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ROOM CHECK KEY

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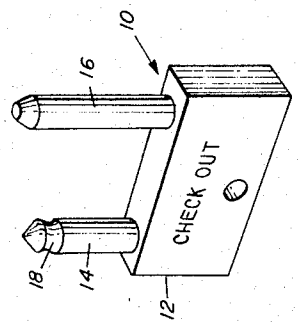


FIG. 1

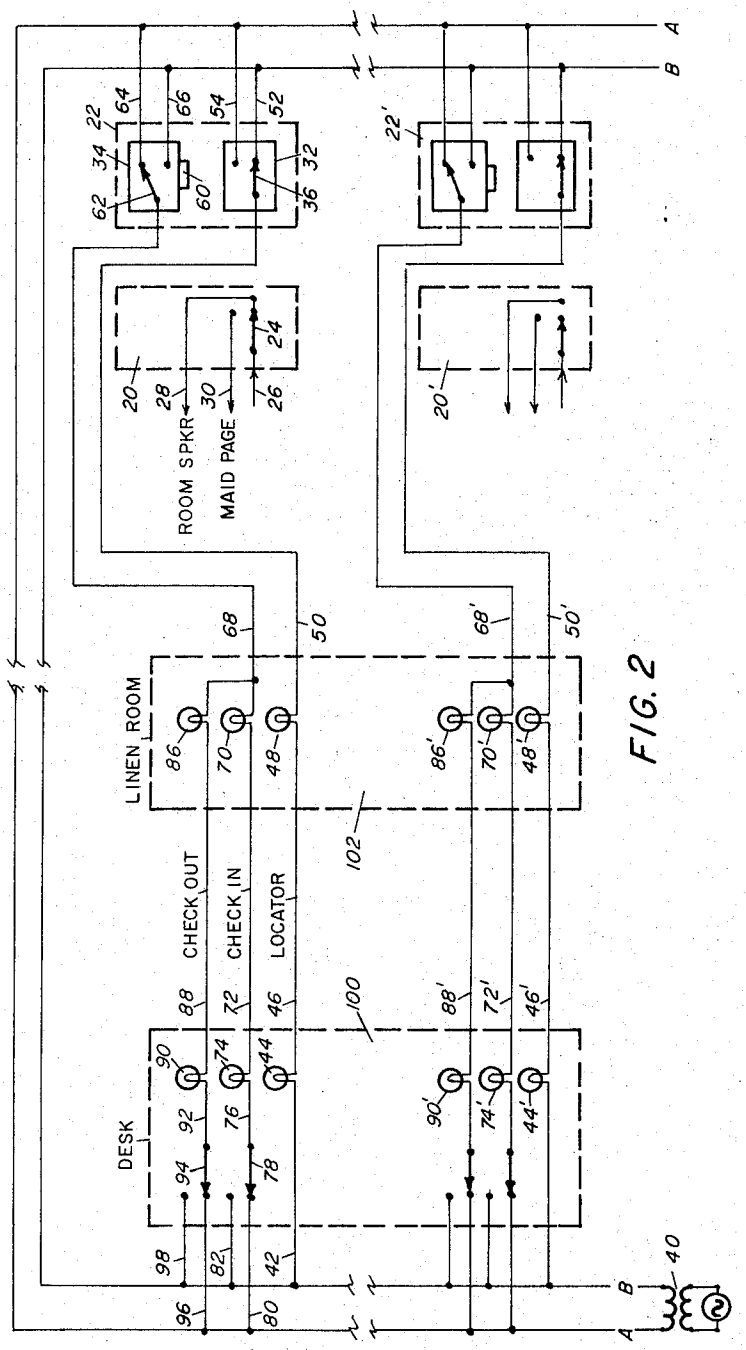


FIG. 2

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ROOM CHECK KEY

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ABSTRACT OF THE DISCLOSURE

A room check key reversably insertable in wall jacks to operate selected switches. Switches operate indicators at central desk to indicate maid location and room occupancy in hotel or motel. Key includes two parallel pins of unequal length which may be inserted in side-by-side wall jacks.

Background of invention

The present invention relates, in general, to portable, or removable, switch actuators, and, more particularly to a key for use in maid locator and room occupancy systems. Such systems are in common use in hotels, motels, or other multi-room structures where information is required at a central location concerning the condition of remote rooms.

Although such locator systems are generally known, problems have arisen in their use and operation, and they have, therefore, not been entirely successful. Such prior systems generally have utilized a single wall jack, with an insertable key to operate the switches located in the jack. The prior systems have used two switches aligned along the axis of the jack, and have provided a switch actuator having a single pin which is pushed into the jack just far enough to actuate the desired switches.

It was found, however, that this was not a satisfactory method of operation, for, as a practical matter, the users of the single-pin actuator would either forget how far the pin was to be inserted for a given situation, or would not push the pin in far enough to actuate any of the switches. Other prior systems have utilized an actuator with a short pin on one end and a long pin on the other end. This was unsatisfactory as the users would frequently forget and insert the wrong end.

Summary of the invention

To overcome the practical problems of operating these maid locator and room occupancy systems, and to make them sufficiently foolproof and easy to operate that the indications provided at the central desk can be relied upon as being accurate, the present system and accompanying actuator was devised. The present system is a modification of the former systems, and comprises a pair of wall jacks located side-by-side, each jack containing one or more switches which are to be selectively operated. A key, or switch actuator, is provided which is adapted to be reversably insertable in the jacks to provide the switch selection. The key includes a pair of pins of unequal length mounted on a handle member, each pin being arranged to engage certain of the switches when inserted in the jacks. Both pins are inserted in their respective jacks at the same time, and the key is always inserted to its fullest extent. Selection of the switches to be operated is made merely by reversing the pins with respect to the jacks before insertion. One side of the key is marked in some manner to indicate which way the key should be inserted in a given situation, thus reducing the chance of error.

Brief description of the drawing

These and other features of the invention may be more fully appreciated when considered in the light of the following specification and drawings, in which:

FIG. 1 is a perspective view of the key of the present invention; and

FIG. 2 is a schematic diagram of a locator and occupancy indicator system such as may be used in conjunction with the present invention.

Description of the preferred embodiment

As illustrated in FIG. 2 of the drawings, the switch actuator **10** of the present invention comprises a handle portion **12**, on which is mounted a pair of elongated pin members **14** and **16**. The pin members are mounted in parallel, side-by-side relationship and are adapted to be inserted in a pair of jacks correspondingly arranged in parallel, side-by-side relationship. Pin **14** is illustrated as being substantially shorter than pin **16**, the difference in lengths being sufficient to insure that when one of the pins is inserted in a particular one of the jacks, at least one of the switches in that jack will remain inoperative, while the other pin, when inserted in the particular jack, will operate that switch. It will be apparent that the desired differential effect of insertion of this key may also be achieved by a difference in the configuration or conductivity of the material utilized in the two pins.

The handle portion **12** of key **10** preferably is comprised of an electrically nonconductive plastic material, such as nylon, although other materials may be found suitable. A nonconductive material is used to insure that short circuits in the electrical indicator system will not find a path through the key to give false indications or to damage the system. For this same reason, one of the pins **14**, **16** is nonconductive, for if a metal cover plate is used for the wall jacks the pins, together with the plate, can provide the short-circuit path. A metal construction for the pins is favored, for reasons of strength and durability, but many plastics have been found to be suitable. A satisfactory arrangement is to make one pin of plastic, and one of metal, both pins being mounted in a handle portion of molded or machined nylon. Alternatively, the one plastic pin can be formed as a part of the handle portion, rather than being separately made and mounted on the handle.

One of the pins includes an indented portion **18** which is adapted to cooperate with one or the other of the locking mechanisms within each of the wall jacks to hold the key in place when it is inserted. This indentation, and the cooperating locking mechanisms in the jacks, are of conventional construction, being common in phone jacks and plugs. The indentation **18**, shown in FIG. 1 as being located on pin **14**, may equally well be on pin **16**, the only requirement being that it be the proper distance from handle **12** to insure a correct locking action.

One side of the handle portion **12** is normally marked in some manner to provide an indication of the manner in which the key is to be inserted. This marking, together with the general shape and construction of the key, increases the likelihood that a correct indication of room occupancy will be given at the central desk, thus making the system more reliable than has previously been the case.

The system with which the present switch actuating key is designed to cooperate is illustrated in FIG. 2, wherein the switch and indicator light assembly for two rooms is shown. Reference will herein be made to the system for one of the rooms, with primed numbers indicating similar elements in the assembly for the second room.

The wall jacks, which are adapted to receive the pins **14** and **16** of key **10**, are generally indicated at **20** and **22**. These jacks are of conventional construction, and are mounted in a suitable location for easy access by the user of the key. Usually, the jacks will be mounted on the wall of the room adjacent the entrance door. The jacks are parallel to each other, and each jack can receive either of pins **14** or **16**. Jack **20** includes a single switch having a movable arm **24** which normally closes a circuit between lines **26** and **28**, which circuit may connect a room loudspeaker to a central music source, or the like. When either of pins **14** or **16** is inserted in jack **20**, the movable arm opens the circuit between lines **26** and **28**, and closes a circuit between lines **26** and **30**, the arm returning to its initial condition when the pin is withdrawn. This latter circuit may be a part of a paging system which will permit the user of the key to be paged from a central location, such as the linen room of a hotel, the closure of this circuit automatically directing the paging call to the proper room.

Jack **22** includes a pair of switches **32** and **34**, the first of which provides an indication of which room the user of the key is in, and the second of which is provided to indicate the occupancy of the room. The first switch **32** is operated when either pin **14** or **16** is inserted in jack **22**, but switch **34** operates only when pin **16** is inserted therein. Switch **32** is the maid locator switch, and includes a movable arm **36** which normally closes a circuit from line B of a source of low-voltage power **40** through line **42**, desk maid locator light **44**, line **46**, linen room locator light **48**, line **50**, and line **52** back to power line B. When arm **36** is in this normal position, neither of the indicator lights **44** or **48** will be illuminated, but when one of the pins **14** or **16** is inserted in this jack, arm **36** will be switched from line **56** to line **54**, and thus to power line A. Closure of the circuit across power lines A and B will light the corresponding indicator lamps thus giving the location of the maid who is using the key. Upon withdrawal of the key pin, switch **32** will return to its original position.

The second switch **34** in jack **22**, is a part of the room occupancy indicator system, and comprises a single-pole, double-throw, push-push latching switch having an actuator means **60** and a movable arm **62**. The movable arm switches between lines **64** and **66**, which lines are connected to power lines A and B, respectively, in response to the force exerted by pin **16** on actuator means **60**. Since this is a latching switch, it changes from one line to the other only on successive insertions of pin **16**, and does not change when the pin is withdrawn. Actuator means **60** is so located in the jack that when the key is inserted into the jacks with pins **14** and **16** corresponding to jacks **20** and **22**, respectively, the actuator will change movable arm **62** from one position to the other, but when the key is reversed, so that pins **14** and **16** correspond to jacks **22** and **20**, respectively, the movable arm **62** will not be affected.

The construction of a push-push latching switch is well known in the art, and will not be detailed here. This switch is in circuit with either line **64** or line **66**, and is connected through line **68** to the parallel "check in" and "check out" circuits at the linen room and the desk, which circuits serve to indicate whether a room is occupied, or whether it can be rented. The "check in" circuit includes indicator lamp **70** at the linen room, line **72**, indicator lamp **74** at the desk, line **76**, and movable arm **78** of a toggle switch, or equivalent, connectible through either line **80** or **82** to power lines A or B, respectively. The "check out" circuit includes indicator lamp **86**, line **88**, lamp **90**, line **92**, and movable arm **94** of a toggle switch, the movable arm being connectible through either line **96** or line **98** to power lines A or B, respectively.

Initially, both ends of the "check in" and "check out" circuits are connected to power line A, as shown, so that all of the indicator lights in these circuits are extinguished. This is the normal condition when a room has been rented, and is occupied.

When a maid enters the rented room to clean it and make the beds, she inserts the room check key in the wall jacks. If the room is still occupied, she inserts the key with the handle markings down, so that pin **16** enters jack **20** and pin **14** enters jack **22**. This switches movable arms **24** and **36** in the respective jacks, connecting the maid page system to that room and illuminating lamps **44** and **48**, to indicate at the remote locations where the maid is working. When the key is inserted in this way, actuator **60** is not touched, and the "check out" and "check in" circuits remain de-energized. Removal of the key returns the system to its rest condition.

If the occupant of a room checks out, movable arm **94** at the desk is switched from line **96** to line **98**, energizing lamps **86** and **90** and signalling the linen room that the room corresponding to these lamps is to be cleaned. When the maid enters the room, she inserts key **10** in the jacks with the markings on the handle facing up, whereby pins **14** and **16** are inserted in jacks **20** and **22**, respectively. This not only operates movable arms **24** and **36** to activate the maid page and maid locker switches, but also operates actuator **60** to change arm **62**. This places lamps **86** and **90** across power line B, de-energizing them, while placing lamps **70** and **74** across power lines A and B to illuminaate them. Thus the "check out" circuit is de-activated and the "check in" circuit is energized. When the maid leaves the room, the maid locator light goes out, but lamps **70** and **74** remain on to indicate that the room has been prepared for rental. When the room is rented, arm **78** is switched to turn off lamp **70** and **74**, and both the "check out" and "check in" circuits are then connected at both ends to power line B, ready for a repeat of the cycle.

If, in the normal rounds of the rooms, the maid discovers a room from which all the luggage has been removed, indicating that the occupant has moved out, she inserts the key in the jacks with the "check out" indicia facing up to switch actuator **60**. If the check out lamps **86** and **90** had not been illuminated by switching arm **94** at the desk, the switching of arm **62** due to insertion of key **10** will light the lamps in both the "check out" and "check in" circuits, providing a warning signal at the desk of the possibility that the occupant of the room is planning to leave without checking out.

The desk **100** at which the various indicator lamps **44**, **74** and **90** are located is generally the registration desk of a hotel, motel, or apartment, where room rentals and the like are handled. A set of lights is provided at the desk for each room under its control, permitting the rental clerk to determine at a glance what rooms are available for rent, and what rooms are being cleaned. The "linen room" **102** referred to may be the maids' quarters in the hotel or motel, permitting the desk to signal the maids to have a room cleaned and prepared for further rental.

It will be apparent that the key switch actuator structure of the present invention is particularly well suited for this type of system, in that it is of simple construction, is easy to use, and eliminates much of the confusion that existed with previous systems and which made them almost useless as a practical solution to the problems of maid location and room occupancy. While the fundamental features of the invention have been pointed out with reference to a specific embodiment, it will be understood that various changes in the device as illustrated may

be made by those skilled in the art without departing from the spirit of the invention.

I claim:

1. A room check key for indicating room occupancy at a remote location, comprising, first jack means, first and second mechanically operable switches located axially along said first jack means, a key reversibly insertable in said first jack for selectively operating one or both of said switches, said key comprising a handle portion and two electrically non-conductive, spaced-apart pins mounted on said handle portion, said pins being parallel with each other and in side-by-side relationship, one of said pins being longer than the other, said longer pin being adapted, when inserted in said first jack means, mechanically to engage and operate said first and second switches, the shorter of said pins being adapted, when inserted in said first jack means, mechanically to engage and operate only said first switch, said first switch initially having a normally-closed and a normally-open circuit, the presence of either of said pins serving to close said normally-open circuit and open said normally-closed circuit, said first switch returning to its initial position upon removal of said pin, said second switch having a two-position push-push latching operation responsive only to said longer pin to change from an initial position to a second position, said second switch remaining in said second position upon removal of said longer pin, and circuit means responsive to the operation and position of each of said switches for producing remote indications of room occupancy.

2. The room check key of claim 1, further including second jack means adjacent and parallel to said first jack means and adapted to receive the one of said pins not inserted in said first jack means.

3. The room check key of claim 2, further including a third switch located in said second jack means for mechanical engagement and operation by either of said pins, said third switch initially having a normally-closed and a normally-open circuit, the presence of either of said pins serving to close said normally-open circuit and open said normally-closed circuit, said third switch returning to its initial position upon removal of said pin.

4. The room check key of claim 2, further including locking means in at least one of said jack means and means on one of said pins for engaging said lock means to hold said key in said jack.

5. The room check key of claim 3, wherein said key is reversibly insertable in said jacks, whereby said longer pin may be inserted into either of said jacks and said shorter pin may be inserted into the remaining jack, the jack into which said longer pin is inserted determining which of said first, second and third switches is operated.

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