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A POWER SOURCE AND/OR CONTROL COMPONENT HOUSING PRIMARILY FOR DOOR MOUNTED DEVICES

Field of the Invention

The present invention relates to a power source and/or control component housing.

The invention has been primarily developed for use with electrically powered and/or controlled door locks for hinged doors in residential and commercial buildings and will be described hereinafter with reference to these applications. However, the invention is not limited to these particular applications and is also suitable for use with other door mounted devices including: swipe card readers; fingerprint readers; closed circuit television cameras; door bells; visual displays; and control interfaces.

Background of the Invention

Door locks requiring electrical power to drive and/or control one or more aspects of their operation are known. Door locks of this type utilize batteries either as their sole power source or as a back-up power source to mains power.

One disadvantage of the door locks of this type is the batteries are housed with the remainder of the lock components which necessitates dedicated door furniture in order to accommodate and provide access to the batteries. For example, the door lock escutcheon may include an outwardly bulging portion, or may have to be made larger than would otherwise be required for a similar non-powered lock, to accommodate the batteries. This creates additional inventory for lock manufacturers and can spoil the appearance of the lock furniture aesthetics. Another disadvantage is that access to batteries in existing powered door locks can only be obtained by disassembly or removal of all or part of the lock from the door. This can lead to damage of the door and/or the door furniture and/or incorrect reassembly and/or component losses. A further disadvantage of existing powered door locks is a person who has gained unauthorised access to a building can access the batteries and/or lock controls via the door furniture. This can result in damage to the lock and/or potential unauthorised door opening.

Similar problems exists in other door mounted devices in which the batteries are housed with the remainder of the devices.

Object of the Invention

It is an object of the present invention to substantially overcome or at least ameliorate one or more of the above disadvantages.

Summary of the Invention

Accordingly, in a first aspect, the present invention provides a power source and/or control component housing for a lock that is surface mounted on a door, the door surface mounted lock including at least one component requiring electric power and/or an electric control signal, the power source and/or control component housing being adapted to house at least one of a power source or a control component, the power source and/or control component housing being mountable in the door at a location independent to that of the door surface mounted lock, and being operatively connected to the door mounted lock.

In one form, the housing includes a power source therein.

In another form, the housing includes at least one control component therein.

In a further form, the housing includes a power source and at least one control component therein.

The control component preferably includes a printed circuit board arrangement.

The power source preferably includes a non-rechargeable battery, a rechargeable battery, or a capacitor.

The door surface mounted lock is preferably an electrically powered lock or an electrically controlled lock.

The power source and/or control component housing is preferably operatively connected to the door surface mounted lock by at least one wire.

In one embodiment, the power source and/or control component housing is mountable in the door. The power source and/or control component housing preferably extends into, and is accessible from, an edge of the door. The power source and/or control component housing preferably includes: a face plate for mounting to the edge of the door; and a power source and/or control component container extending from the face plate.

In a second aspect, the present invention provides a door lock arrangement, the door lock arrangement including: an electrically powered or controlled door lock mountable in or on a door; and a power source and/or control component housing extending into, and accessible from, the edge of the door, wherein the powered door lock is electrically connected to the power source and/or control component housing.

The power source and/or control component housing preferably includes a face plate for mounting to the edge of the door and a power source and/or control component container extending from the face plate.

The power source preferably includes a non-rechargeable battery, a rechargeable battery, or a capacitor.

In a third aspect, the present invention provides a door lock power source and/or control component housing, the power source and/or control component housing including: a face plate adapted for fixing to an edge of a door; and a power source and/or control component container extending away from the plane of the face plate.

The power source and/or control component container preferably has a generally longitudinal axis oriented normally to the plane of the face plate.

The power source container and/or control component preferably defines an internal storage volume, and the face plate includes an opening therein to said volume.

In one form, the battery and/or control component container is preferably adapted for storage of at least one power source.

In another form, the battery and/or control component container is preferably adapted for storage of at least one control component.

In a further form, the power source and/or control component container is preferably adapted for storage of at least one power source and at least one control component.

The power source preferably includes a non-rechargeable battery, a rechargeable battery, or a capacitor.

In a fourth aspect, the present invention provides a method of accessing a power source and/or a control component for a door lock in a door, the method including:

- (a) opening the door with correct authorisation; and
- (b) subsequently accessing a power source and/or control component container mounted into and through an edge of the door.

Brief Description of the Drawings

Preferred embodiments of the invention will now be described, by way of examples only, with reference to the accompanying drawings in which:

Fig. 1 is an end view of a first embodiment of a power source and/or control component housing used with a door lock;

Fig. 2 is a side view of the housing and the lock shown in Fig. 1;

Fig 3 is a perspective view of the housing and the lock shown in Fig. 1;

Fig. 4 is an exploded perspective view of the housing and the lock shown in Fig. 1;

Fig 5 is a perspective view of a second embodiment of a power source and/or control component housing used with a door lock;

Fig 6 is a perspective view of a third embodiment of a power source and/or control component housing used with a door lock; and

Fig 7 is a perspective view of a fourth embodiment of a power source and/or control component housing used with a door lock.

Detailed Description of the Preferred Embodiments

Referring to Figs. 1 to 4, there is shown a surface mount door lock 10. The lock 10 includes a pair of escutcheons 12, a pair of door handles 14 and a first embodiment of a control component housing 16. The housing 16 includes a face plate 18, a power source and control component container 20 and a cover 22. Lock control electronics, in the form of printed circuit board 24, and batteries 26 are housed within the housing 16.

Several other “mechanical” components of the lock 10 are not shown for the sake of drawing clarity, including the lock bolt, spindle, key barrels, manual lock actuation mechanism, and powered lock actuation mechanism (e.g. electric motor or solenoid). The function of these components will be well understood by persons skilled in the art of electrically powered and controlled door locks.

The face plate 18 of the housing 16 is adapted to be mounted flush with a ‘free’ (i.e. non-hinged) side edge 28 of a door 30. The escutcheons 12 and the handles 14 are mounted to the outer (front) and inner (rear) faces of the door 30. More particularly, the container 20 is inserted into a passage 32 extending into and through the edge 28 of the door 30 and the face plate 18 is located within a surface recess 34 adjacent the opening 32. The housing 16 is fixed to the door 30 by screws (not shown) passing through openings 40 into the recess 34. The production of the opening 32 and the recess 34 is advantageously familiar to lock installers due to them being similar to lock bolt passage 36 and associated recess 38.

The batteries 26 and the printed circuit board 24 are connected to the lock activation mechanism by wires (not shown) which pass through the interior of the door 30.

Although the housing 16 is shown in close proximity to the mechanical components of the lock 10, the housing 16 can be positioned anywhere on the door 30. Put another way, the location of the housing 16 is independent to that of the lock 10.

Referring to Fig. 5, there is shown a mortise lock 60. The lock 60 includes a pair of rosettes 62, a pair of door handles 64, a face plate 66 and a lock bolt 68. The lock 60 also includes a second embodiment of a control component housing 70, which is similar to the control component housing 16. The housing 70 is mounted through the edge 28 of the door 30.

Referring to Fig. 6, there is shown a lock 80 with a pair of rosettes 82, a pair of handles 84, a face plate 86 and a lock bolt 88. The lock 80 is of the mortise type, similar to the lock 60 shown in Fig. 5. The lock 80 also includes a third embodiment of control component housing 90 mounted to an inner (rear) face 92 of the door 30.

Referring to Fig. 7, there is shown a surface mount door lock 100 that includes a pair of escutcheons 102, a pair of door handles 104 and a third embodiment of a control component housing 106. The lock 100 is similar to the lock 10 except the housing 106 is mounted to the inner face 92 of the door 30.

The housings and the locks described above possess several advantages. Firstly, in the first and second embodiments, unauthorised access to the batteries and/or the control electronics is more difficult, as these components can only be accessed after the door has been opened, which requires a correct key or other authorisation. This avoids easy access to the batteries and/or the control electronics by a person who has, for example, broken into a building by other means and wishes to open a door.

Secondly, the electronics and batteries can be mounted and accommodated without influencing the styling and/or size of other door furniture, such as the escutcheons. This allows door manufacturers to reduce their inventory and to produce both manual and powered door locks having the same appearance. Similarly, deviations to escutcheons, such as battery accommodating bulges or extra long housings etc, can be avoided. In addition, as the housing in the first and second embodiment is concealed when the door is closed, it has no visual impact on the styling of the (visible) door furniture, and can thus be used with different styles thereof. Further, only a discrete face plate of the first and second embodiment of the housings can be seen when the door is open.

Thirdly, once the door has been opened with correct authorisation, access to the battery and electronics can be achieved without requiring any disassembly of the door lock mechanism itself. This advantageously avoids damage of the door and/or the door furniture and/or incorrect reassembly and/or component losses. Further, in the event that any damage to the battery housing or door edge occurs in the first and second embodiments, it can not be seen once the door is closed.

Fourthly, the housing provides mounting and installation flexibility as the housing and the mechanical components of the lock can be installed together or in different regions of the door, as required.

Although the invention has been described with reference to preferred embodiments, it will be appreciated by persons skilled in the art that the invention may be embodied in many other forms. For example, a teach or reset button or sensor for remote controls can be incorporated into the housing, which again means access is only provided in the event of authorised door opening.

CLAIMS

1. A power source and/or control component housing for a lock that is surface mounted on a door, the door surface mounted lock including at least one component requiring electric power and/or an electric control signal, the power source and/or control component housing being adapted to house at least one of a power source or a control component, the power source and/or control component housing being mountable in the door at a location independent to that of the door surface mounted lock, and being operatively connected to the door mounted lock.
2. The housing as claimed in claim 1, wherein the housing includes a power source therein.
3. The housing as claimed in claim 1, wherein the housing includes at least one control component therein.
4. The housing as claimed in claim 1, wherein the housing includes a power source and at least one control component therein.
5. The housing as claimed in claim 1, 3 or 4, wherein the at least one control component includes a printed circuit board arrangement.
6. The housing as claimed in claim 1, 2 or 4, wherein the power source includes a non-rechargeable battery, a rechargeable battery, or a capacitor.
7. The housing as claimed in any one of the preceding claims, wherein the door surface mounted lock is an electrically powered lock or an electrically controlled lock.
8. The housing as claimed in any one of the preceding claims, wherein the housing is operatively connected to the door surface mounted lock by at least one wire.
9. The housing as claimed in any one of the preceding claims, wherein housing extends into, and is accessible from, an edge of the door.
10. The housing as claimed in claim 9, wherein the housing includes: a face plate for mounting to the edge of the door; and a power source and/or control component container extending from the face plate.

11. A power source and/or control component housing for a lock surface mounted on a door, the power source and/or control component housing substantially as described herein with reference to: Figs. 1 to 4 or Fig. 5 of the accompanying drawings.

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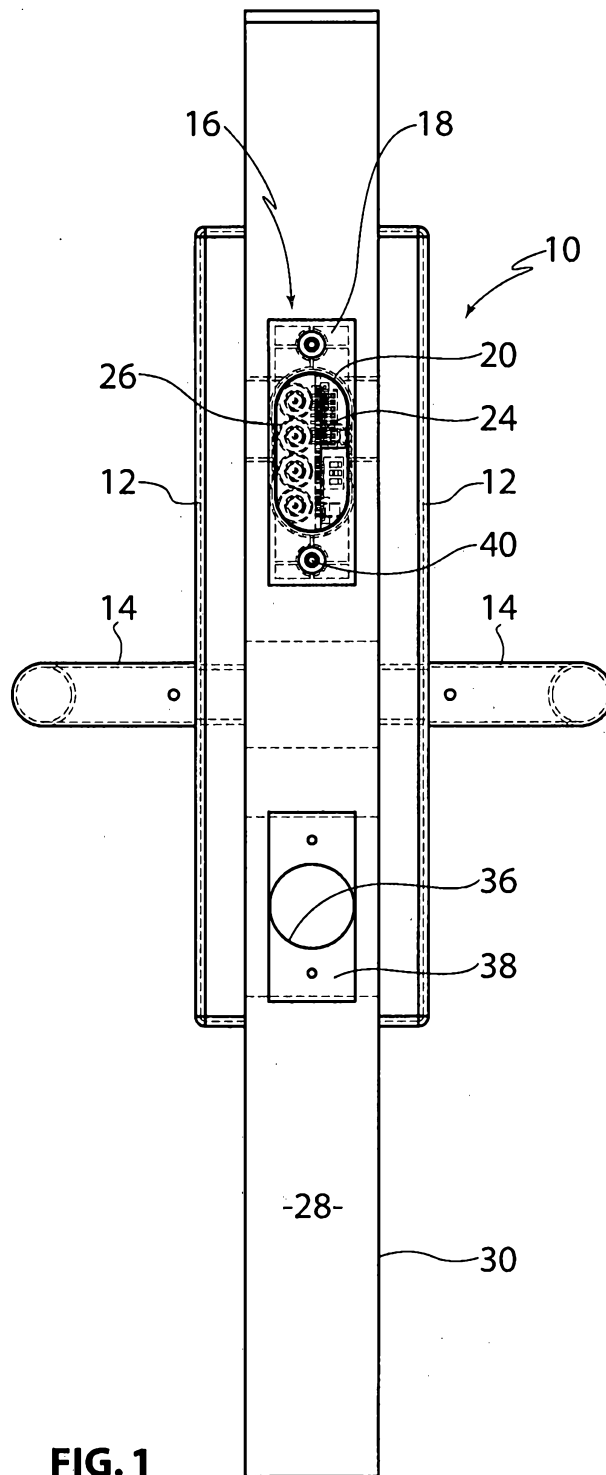


FIG. 1

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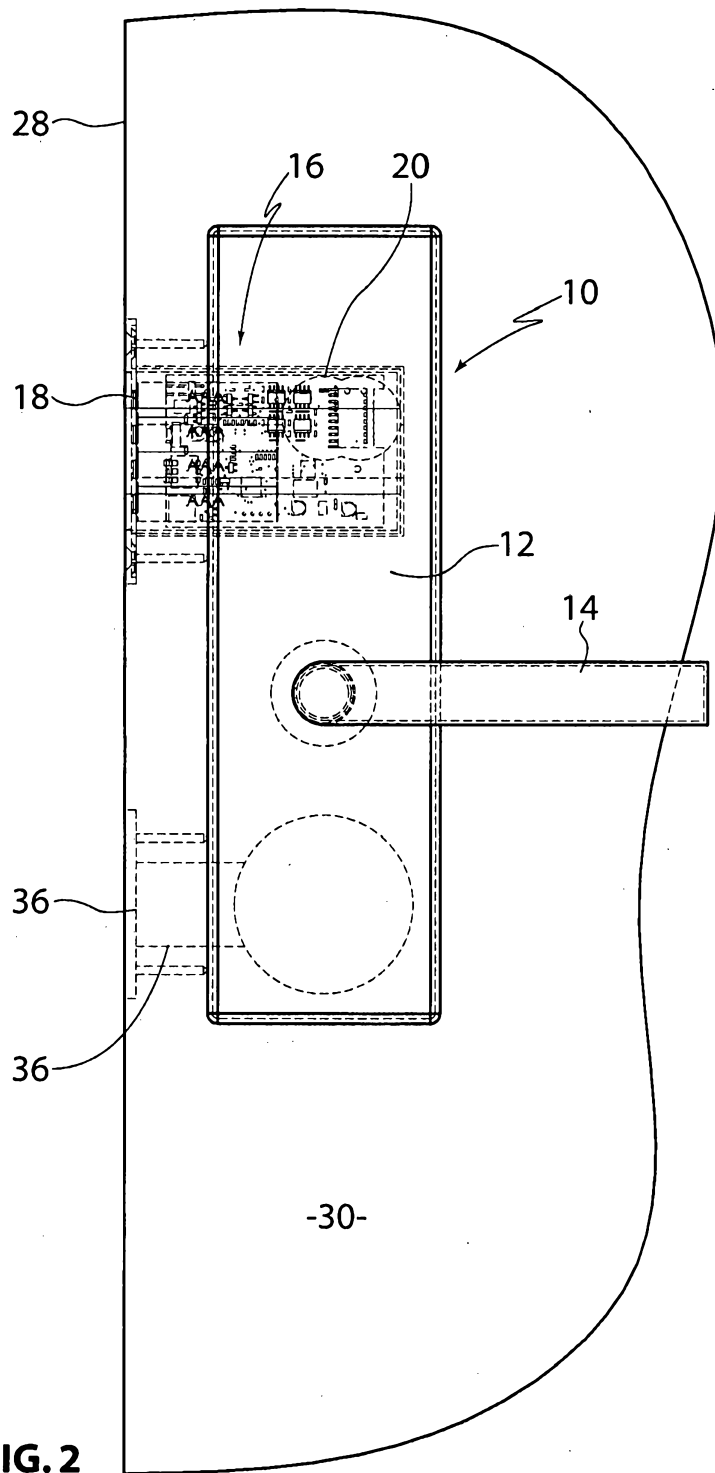
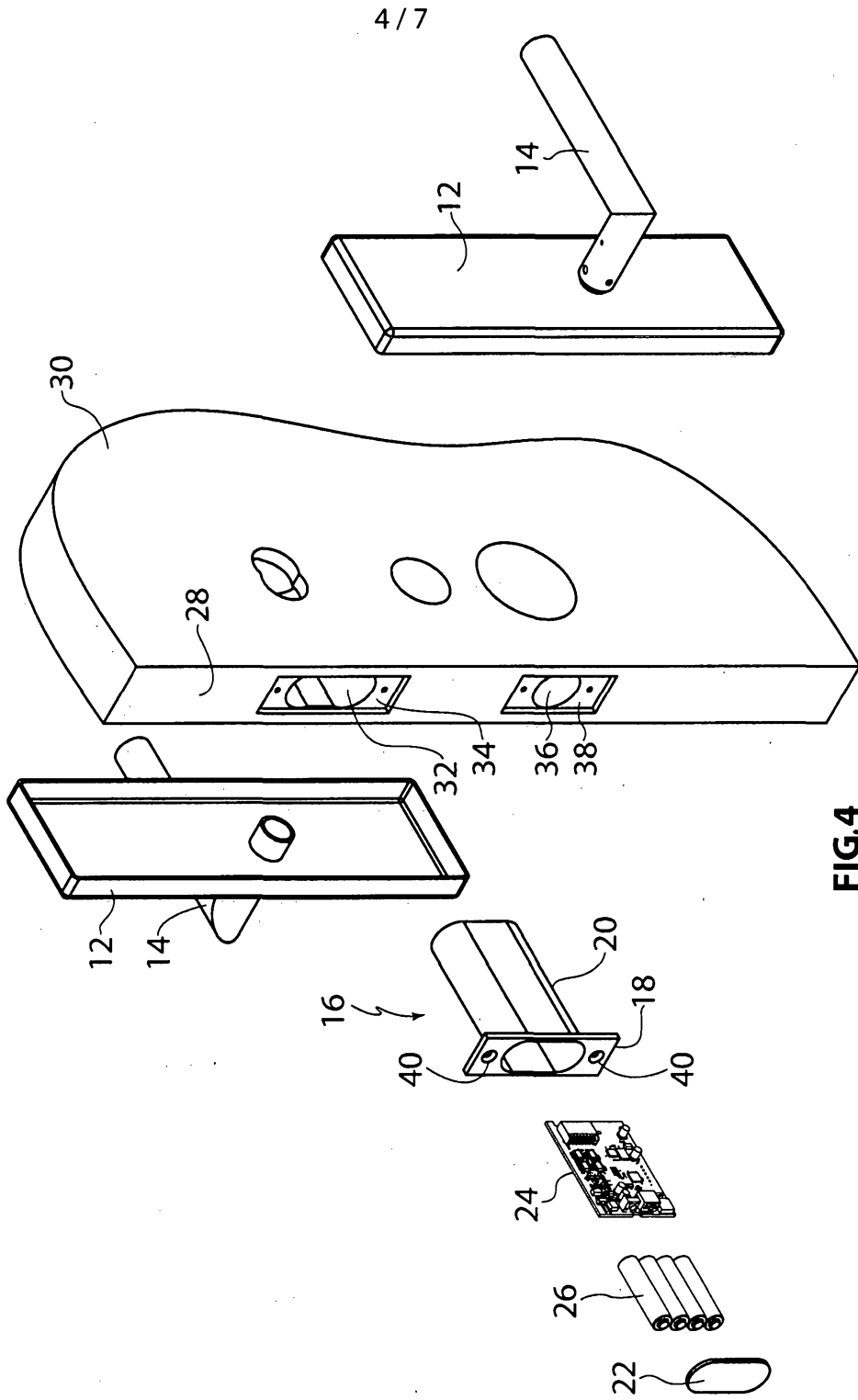


FIG. 2



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FIG.4

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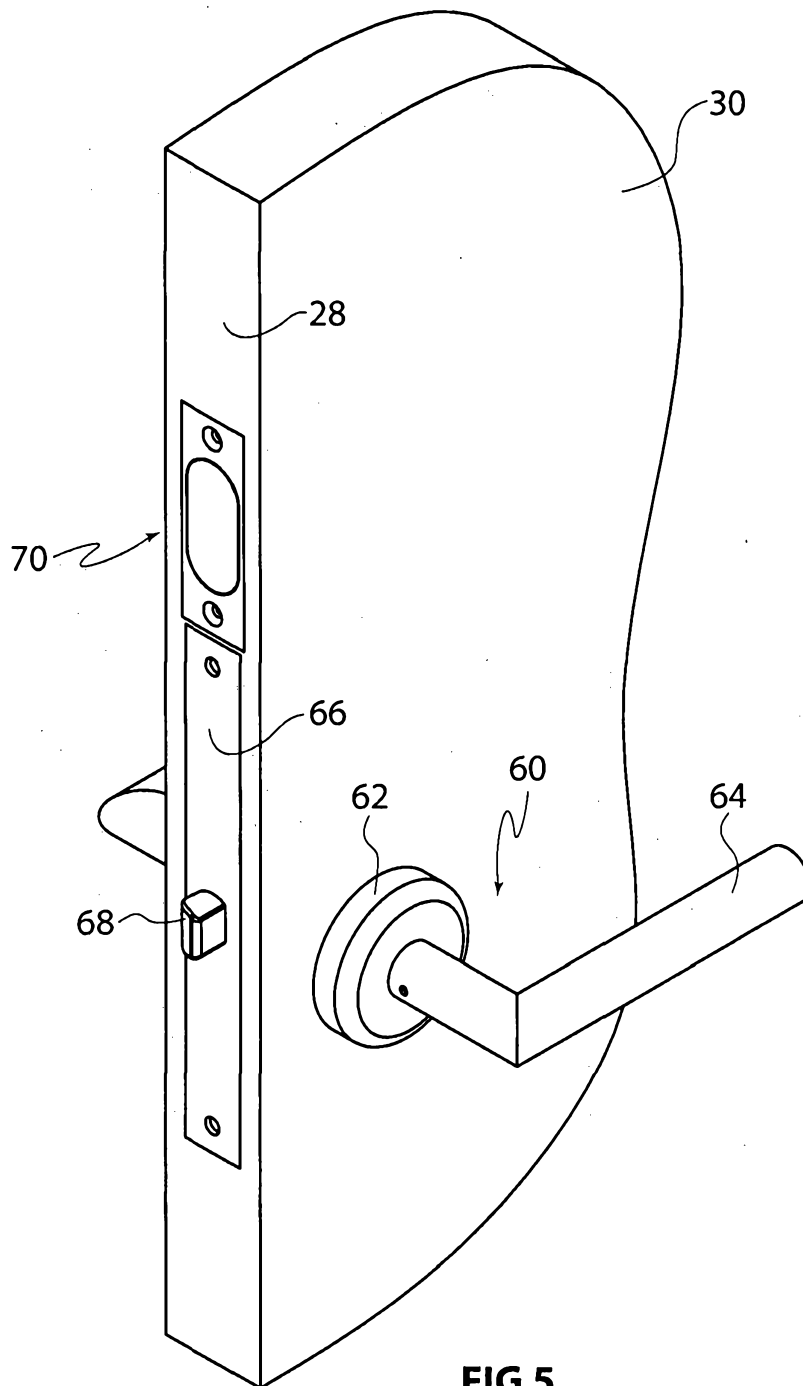


FIG. 5

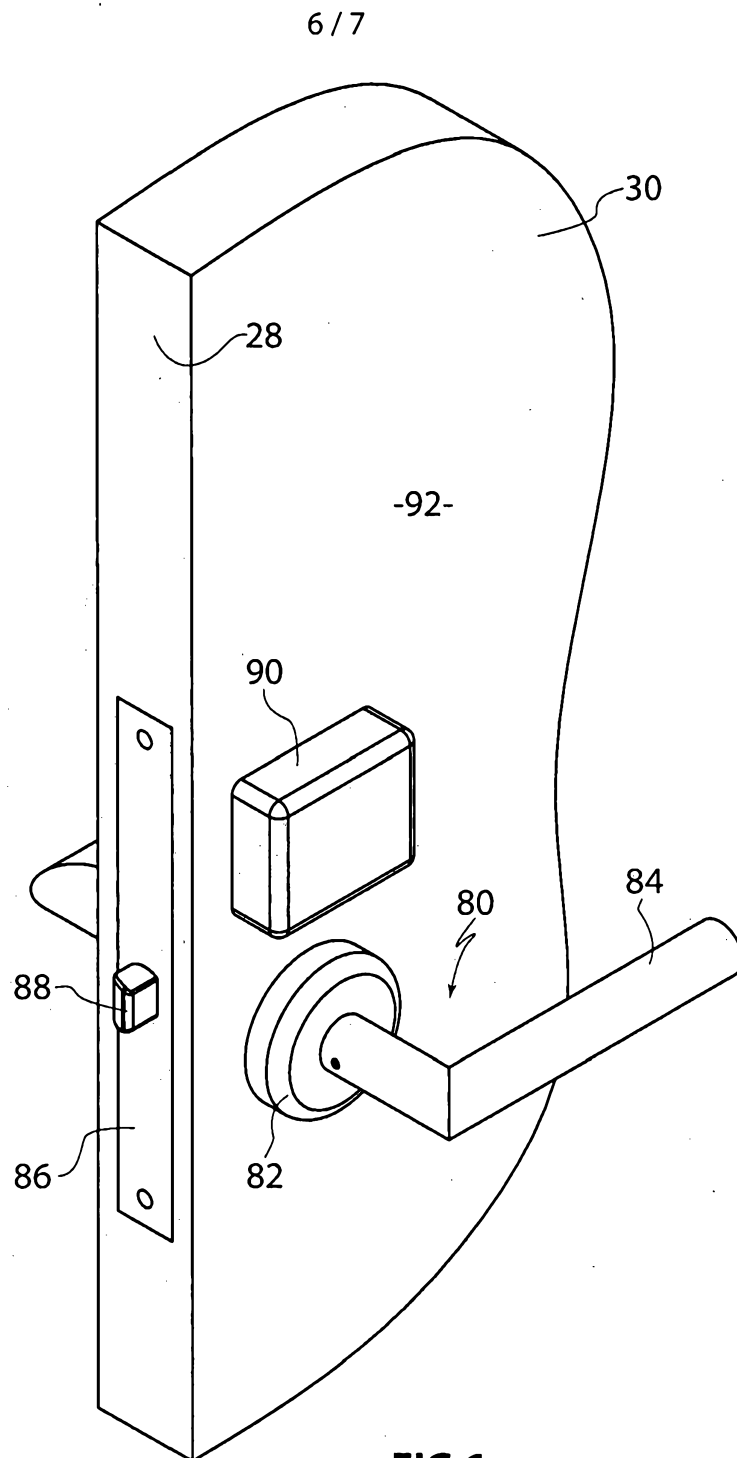


FIG. 6

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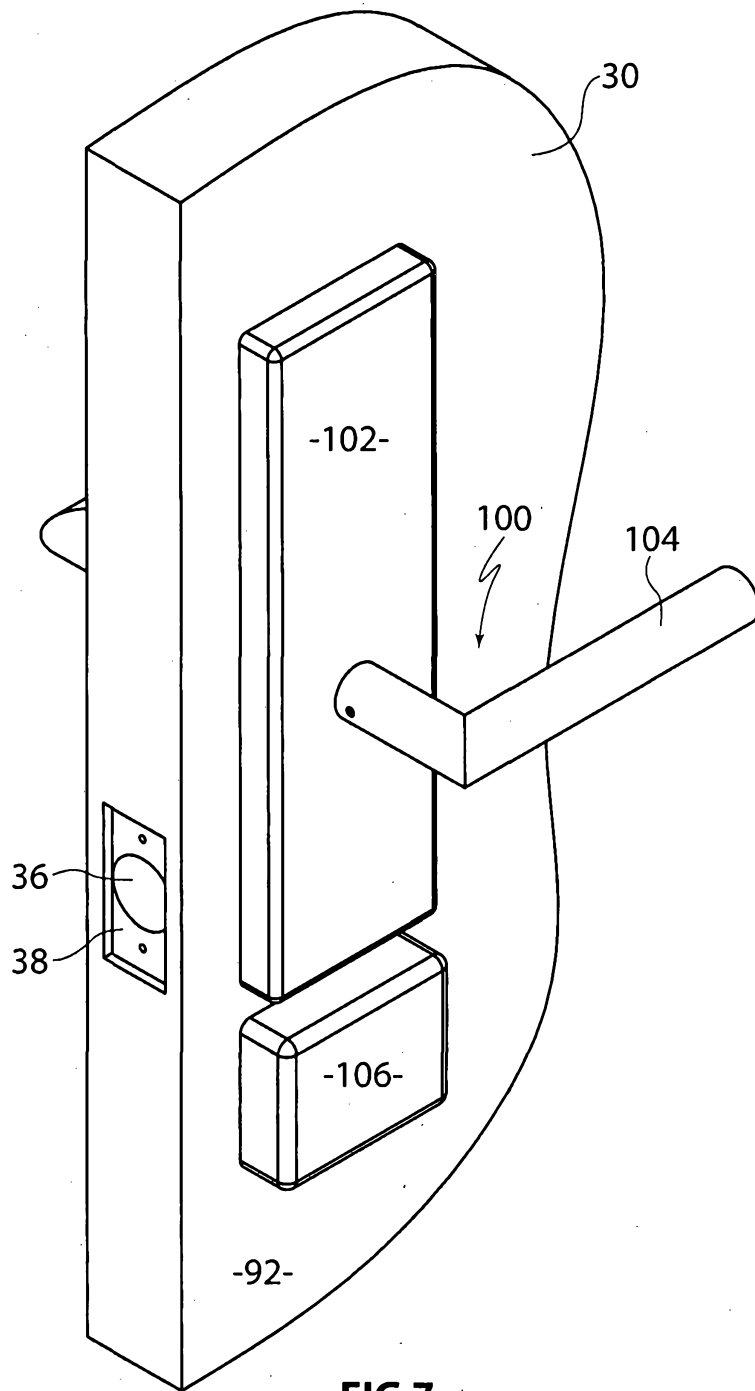


FIG. 7