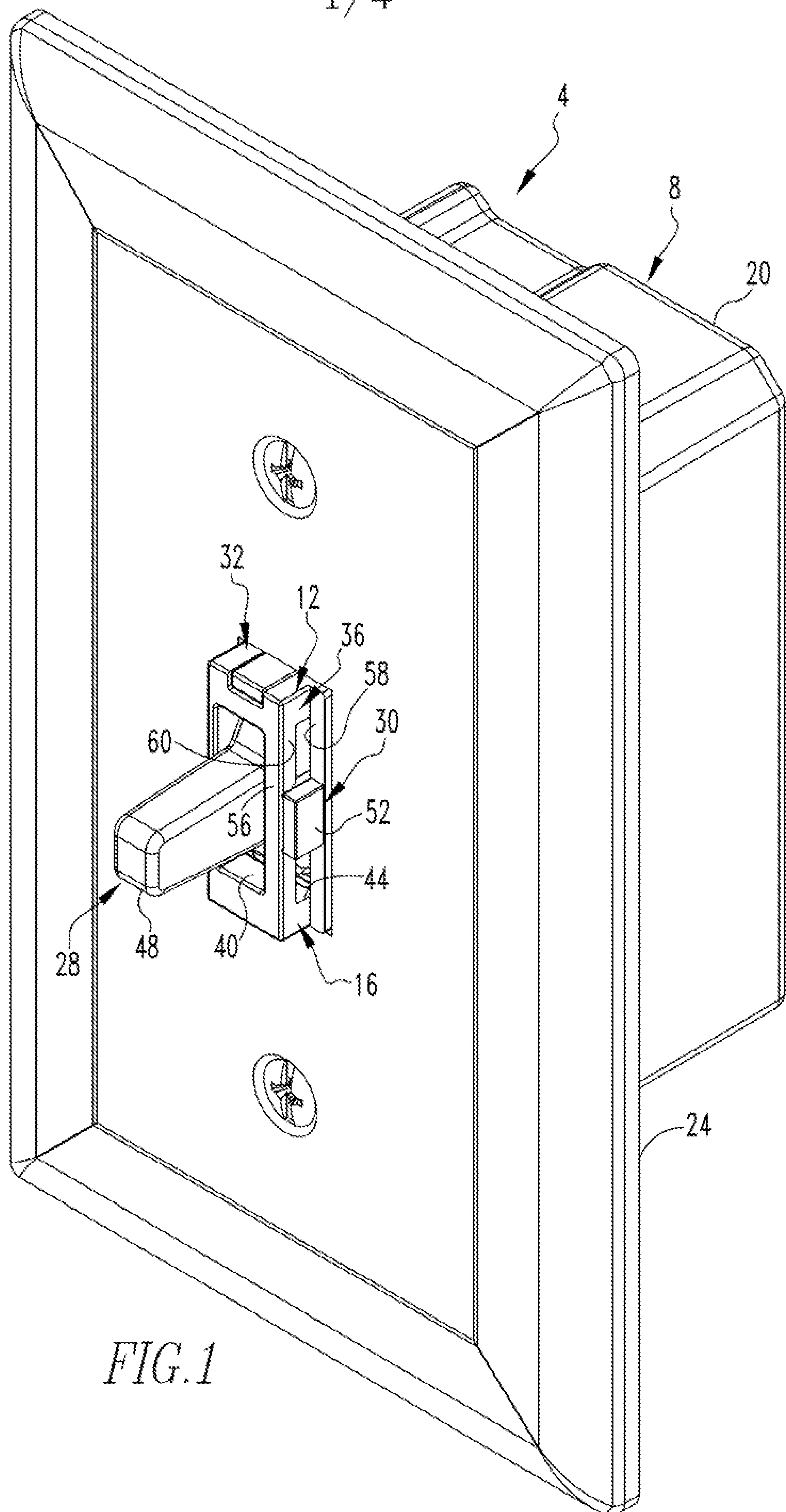
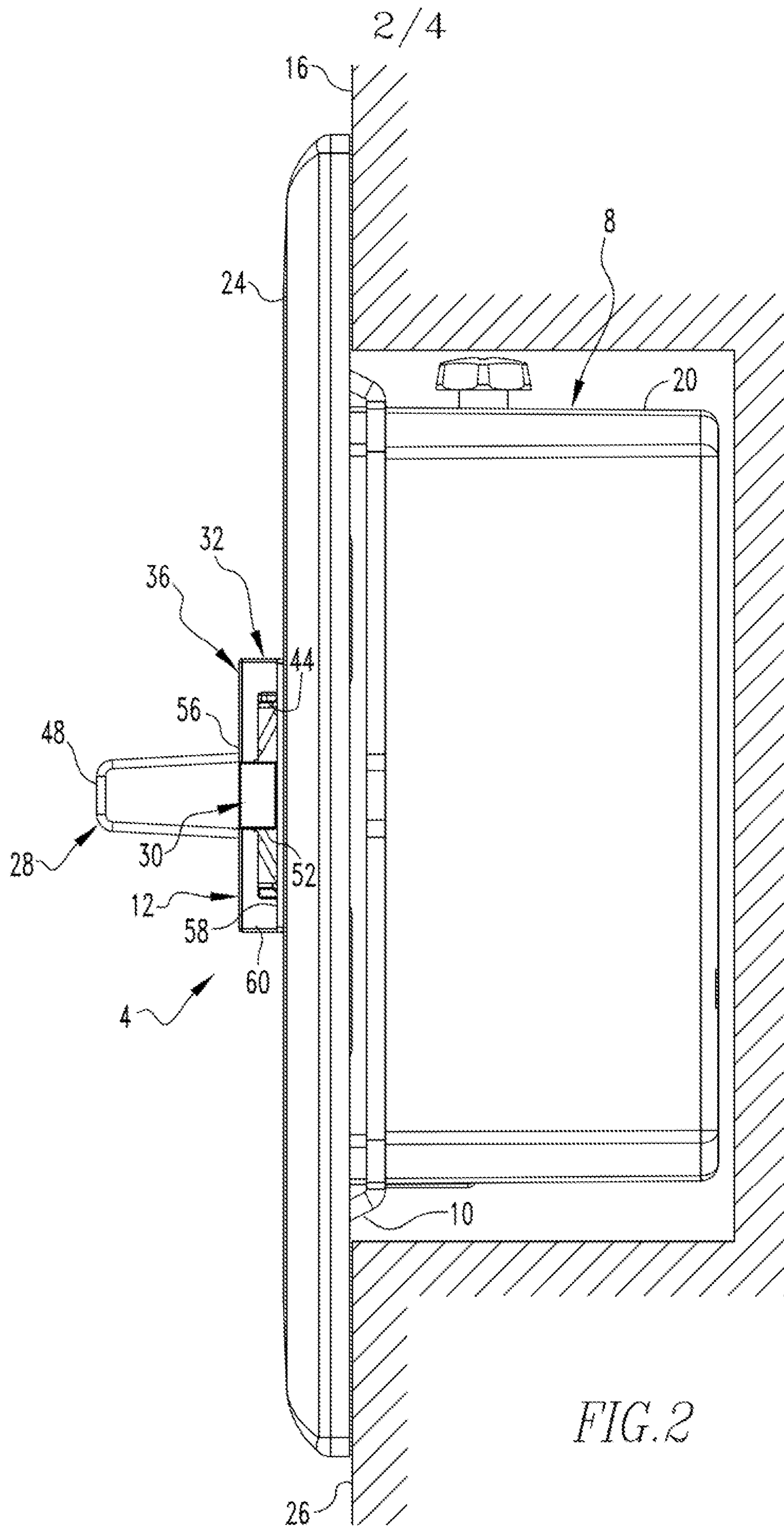
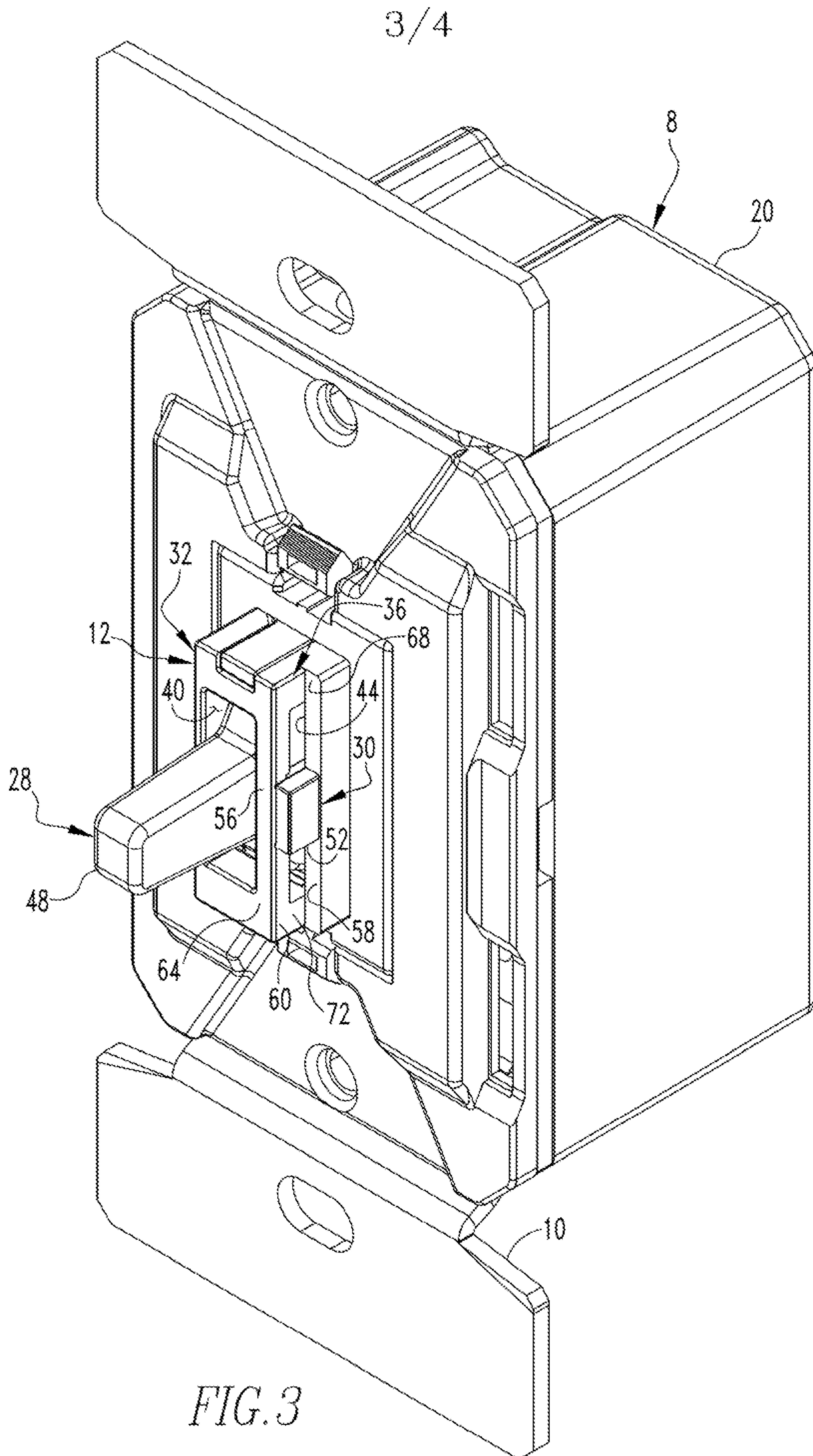


FIG. 1





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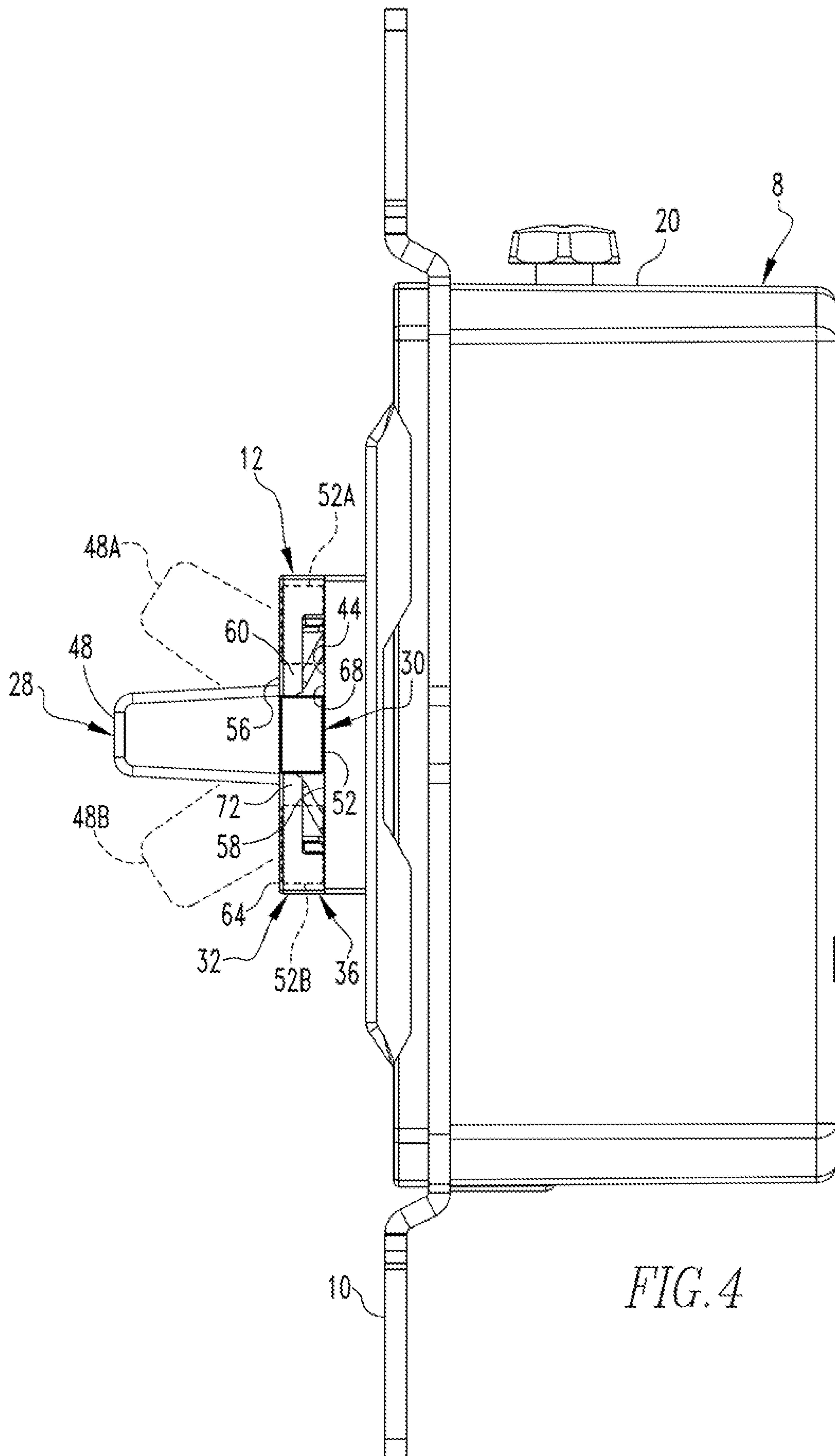


FIG. 4

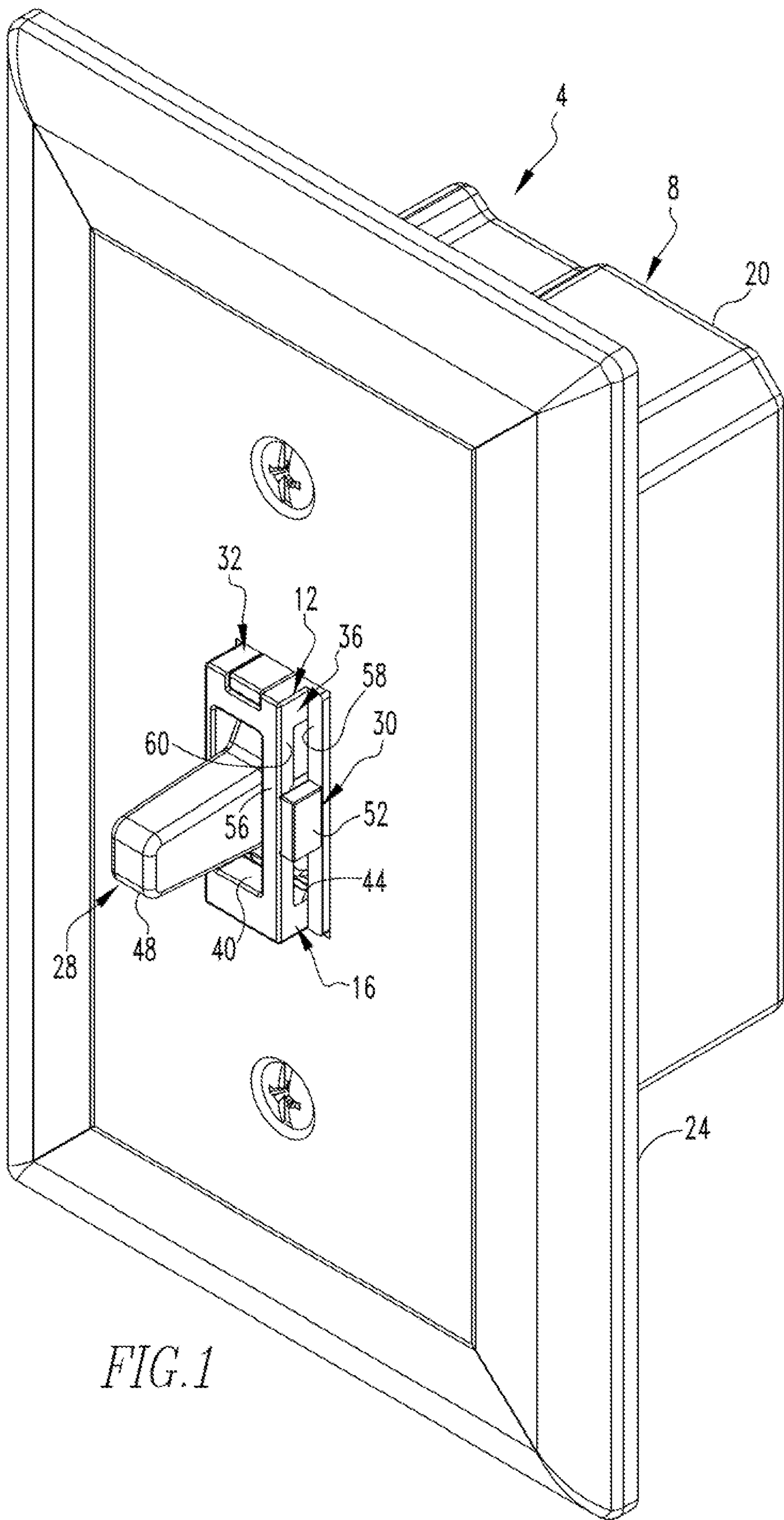


FIG. 1