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Steen et al.

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[54] **EXTENSION ACTUATOR FOR ELECTRICAL WALL SWITCH**

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[51] **Int. Cl.**[6] **H01H 3/20**

[52] **U.S. Cl.** **200/331**; 200/330; 200/329

[58] **Field of Search** 200/331, 332, 330, 329

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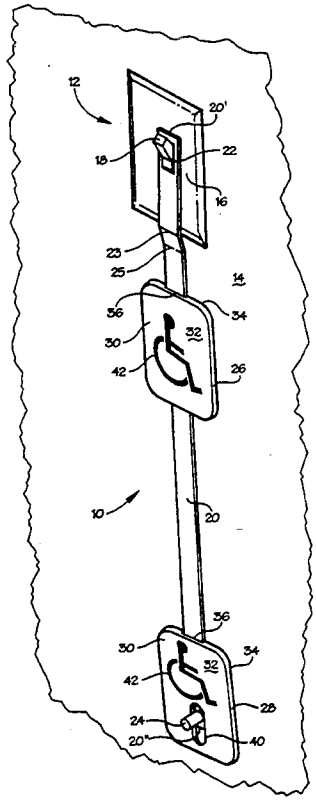
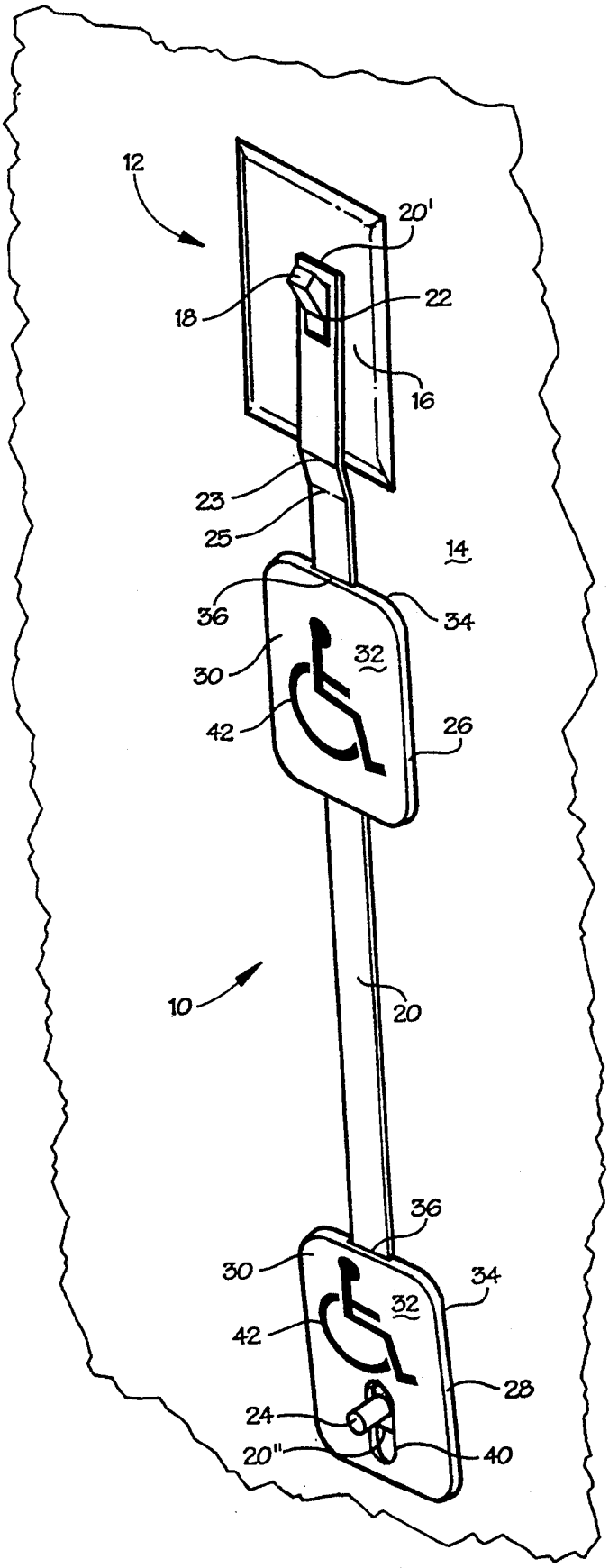
Assistant Examiner—David J. Walczak
Attorney, Agent, or Firm—Shefte, Pinckney & Sawyer

[57] **ABSTRACT**

A device for actuating conventional toggle-type and rocker-type electrical wall switches such as light switches, particularly adapted for facilitating switch operation by children and handicapped persons who cannot reach the normal elevation at which such switches are installed, utilizes an elongated operating arm with a portion at one end for operating engagement with the switch, e.g., an opening to receive a toggle switch or a protuberance to rest in contact against a rocker switch, and a pin projecting outwardly from the other end, the arm depending downwardly from the switch flatly against the wall and constrained to longitudinal reciprocating operational movement by a pair of guiding members each affixed directly to the wall or to the wall and the switch and defining respective aligned recesses facing the wall within which the arm slides, the lowermost guiding member having an elongated slot through which the arm's pin extends outwardly for manual actuation of upward and downward sliding movement of the arm to move the switch between its on and off positions.

2 Claims, 5 Drawing Sheets

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20'
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16
23
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34
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26
10
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30
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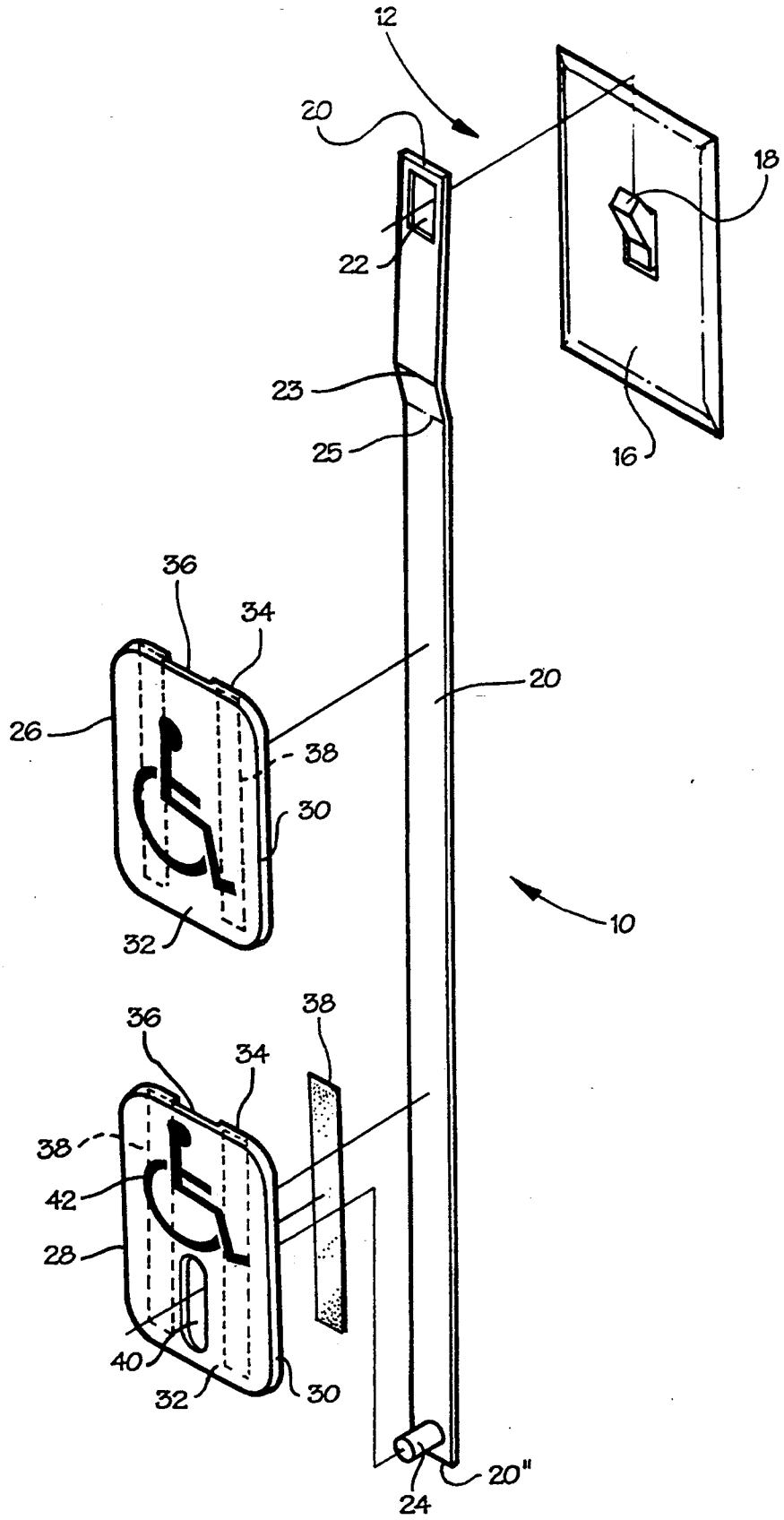
28
24
20"
40

Fig. 1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20"
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Fig. 2

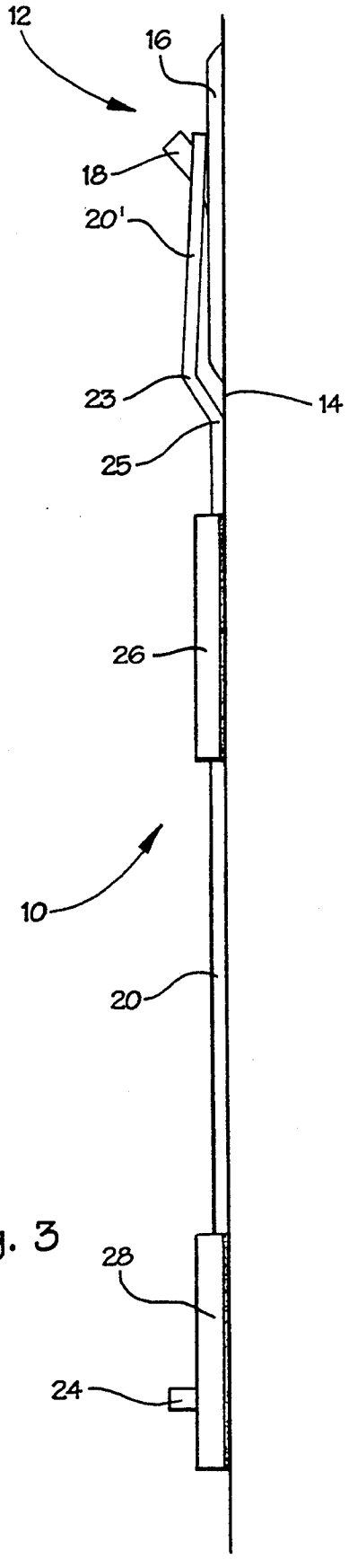
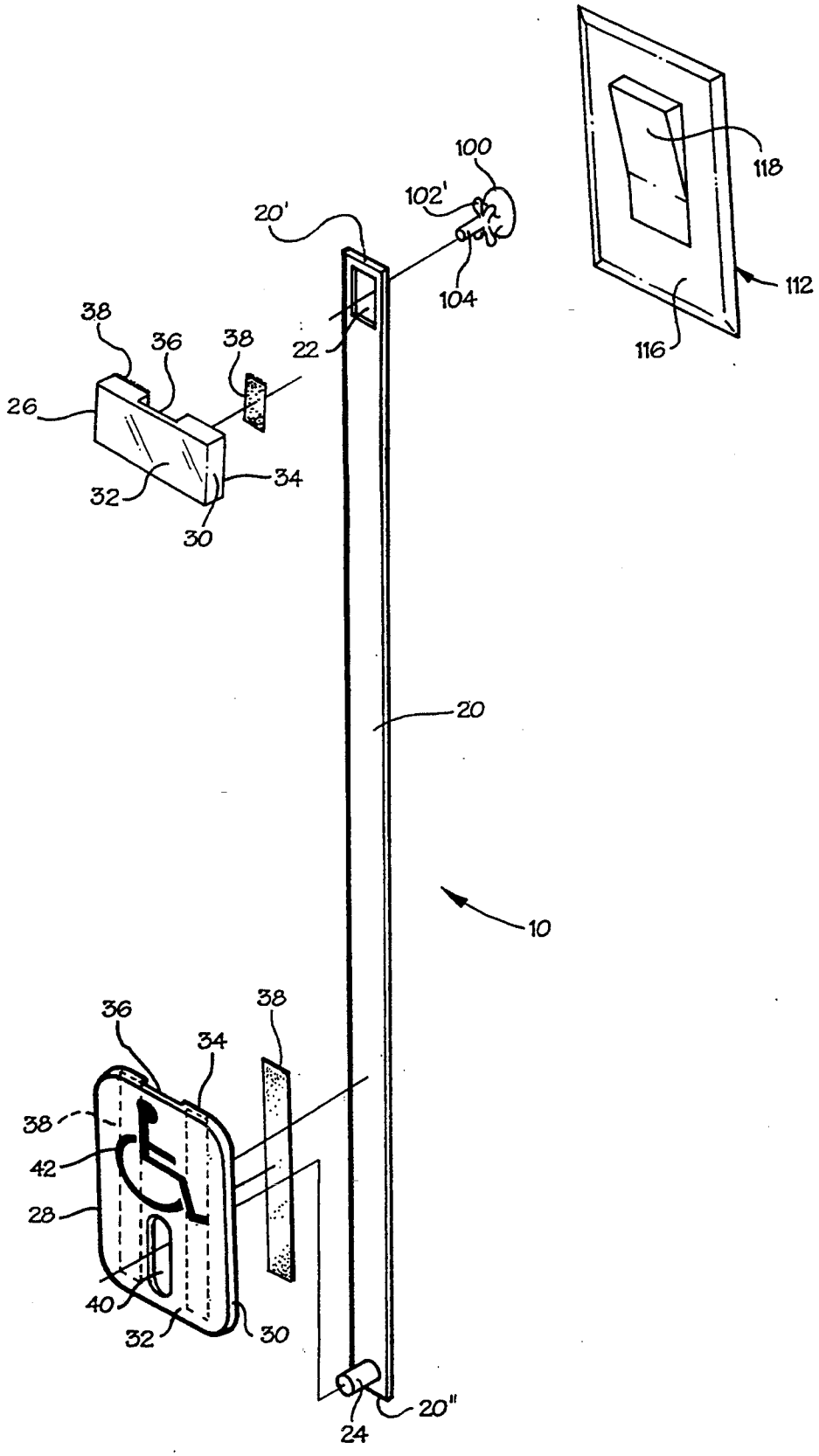


Fig. 3


100
102'
20'
104
118
112
116
38
36
38
22
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20"
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Fig. 4

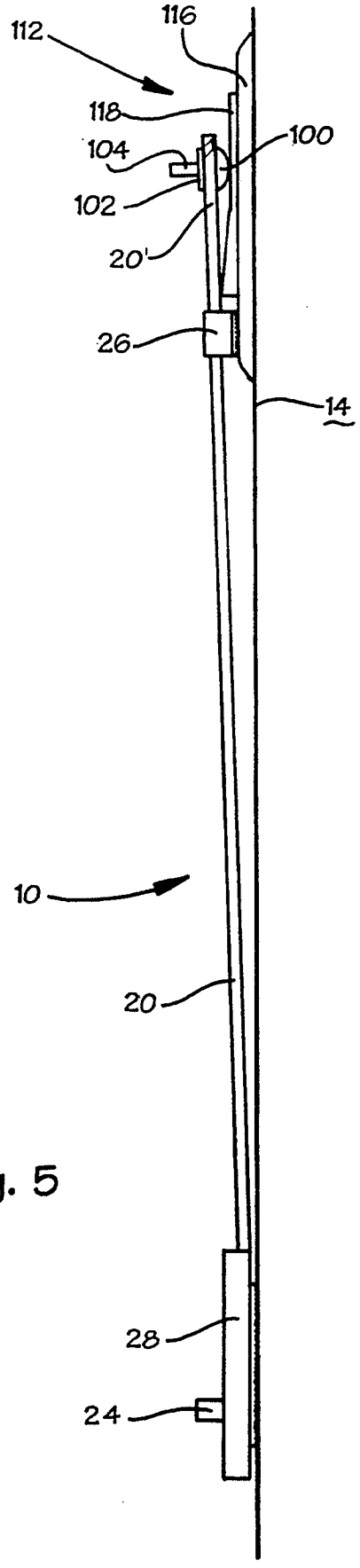

Fig. 5

EXTENSION ACTUATOR FOR ELECTRICAL WALL SWITCH

BACKGROUND OF THE INVENTION

The present invention relates generally to devices for actuating switches and, particularly, to devices for remote actuation of wall mounted electrical switches, e.g., toggle-type and rocker-type light switches and the like.

Toggle-type and rocker-type electrical on-off switches are commonly employed in homes and buildings for controlling actuation of lights and other electrical appliances. Typically, such switches are mounted to a vertical wall at a relatively standard height of about 4 feet above the floor to be conveniently accessible to most people and to present minimal risk of obstruction by furniture. However, at such height, it is difficult, if not impossible, for small children or handicapped persons to reach and operate such wall switches. A number of devices and apparatus have been proposed in the past to address this problem, the devices typically employing some form of extension rod or arm attached to and extending downwardly from the wall switch to a lower level at which a child or handicapped person can actuate the switch remotely using the extension rod or arm. Representative examples of these types of devices are disclosed in U.S. Pat. Nos. 2,389,220; 2,493,581; 2,668,456; 3,077,789; 3,581,037; 3,825,710; 3,839,615; 4,256,943; 4,454,401; 4,567,337; 4,419,556; 4,705,924; 4,870,232. Disadvantageously, many of such devices are unnecessarily complicated in construction and difficult to install, including in some cases the undesirable necessity that the switch be partially disassembled (e.g., removal of the switch-covering plate) to accomplish installation.

SUMMARY OF THE INVENTION

It is accordingly an object of the present invention to provide an improved actuator for wall-mounted switches, particularly toggle-type and rocker-type switches, which is of a simplified construction and is quick and easy to install, without any necessity to remove the switch-covering plate or otherwise access the interior of the switch.

Briefly summarized, the switch-actuating device of the present invention basically comprises an elongate operating arm having a portion at one end of the arm configured for engaging the movable switch member of the wall switch, e.g., a toggle member or rocker member, and an actuating pin extending outwardly from the opposite end of the arm for manually actuating longitudinal movement of the arm. In embodiments for use with toggle-type switches, the switch engaging portion of the arm is formed with an opening for extension therethrough of the toggle member of the switch. In embodiments for use with rocker-type switches, the switch engaging portion of the arm is formed with a protuberance which projects into engagement with the rocker member of the switch.

At least one arm guiding member is mountable to the wall for constraining the arm to move longitudinally when actuated by the pin, the guiding member having a pair of mounting surfaces spaced laterally from one another at opposite sides of a longitudinal arm-receiving recess. In embodiments for use with toggle-type switches, it is preferred to use a second wall-mountable arm guiding member at a spacing from the first-mentioned guiding member. In rocker-switch embodiments, a second arm guiding member is preferably mounted to the switch-covering plate directly beneath the movable rocker member. When so mounted, the recesses of the guiding members are aligned with one another to define, in conjunction with the wall and the switch plate as applicable, a pathway in which the arm is received for reciprocating longitudinal movement. Preferably, each guiding member includes an adhesive material on each of its mounting surfaces for affixation to the wall or switch plate.

The lowermost one of the guiding members has an elongate slot formed therethrough in alignment with its arm-receiving recess for extension of the actuating pin through the slot to be accessible for sufficient movement within the slot to actuate reciprocating longitudinal movement of the arm between opposed limit positions wherein the toggle, rocker, or other switch member of the switch is pivoted between its alternate operating positions.

In certain embodiments, e.g., the toggle-type switch embodiment, the arm may include a biasing portion for urging the one end of the arm into engagement with the switch member. The surface of either or both guiding members facing outwardly opposite from the wall-mounting surfaces enables a decoration or an informational notice to be carried on either or both arm guiding member.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a toggle switch actuating device in accordance with one preferred embodiment of the present invention, shown installed and in operation;

FIG. **2** is an exploded perspective view of the toggle switch actuating device of FIG. **1**;

FIG. **3** is a side elevational view of the toggle switch actuating apparatus of FIG. **1**;

FIG. **4** is an exploded perspective view of a rocker switch actuating device in accordance with another preferred embodiment of the present invention; and

FIG. **5** is a side elevational view of the rocker switch actuating apparatus of FIG. **4**.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the accompanying drawings and initially to FIGS. **1–3**, one preferred embodiment of the present switch actuating device is shown generally at **10** in FIG. **1** as installed on an electrical light switch **12** of the conventional toggle-type having a switch body (not shown) mounted within a building wall **14** and covered by a switch plate **16** through which a pivotable toggle member **18** extends outwardly for manual on-off control of the switch **12** by pivoting the toggle member **18** alternately between upward and downward limit positions.

The actuating device **10** includes an elongate operating arm **20** having a substantially square opening **22** formed in its upper end **20'** and a cylindrical pin **24** projecting outwardly from the opposite lower end **20''**. The opening **22** is configured and dimensioned to snugly receive the toggle member **18**. In this manner, the operating arm **20** depends vertically downwardly from the toggle member **18** of the light switch **12**, the arm **20** being of a sufficient predetermined length, e.g., approximately 18 to 20 inches in length, to position the

pin **24** at an elevation above the adjacent floor (not shown) at which the pin **24** can be easily reached by handicapped persons and small children.

The operating arm **20** is of a substantially rectangular band or web-like configuration having a relatively thin cross-sectional thickness for placement substantially flatly against the wall **14**, with slight bends **23,25** being formed at a spacing from the upper end **20'** to enable the upper end portion of the arm **20** to overlie the switch plate **16** at a slight inward angle toward the wall **14** to bias and maintain the upper end **20'** in contact with the switch plate **16** with the toggle member **18** extending through the opening **22** in the arm's upper end **20'**.

A pair of arm guiding members **26,28** are mountable to the wall **14** to constrain the arm to longitudinal reciprocating movement upwardly and downwardly by corresponding manual upward and downward movement of the pin **24**. For this purpose, each arm guiding member **26** is configured in the form of a substantially flat plate-like body **30** having a generally planar outer surface **32** and laterally-spaced co-planar inner surfaces **34** separated by a linear recess **36** dimensioned in depth and transverse width in correspondence to the arm **20**. Each of the opposed inner surfaces **34** carries an adhesive material, preferably in the form of a double-sided adhesive tape **38**, whereby the arm guiding members **26,28** may be readily adhered to the wall **14** in spaced relation to one another at appropriate locations below the light switch **12** with the respective recesses **36** of the guiding members aligned to receive the arm **20** for sliding reciprocation within the confinement of the recesses.

The lower arm guiding member **28** additionally includes an elongate slot **40** formed entirely through the body **30** in alignment with the recess **36** to receive the pin **24**. The slot **40** is of a sufficient length for movement of the pin **24** vertically between upper and lower limit positions wherein the toggle member **18** of the light switch **12** is disposed under the longitudinal reciprocating influence of the arm **20** in the on and off upward and downward limit positions, respectively, of the switch **12**.

Advantageously, the flat planar outer surface **32** of the arm guiding members **26,28** enables any desirable form of decal, sticker or the like to be affixed to one or both guiding members **26,28** for decorative or informational purposes, such as representatively indicated by the decal **42** displaying the standard international handicapped symbol. When the device **10** is used in a home, such as in a child's bedroom, any form of decorative decal or sticker, e.g., a clown's face, may be used instead.

Installation of the device **10** may be readily understood to be extremely simple and quick to accomplish. Specifically, the arm **20** is simply placed in depending manner on the toggle member **18** of a selected light switch **12** by situating the opening **22** over the toggle member **18**. With the arm **20** hanging downwardly, the arm guiding members **26,28** are adhered to the wall over the arm **20** so that each recess **36** slidably receives the arm **20** and with the lower arm guiding member **28** receiving the pin **24** projecting outwardly through the slot **40**. Preferably, the upper arm guiding member **26** is disposed at a short spacing immediately below the bends **23,25** in the arm **20** so that the guiding member **26** assists in constraining the upper end portion **20'** of the arm **20** into overlying engagement with the switch plate **16**.

The switch actuating device of the present invention offers a number of distinct advantages over known actuating devices. First, as will be understood from the above description, the device **10** is extremely simple and easy to install and particularly does not require removal or loosening of the switch plate **16** or any other disassembly or alteration of the light switch **12**, but is simply placed over the projecting toggle member **18** of the light switch. The pin-and-slot connection between the lower end of the actuating arm **20** and the lower arm guiding member **28** substantially simulates the same on-off pivoting movement of the toggle member **18**, so that the normal operation of the light switch **12** is essentially unchanged. Further, the arm guiding members **26,28** maintain the arm **20** substantially flatly against the wall **14**, which prevents a child from being able to easily reach behind the actuator arm **20** to pull the arm away from the wall **14**, thereby minimizing the risk of damage or breakage of the device **10**.

Referring now to FIGS. **4** and **5**, an alternative embodiment of the switch actuating device **10** is shown for use in operating a conventional rocker-type electrical light switch **112**. The rocker-type switch **112** has a switch body (not shown) mounted within a building wall **14** and covered by a switch plate **116** through which a pivotable rocker member **118** is exposed outwardly for manual on/off control of the switch **112** by manual pressing of the upper and lower angularly-related surfaces of the rocker member **118** to pivot it between opposing on and off limit positions. In this embodiment, the actuating device **10** is substantially the same as that of FIGS. **1–3** except that (a) the actuating arm **20** is substantially linear, without any biasing bends **23,25**; (b) an actuating protuberance in the form of a rounded button **100** is snap-fit by a resilient base portion **102** thereof through the opening **22** in the actuating arm **20** so that the main rounded body of the button **100** protrudes outwardly from the wall-facing side of the arm **20** for operating contact with the rocker member **118**; and (c) the upper arm guiding member **26** is configured of a reduced dimension for adhesion directly to the switch covering plate **116**, rather than to the wall **14**, immediately beneath the rocker member **118**. Installation and operation of the actuating body **10** in this embodiment is therefore otherwise the same as in the previously-described embodiment of FIGS. **1–3**. Specifically, upon manual movement of the pin **24** upwardly and downwardly within the slot **40** in the lower arm guiding member **28**, the corresponding upward and downward movement of the arm **20** causes the button **100** to move between upper and lower positions in which the button **100** acts to depress respectively the upper and lower angled surfaces of the rocker member **118**, thereby to pivot the rocker member **118** between its on and off limit positions. An extension pin **104** on the protuberance projects outwardly through the opening **22** in the actuating arm to allow operation of the switch to be controlled directly at the switch location generally in the fashion of a toggle-type switch. All of the same advantages of simple installation and operation which are achieved by the first-described embodiment of FIGS. **1–3** are equally achieved in this embodiment.

It will therefore be readily understood by those persons skilled in the art that the present invention is susceptible of broad utility and application. Many embodiments and adaptations of the present invention other than those herein described, as well as many variations, modifications and equivalent arrangements will be ap-

parent from or reasonably suggested by the present invention and the foregoing description thereof, without departing from the substance or scope of the present invention. Accordingly, while the present invention has been described herein in detail in relation to its preferred embodiment, it is to be understood that this disclosure is only illustrative and exemplary of the present invention and is made merely for purposes of providing a full and enabling disclosure of the invention. The foregoing disclosure is not intended or to be construed to limit the present invention or otherwise to exclude any such other embodiments, adaptations, variations, modifications and equivalent arrangements, the present invention being limited only by the claims appended hereto and the equivalents thereof.

We claim:

1. In combination, a toggle switch mounted to a wall, the toggle switch having a switch covering plate outwardly abutting the wall and a toggle member extending outwardly from the wall through the switch covering plate for pivoting movement between alternate operating positions, and a device for remote actuation of the toggle member, the device comprising an elongate operating arm of a substantially flat planar configuration disposed in essentially continuous slidable outward surface abutment with the wall and the switch covering plate, one end of the arm being connected to the toggle switch only by an opening in the one end of the arm through which the toggle member extends, the opposite end of the arm having an actuating pin affixed rigidly thereto and extending outwardly from the arm away from the wall for manually actuating longitudinal movement of the arm to cause pivoting movement of the toggle member, and a pair of arm guiding plates affixed only adhesively to the wall at spacing from one another for constraining the arm to slide longitudinally along the wall when actuated by the pin, each guiding plate having a substantially flat planar body having a wall-facing side formed of a pair of flat wall-mounting adhesive surfaces adhered to the wall at lateral spacings from one another at opposite sides of a longitudinal recess spaced from the wall, the arm extending through the recess in each guiding plate, the recess of each guiding plate being configured in close conformity to the flat planar configuration of the arm for defining in conjunction with the wall a pathway in which the arm is constrained for reciprocating longitudinal movement in sliding surface abutment with the wall and the switch covering plate, one of the guiding plates having an elongate slot formed therethrough in alignment with its arm-receiving recess with the actuating pin of the arm extending outwardly through the slot to be accessible for sufficient movement within the slot to actuate reciprocating longitudinal movement of the arm between opposed limit positions wherein the toggle member is pivoted between its alternate operating positions, whereby installation of the device may be accomplished without tools by placing the arm by its opening onto the toggle member and then adhering the guiding plates to the wall over the arm.

2. The combination of claim 1, wherein the arm includes a biasing portion for urging the arm into engagement with the toggle member.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 5,380,967

DATED : January 10, 1995

INVENTOR(S) : Carson D. Steen and Robby W. Steen

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 6, line 3, after "at" insert -- a --.

Signed and Sealed this

Seventeenth Day of October, 1995

Attest:

BRUCE LEHMAN

Attesting Officer

Commissioner of Patents and Trademarks