



(11)

EP 3 530 604 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
28.08.2019 Bulletin 2019/35

(51) Int Cl.:
B66B 11/02 (2006.01)

(21) Application number: **18305180.4**

(22) Date of filing: **21.02.2018**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
MA MD TN

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(54) **ELEVATOR COMPONENT ACCESS SYSTEMS**

(57) Elevator component access systems are provided. The elevator component access systems include an elevator car having a wall panel, the wall panel defining a panel recess, a component housing installable into the panel recess of the wall panel, the component housing having at least one component therein, and a first securing mechanism arranged to secure the component housing to the wall panel and enable removal of the component housing from the wall panel, wherein the first securing mechanism is located on an exterior of the elevator car and the component housing is removable into an interior of the elevator car when the first securing mechanism is unlocked.

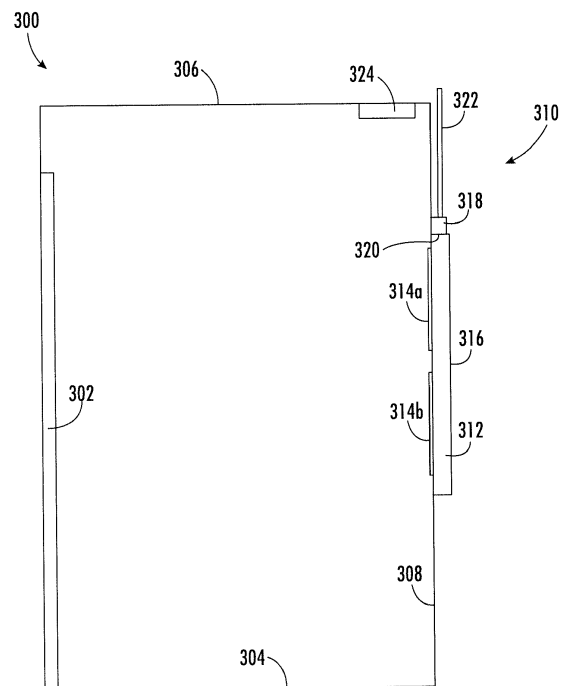


FIG. 3

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Description

BACKGROUND

[0001] The subject matter disclosed herein generally relates to elevator car panels and, more particularly, to methods and apparatus for opening and closing elevator car panels.

[0002] Elevator systems include various components that require maintenance actions to be performed thereon, including, but not limited to, inspection, repair, and replacement. Typically, such maintenance operations may be time consuming and various safety requirements imposed thereon. For example, for some maintenance operations, access to an elevator shaft may be required by a mechanic to perform such maintenance operations. It may be advantageous to provide improved systems to increase safety and/or reduce costs associated with maintenance of elevator systems.

SUMMARY

[0003] According to some embodiments, elevator component access systems are provided. The elevator component access systems include an elevator car having a wall panel, the wall panel defining a panel recess, a component housing installable into the panel recess of the wall panel, the component housing having at least one component therein, and a first securing mechanism arranged to secure the component housing to the wall panel and enable removal of the component housing from the wall panel, wherein the first securing mechanism is located on an exterior of the elevator car and the component housing is removable into an interior of the elevator car when the first securing mechanism is unlocked.

[0004] In addition to one or more of the features described above, or as an alternative, further embodiments of the elevator component access systems may include an operating element operably connected to the first securing mechanism to enable at least one of locking and unlocking of the first securing mechanism.

[0005] In addition to one or more of the features described above, or as an alternative, further embodiments of the elevator component access systems may include that the operating element is a manually operated element.

[0006] In addition to one or more of the features described above, or as an alternative, further embodiments of the elevator component access systems may include an access panel in a ceiling of the elevator car, wherein the operating element is accessible through the access panel.

[0007] In addition to one or more of the features described above, or as an alternative, further embodiments of the elevator component access systems may include that the first securing mechanism comprises a securing portion and a releasing portion, wherein the securing portion is arranged to secure the component housing within

the panel recess and, during operation of the first securing mechanism, the releasing portion is arranged to apply a force to the component housing to remove the component housing from the panel recess.

[0008] In addition to one or more of the features described above, or as an alternative, further embodiments of the elevator component access systems may include that the first securing mechanism comprises a biasing element arranged to bias the first securing mechanism into locking engagement with the component housing.

[0009] In addition to one or more of the features described above, or as an alternative, further embodiments of the elevator component access systems may include a retaining element that retains the component housing to the panel recess during removal of the component housing from the panel recess.

[0010] In addition to one or more of the features described above, or as an alternative, further embodiments of the elevator component access systems may include that the component housing has a first end and a second end and the first securing mechanism engages with the component housing at the first end.

[0011] In addition to one or more of the features described above, or as an alternative, further embodiments of the elevator component access systems may include a second securing mechanism located at the second end of the component housing.

[0012] In addition to one or more of the features described above, or as an alternative, further embodiments of the elevator component access systems may include that the second securing mechanism comprises a tongue-and-groove arrangement to enable engagement between the component housing and the panel recess.

[0013] In addition to one or more of the features described above, or as an alternative, further embodiments of the elevator component access systems may include an access platform located within the elevator car and arranged to allow access to and operation of the first securing mechanism.

[0014] In addition to one or more of the features described above, or as an alternative, further embodiments of the elevator component access systems may include that the access platform comprises at least one of a ladder and a drop-down support platform of the elevator car.

[0015] In addition to one or more of the features described above, or as an alternative, further embodiments of the elevator component access systems may include that the component housing and the component are a unitary structure.

[0016] In addition to one or more of the features described above, or as an alternative, further embodiments of the elevator component access systems may include that the at least one component is at least one of a car operating panel and a display.

[0017] According to some embodiments, elevator systems are provided that include the elevator component access system of any embodiment described herein.

[0018] The foregoing features and elements may be

combined in various combinations without exclusivity, unless expressly indicated otherwise. These features and elements as well as the operation thereof will become more apparent in light of the following description and the accompanying drawings. It should be understood, however, that the following description and drawings are intended to be illustrative and explanatory in nature and non-limiting.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] The subject matter is particularly pointed out and distinctly claimed at the conclusion of the specification. The foregoing and other features, and advantages of the present disclosure are apparent from the following detailed description taken in conjunction with the accompanying drawings in which:

FIG. 1 is a schematic illustration of an elevator system that may employ various embodiments of the present disclosure;

FIG. 2A is a front elevation schematic illustration of an elevator car panel;

FIG. 2B is a rear perspective schematic illustration of the elevator car panel of FIG. 2A;

FIG. 3 is a schematic illustration of an elevator car having a component access system in accordance with an embodiment of the present disclosure;

FIG. 4A is a schematic illustration of an aspect of a maintenance operation in accordance with an embodiment of the present disclosure;

FIG. 4B is a schematic illustration of another aspect of a maintenance operation in accordance with an embodiment of the present disclosure;

FIG. 4C is a schematic illustration of another aspect of a maintenance operation in accordance with an embodiment of the present disclosure;

FIG. 4D is a schematic illustration of another aspect of a maintenance operation in accordance with an embodiment of the present disclosure;

FIG. 5A is a schematic illustration of an elevator component access system in accordance with an embodiment of the present disclosure, illustrating a component housing installed within a panel recess;

FIG. 5B is a schematic illustration of an aspect of an operation of the elevator component access system of FIG. 5A to remove the component housing from the panel recess;

FIG. 5C is a schematic illustration of an aspect of an operation of the elevator component access system of FIG. 5A to remove the component housing from the panel recess;

FIG. 6A is a schematic illustration of a component housing as removed from a panel recess in accordance with an embodiment of the present disclosure

FIG. 6B is a schematic illustration of an aspect of an installation operation to install the component housing of FIG. 6A into the panel recess shown therein;

FIG. 6C is a schematic illustration of an aspect of an installation operation to install the component housing of FIG. 6A into the panel recess shown therein; and

FIG. 6D is a schematic illustration of an aspect of an installation operation to install the component housing of FIG. 6A into the panel recess shown therein, with the component housing secured within the panel recess.

DETAILED DESCRIPTION

[0020] FIG. 1 is a perspective view of an elevator system 101 including an elevator car 103, a counterweight 105, a roping 107, a guide rail 109, a machine 111, a position encoder 113, and a controller 115. The elevator car 103 and counterweight 105 are connected to each other by the roping 107. The roping 107 may include or be configured as, for example, ropes, steel cables, and/or coated-steel belts. The counterweight 105 is configured to balance a load of the elevator car 103 and is configured to facilitate movement of the elevator car 103 concurrently and in an opposite direction with respect to the counterweight 105 within an elevator shaft 117 and along the guide rail 109.

[0021] The roping 107 engages the machine 111, which is part of an overhead structure of the elevator system 101. The machine 111 is configured to control movement between the elevator car 103 and the counterweight 105. The position encoder 113 may be mounted on an upper sheave of a speed-governor system 119 and may be configured to provide position signals related to a position of the elevator car 103 within the elevator shaft 117. In other embodiments, the position encoder 113 may be directly mounted to a moving component of the machine 111, or may be located in other positions and/or configurations as known in the art.

[0022] The controller 115 is located, as shown, in a controller room 121 of the elevator shaft 117 and is configured to control the operation of the elevator system 101, and particularly the elevator car 103. For example, the controller 115 may provide drive signals to the machine 111 to control the acceleration, deceleration, leveling, stopping, etc. of the elevator car 103. The controller

115 may also be configured to receive position signals from the position encoder 113. When moving up or down within the elevator shaft 117 along guide rail 109, the elevator car 103 may stop at one or more landings 125 as controlled by the controller 115. Although shown in a controller room 121, those of skill in the art will appreciate that the controller 115 can be located and/or configured in other locations or positions within the elevator system 101.

[0023] The machine 111 may include a motor or similar driving mechanism. In accordance with embodiments of the disclosure, the machine 111 is configured to include an electrically driven motor. The power supply for the motor may be any power source, including a power grid, which, in combination with other components, is supplied to the motor.

[0024] Although shown and described with a roping system, elevator systems that employ other methods and mechanisms of moving an elevator car within an elevator shaft may employ embodiments of the present disclosure. FIG. 1 is merely a non-limiting example presented for illustrative and explanatory purposes.

[0025] At times, it may be necessary for a technician or other person to gain access to elements that are located behind a panel of the elevator car. For example, certain electronics and/or other components of the elevator car are stored behind a panel of the elevator car. Further, it may be necessary for a technician or other person to access electronics of the elevator car, such as elements of car operating panels, displays, etc.

[0026] Turning to FIGS. 2A and 2B, schematic illustrations of an elevator car panel 200 that may be configured to employ embodiments described herein are shown. FIG. 2A shows a front elevation schematic view of a first side of the elevator car panel 200. FIG. 2B shows a rear perspective schematic view of a second side of the elevator car panel 200. The elevator car panel 200, as shown, includes a first component 202 and a second component 204. The components 202, 204 are installed into and/or mounted within the elevator car panel 200. In this illustration, the first component 202 is a car operating panel and the second component 204 is a display. Although shown with two example components, those of skill in the art will appreciate that other components can be installed within elevator cars, and thus the present disclosure is not limited to just car operating panels and displays. At times, the various components may require maintenance. For example, as shown in FIG. 2B, the first component 202 has a respective first control element 202a and the second component 204 has a respective second control element 204a.

[0027] As shown, the elevator car panel 200 extends from a floor 206 at a first end 208 to a ceiling 210 at a second end 212 of the elevator car panel 200. Typically, it may be very difficult to perform maintenance operations on the components 202, 204 and/or the control elements 202a, 204a due to the construction of the elevator car panel 200 and the installation within an elevator car. For

example, the entire elevator car panel 200, or a substantial portion thereof, may be required to be opened and/or removed from the wall of the elevator car, to enable access to the control elements 202a, 204a.

[0028] As shown, the first component 202 includes an interactive element 214. The interactive element 214 may be arranged as a number of buttons that are used to enable a passenger to select a destination floor, and may also include emergency buttons, or other buttons as known in the art. In some embodiments, the interactive element 214 may be a touchscreen or other type of user-interface display that enables a user or passenger to interact with and/or control the elevator. As shown in FIG. 2B, the control elements 202a, 204a are shown on the back side of the elevator car panel 200. The control elements 202a, 204a are electronics and other components that are configured to enable the components 202, 204 to control the elevator car and/or display information thereon. For example, the control elements 202a, 204a may include switches, processors, communication devices, etc. that enable a passenger to control the elevator car and receive information related thereto.

[0029] In this illustrative embodiment, as shown, the second component 204 is arranged as a display. The second component 204 may be a screen or other light up display that is used to indicate a current floor or movement of the elevator car. In some embodiments, the second component 204, when arranged as a display, can be used to display real-time information (e.g., weather, etc.) and/or may be used to display television, advertisements, etc. As shown in FIG. 2B, the second control element 204a associated with the second component 204 can be display electronics located on the back side of the car elevator panel 200. The display electronics may include processors, memory, display components, etc. that enable the second component 204 to provide desired information, including current floor, movement, commercials, etc., as noted above.

[0030] As noted, the elevator car panel 200 extends from the floor 206 at the first end 208 up to the second end 212 at the ceiling 210 of the elevator car. In some embodiments, the elevator car panel 200 may be substantially solid. That is, the elevator car panel 200 may be configured to be a wall or other structure that prevents unauthorized persons to gain access to the control elements 202a, 204a, or other components that may be located behind the elevator car panel 200. As such, as viewed from inside an elevator car, the elevator car panel 200 may appear as a solid wall that may not be opened.

[0031] However, as noted, at times, it may be necessary to perform maintenance on aspects of the first component 202, the second component 204, associated control elements 202a, 204a, and/or to access other electronics, wiring, components, etc. that are housed behind the elevator car panel 200. Accordingly, providing ease of access to such components and elements may be advantageous. However, preventing passengers from intentionally accessing such components and elements

behind the elevator car panel 200 is also important.

[0032] Turning now to FIG. 3, a schematic illustration of an elevator car 300 in accordance with an embodiment of the present disclosure is shown. The elevator car 300 has a car door 302, a floor 304, a ceiling 306, and a wall panel 308. The wall panel 308 extends between the floor 304 and the ceiling 306. The elevator car 300 includes a component access system 310 that is configured to enable relatively easy access and yet provide security to one or more components of the elevator car 300.

[0033] For example, as shown in FIG. 3, the component access system 310 includes a component housing 312 that is removably attached to the wall panel 308. The component housing 312 can house or contain one or more components 314a, 314b, including, but not limited to, a car operating panel, a display, and/or an interactive element, etc. as will be appreciated by those of skill in the art. The component housing 312 may be a tray, frame, shell, etc. that is arranged to contain and support the one or more components 314a, 314b therein. The component housing 312 is arranged to fit within a panel recess 316 of the wall panel 308.

[0034] The component access system 310 is arranged to secure the component housing 312 within the panel recess 316 such that unauthorized access to the components 314a, 314b may be prevented. In the present embodiment, the component access system 310 includes a housing lock 318 that includes a lock pin 320 that is arranged to securely engage the component housing 312 when the component housing 312 is installed within the panel recess 316. The housing lock 318 may be a springloaded or biased device that biases the lock pin 320 into an engaged and secured position with the component housing 312. In some such embodiments, and as shown, an operating element 322 is operably connected to the housing lock 318. The operating element 322 may be a lever, rod, chain, etc. that may be manually operated to operate the housing lock 318 to transition from a locked position to an unlocked position.

[0035] As shown, the operating element 322 may be accessible through an access panel 324 located in the ceiling 306 of the elevator car 300. The access panel 324 may be a ceiling panel or tile of the elevator car 300 and may have an aesthetic appearance similar to other ceiling panels/tiles of the elevator car 300. In operation, a mechanic or technician can open the access panel 324 to enable operation of the operating element 322 to unlock the housing lock 318 by lifting the lock pin 320 out of engagement with the component housing 312. When the lock pin 320 is moved to an unlocked position, the component housing 312 can be removed from the panel recess 316, and thus the mechanic may easily perform maintenance on the components 314a, 314b.

[0036] Turning now to FIGS. 4A-4D, schematic illustrations of a maintenance operation in accordance with an embodiment of the present disclosure are shown. In this embodiment, an elevator car 400 includes a component housing 412 having a damaged component 426

contained therein that is part of a component access system 410 similar to that shown and described with respect to FIG. 3. The illustrations of FIG. 4A-4D illustrate a maintenance operation to repair or replace the damaged component 426. For example, as shown in FIG. 4A, a mechanic 428 is shown standing on an access platform 430 (e.g., ladder, drop-down support platform, etc.). The mechanic 428 is shown having access through a ceiling 406 of the elevator car 400, such as through an access panel as shown in FIG. 3.

[0037] The mechanic 428 can access and operate an operating element 422 to unlock the component access system 410 to release the component housing 412 from a panel recess 416 of a wall panel 408 of the elevator car 400, as shown in FIGS. 4A-4B. With the operating element 422 actuated, the mechanic 428 can remove the component housing 412 from the panel recess 416, as shown in FIG. 4B.

[0038] As shown in FIG. 4C, the mechanic 428 can repair or replace the broken component 426 with a fixed component 432. The mechanic 428 can then replace the component housing 412 into the panel recess 416, as shown in FIGS. 4C-4D. Subsequently, the mechanic 428 can use the operating element 422 to lock the component housing 412 (and thus the fixed component 432) within the panel recess 416 of the wall panel 408 of the elevator car 400, as shown in FIG. 4D.

[0039] Turning now to FIGS. 5A-5C, schematic illustrations of operation of a component access system 550 in accordance with an embodiment of the present disclosure are shown. The component access system 550 includes a component housing 552 that can contain one or more components of an elevator car, as described above. The component housing 552 is shown in FIG. 5A as installed within a panel recess 554 of a wall panel 556 of an elevator car. The component housing 552 is secured within the panel recess 554 by a first securing mechanism 558 at a first end 560 of the component housing 552 and a second securing mechanism 562 at a second end 564 of the component housing 552. The first securing mechanism 558 can be a locking device that is operable to lock and unlock or secure and release the component housing 552 from engagement within the panel recess 554. The second securing mechanism 562 may be a tongue-and-groove or similar slotted or alignment-type engagement/arrangement that can secure, in this illustration, a bottom of the component housing 552 within the panel recess 554 of the elevator car. As shown, in accordance with embodiments of the present disclosure, the first securing mechanism 558 is located on an exterior of the elevator car (outside of an elevator car interior) and the component housing is removable into the elevator car interior during operation of the first securing mechanism 558.

[0040] The first securing mechanism 558, in this embodiment, includes a pivoting element 566 that is operable by force applied through an operating element 568. The pivoting element 566 includes a securing portion 570

and a releasing portion 572. The securing portion 570 may be a hook or similar type extension that engages with a portion of the component housing 552 to securely retain the component housing 552 within the panel recess 554. The releasing portion 572 is arranged to contact and apply force to the component housing 552 to thus urge the component housing 552 out of engagement with the panel recess 554. The first securing mechanism 558 includes a biasing element 574 (e.g., a spring) that is arranged to urge the securing portion 570 into engagement with the component housing 552 and thus secure the component housing 552 within the panel recess 554.

[0041] In operation, when the operating element 568 is manually pulled upward, as shown in FIG. 5B, the first securing mechanism 558 can be operated to release the component housing 552. For example, as the operating element 568 is operated (e.g., pulled upward as shown in FIG. 5B), the biasing element 574 is compressed and the pivoting element 566 is rotated such that the securing portion 570 is moved out of engagement with the component housing 552. As the pivoting element 566 is rotated about a pivot, the releasing portion 572 applies force to the back of the component housing 552 to thus urge the component housing 552 out of engagement with the panel recess 554. As the component housing 552 is pushed by the releasing portion 572 of the pivoting element 566, the component housing 552 may pivot about the second securing mechanism 562, as shown in FIG. 5C. A mechanic can then remove the component housing 552 from the panel recess 554 to perform maintenance on the component housing 552 and/or one or more components located therein.

[0042] As shown in FIG. 5C, an optional retaining element 576 can be provided to hold or secure the component housing 552 to the panel recess 554 even when the first securing mechanism 558 is operated to unlock, release, and push upon the component housing 552. Thus, the component housing 552 may be prevented from falling out of the panel recess 554 and causing damage thereto. The retaining element 576 may be a chain, a linking structure, a roping element, etc. that allows for movement of the component housing 552 relative to the panel recess 554, yet prevents the component housing 552 from falling.

[0043] Turning now to FIGS. 6A-6D, schematic illustrations of installation of a component housing 652 into a panel recess 654 of a component access system 650 in accordance with an embodiment of the present disclosure are shown. The component access system 650 may be substantially similar to that shown and described with respect to FIGS. 5A-5C, and thus detailed descriptions of various features may not be repeated.

[0044] In these illustrations, a repaired or new component housing 652 is shown being installed into the panel recess 654 of a wall panel 656 of an elevator car. To install the component housing 652, a mechanic can attach the component housing 652 to a retaining element 676 (or the retaining element 676 may be permanently

attached to the component housing). As shown in FIG. 6A, the component housing 652 is completely removed and separate from the panel recess 654. To install the component housing 652 into the panel recess 654, a first end 660 and a second end 664 of the component housing 652 are aligned with the panel recess 654, as shown in FIG. 6A.

[0045] The second end 664 of the component housing 652 is inserted into the panel recess 654 as shown in FIG. 6B. A second securing mechanism 662 of the component access system 650 is aligned to retain the second end 664 of the component housing 652 within the panel recess 654. The component housing 652 can then be rotated or pivoted about the second securing mechanism 662 such that the first end 660 of the component housing 652 is moved toward and into the panel recess 654.

[0046] As shown in FIG. 6C, the first end 660 of the component housing 652 is pushed inward into the panel recess 654 and contacts and/or engages with a securing portion 670 of a pivoting element 666 of a first securing mechanism 658. As shown, the first end 660 of the component housing 652 will contact and push the securing portion 670 upward such that it pivots and allows the first end 660 of the component housing 652 to slide into or fit within the panel recess 654.

[0047] With the component housing 652 fully inserted into the panel recess 654, the pivoting element 666 will rotate or pivot back downward, due to a biasing force applied by a biasing element 674. The securing portion 670 of the first securing mechanism 662 will then engage with the component housing 652 at the first end 660 thereof and thus securely retain the component housing 652 within the panel recess 654.

[0048] Although described herein with a manual operating element, various other types of operating elements may be employed without departing from the scope of the present disclosure. For example, in some embodiments, the locking mechanism of the component access systems of the present disclosure can be electrical systems that can be controlled using a user interface (e.g., buttons or a computer). In one non-limiting example, the first securing mechanism can include a key-lock feature that is lockable/unlockable by operation of a key inserted from the interior of the elevator car into/through the wall panel of the elevator car.

[0049] Further, although described as separate components within a component housing, in some embodiments, the component housing and the components can be integrally formed as a single unit or as a unitary structure. That is, in some embodiments, the component housing may be a frame or structural aspect of the component itself. For example, in some embodiments wherein the component is a display, the component housing may be the display housing, and a separate component housing can be eliminated or may be optional.

[0050] The component housing may include one or more apertures or openings to enable cabling, cords, power, wiring, etc. to pass therethrough. That is, the com-

ponents contained within the component housing can have electric wiring that is required to be connected to various other locations on the elevator car or within the elevator system. In such embodiments, the wiring can pass through an aperture or opening in the component housing to allow such wiring to connect to necessary other locations.

[0051] In accordance with some embodiments of the present disclosure, elevator car components can be mounted or dismounted from within the elevator car using component access systems as described herein, and/or variations thereof. Further, in accordance with some embodiments, the component access systems can be locked and/or operating from the top of the elevator car, thus preventing unauthorized access and operation thereof. In some embodiments, the component access systems can include a locking mechanism that includes a vertical pin with a spring and a hook that is manually or electrically operable to lock and unlock a component housing into/from engagement with a panel recess of an elevator car.

[0052] Advantageously, when a pivoting element is employed as part of a first securing mechanism, an operating element can be used to pivot the pivoting element to release a securing portion and simultaneously push upon the component housing to remove the component housing from the panel recess. Further, advantageously, when the component housing is reinstalled into the panel recess, the component housing can be automatically locked by a spring-action that is part of the first securing mechanism. In some embodiments, a further locking aspect, such as a manual lock can be used to lock the entire system from unauthorized access.

[0053] Advantageously, embodiments described herein provide elevator component access systems that allow for easy maintenance operations thereupon without the need for a mechanic to enter an elevator shaft to perform the maintenance. That is, no more access to the elevator shaft is needed to perform maintenance on various components of elevator car. Advantageously, the components may only be installed or removed by authorized personnel because the locking system for the component housing may be located, at least in part, on the top of the elevator car.

[0054] Advantageously, the component access systems of the present disclosure can provide for optimized integration of easy-maintenance components installed within an elevator car. Such component access systems can enable flush mounting having non-visible fastening/securing elements. As such, theft prevention and/or unauthorized access prevention can be provided from various embodiments. Furthermore, advantageously, due to the ease of use, maintain field hours can be reduced and further safety can be increased.

[0055] While the present disclosure has been described in detail in connection with only a limited number of embodiments, it should be readily understood that the present disclosure is not limited to such disclosed em-

bodiments. Rather, the present disclosure can be modified to incorporate any number of variations, alterations, substitutions, combinations, sub-combinations, or equivalent arrangements not heretofore described, but which are commensurate with the scope of the present disclosure. Additionally, while various embodiments of the present disclosure have been described, it is to be understood that aspects of the present disclosure may include only some of the described embodiments.

[0056] Accordingly, the present disclosure is not to be seen as limited by the foregoing description, but is only limited by the scope of the appended claims.

Claims

1. An elevator component access system comprising:

an elevator car having a wall panel, the wall panel defining a panel recess;
a component housing installable into the panel recess of the wall panel, the component housing having at least one component therein; and
a first securing mechanism arranged to secure the component housing to the wall panel and enable removal of the component housing from the wall panel, wherein the first securing mechanism is located on an exterior of the elevator car and the component housing is removable into an interior of the elevator car when the first securing mechanism is unlocked.

2. The elevator component access system of claim 1, further comprising an operating element operably connected to the first securing mechanism to enable at least one of locking and unlocking of the first securing mechanism.

3. The elevator component access system of claim 2, wherein the operating element is a manually operated element.

4. The elevator component access system of any of claims 2-3, further comprising an access panel in a ceiling of the elevator car, wherein the operating element is accessible through the access panel.

5. The elevator component access system of any preceding claim, wherein the first securing mechanism comprises a securing portion and a releasing portion, wherein the securing portion is arranged to secure the component housing within the panel recess and, during operation of the first securing mechanism, the releasing portion is arranged to apply a force to the component housing to remove the component housing from the panel recess.

6. The elevator component access system of any pre-

ceding claim, wherein the first securing mechanism comprises a biasing element arranged to bias the first securing mechanism into locking engagement with the component housing.

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7. The elevator component access system of any preceding claim, further comprising a retaining element that retains the component housing to the panel recess during removal of the component housing from the panel recess. 10
8. The elevator component access system of any preceding claim, wherein the component housing has a first end and a second end and the first securing mechanism engages with the component housing at the first end. 15
9. The elevator component access system of claim 8, further comprising a second securing mechanism located at the second end of the component housing. 20
10. The elevator component access system of claim 9, wherein the second securing mechanism comprises a tongue-and-groove arrangement to enable engagement between the component housing and the panel recess. 25
11. The elevator component access system of any preceding claim, further comprising an access platform located within the elevator car and arranged to allow access to and operation of the first securing mechanism. 30
12. The elevator component access system of claim 11, wherein the access platform comprises at least one of a ladder and a drop-down support platform of the elevator car. 35
13. The elevator component access system of any preceding claim, wherein the component housing and the component are a unitary structure. 40
14. The elevator component access system of any preceding claim, wherein the at least one component is at least one of a car operating panel and a display. 45
15. An elevator system comprising the elevator component access system of any preceding claim. 50

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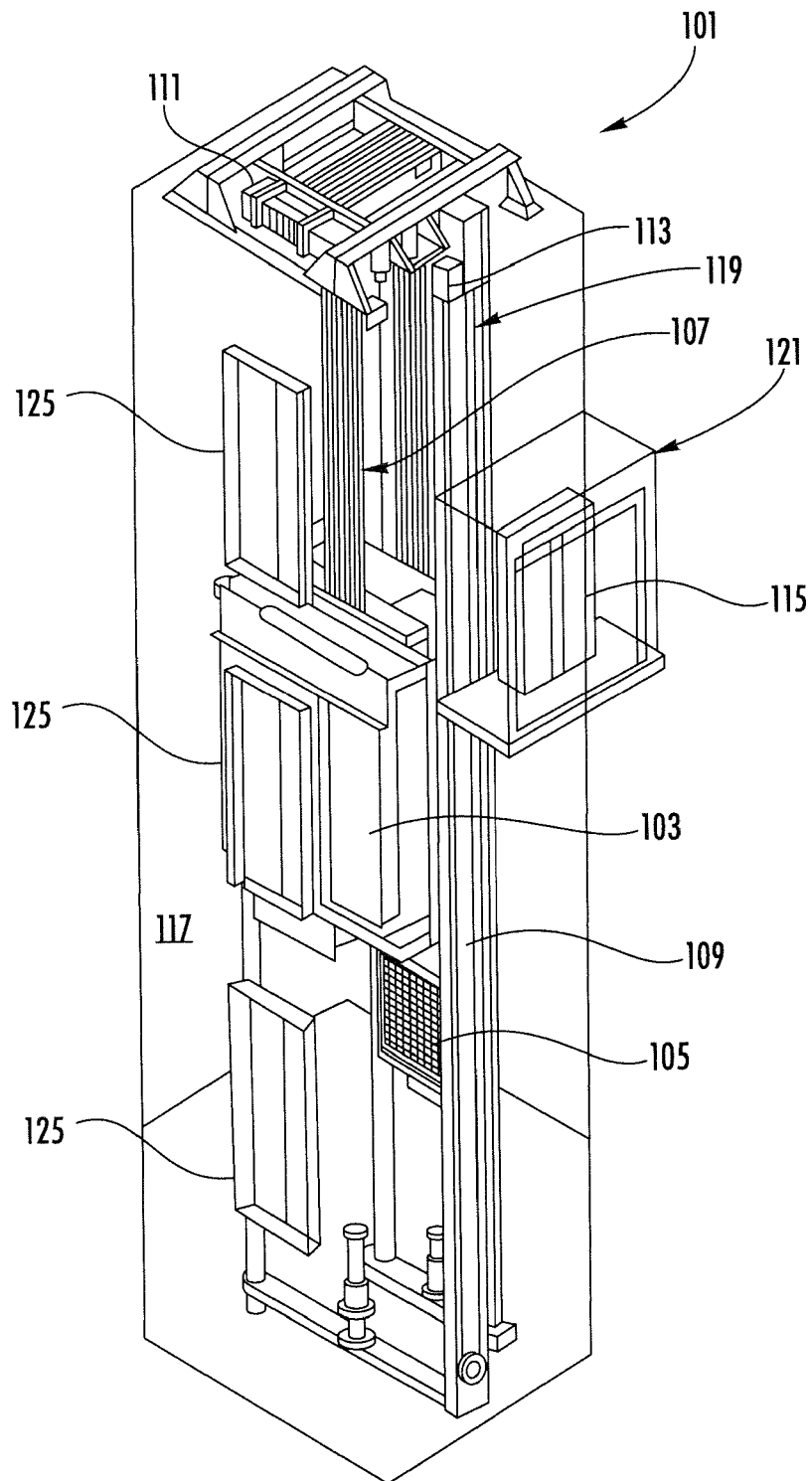


FIG. 1

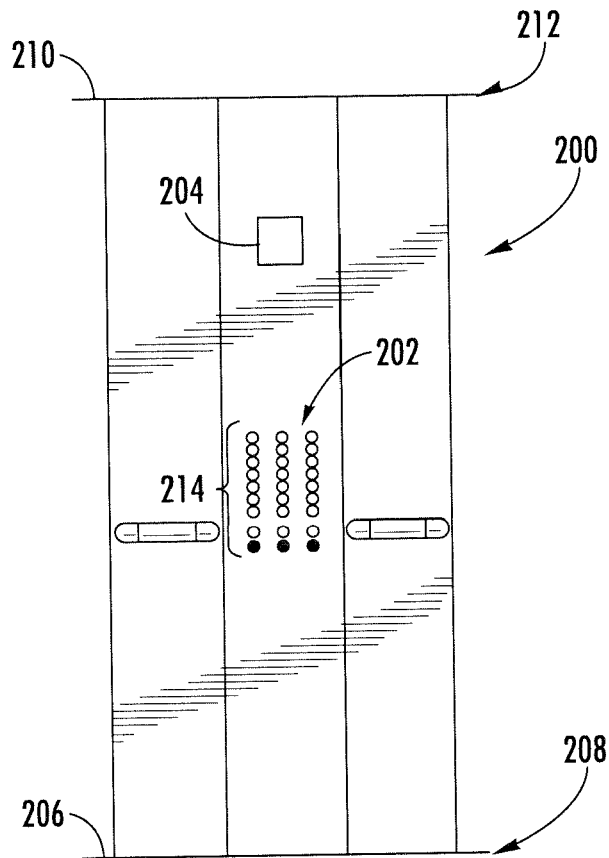


FIG. 2A

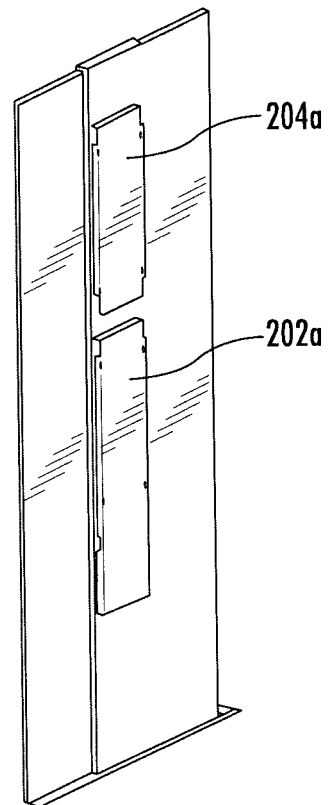


FIG. 2B

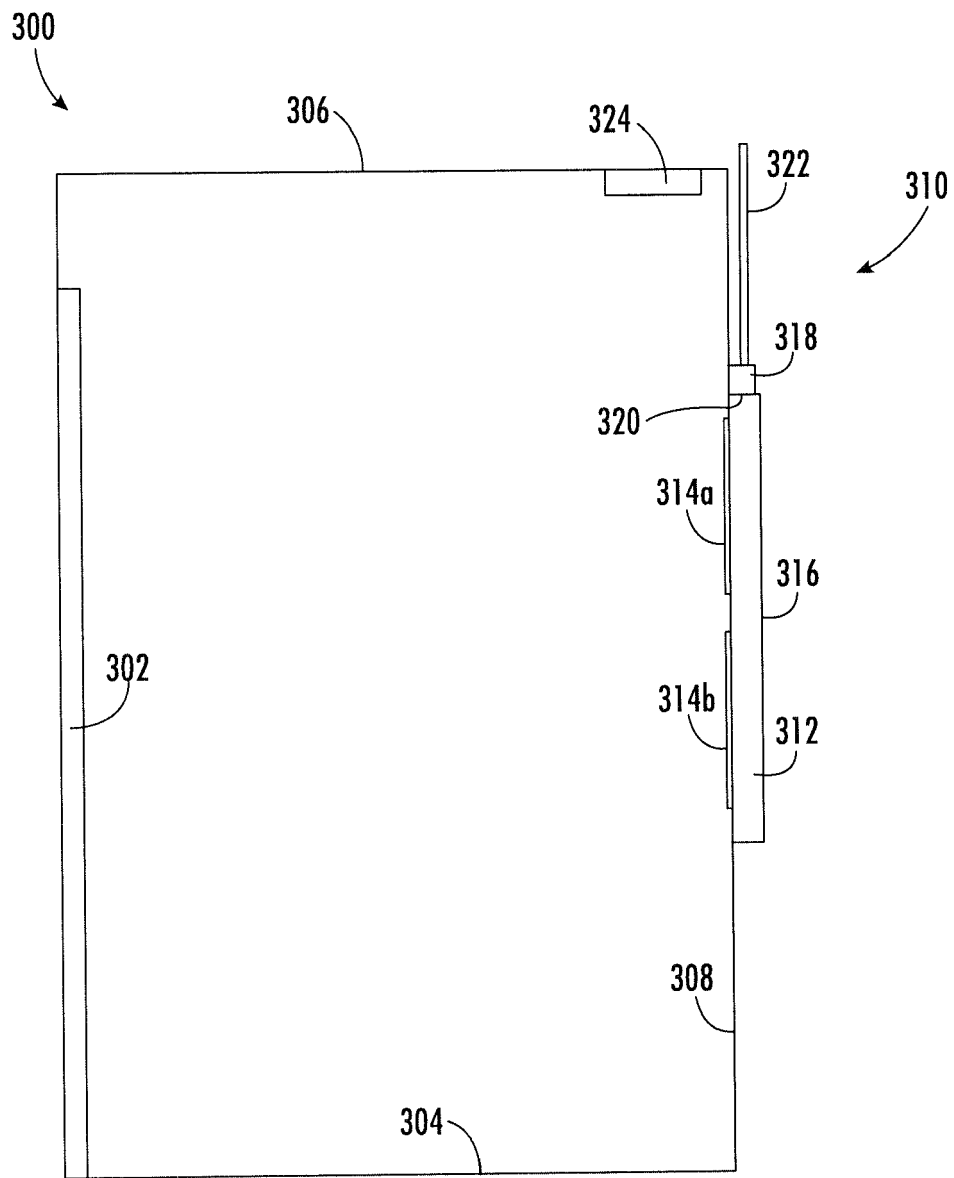


FIG. 3

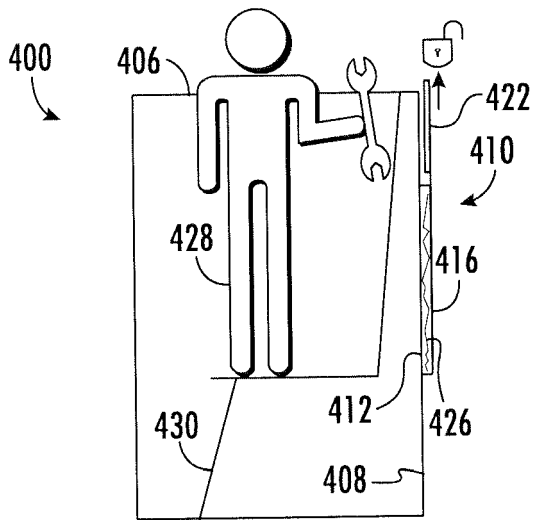


FIG. 4A

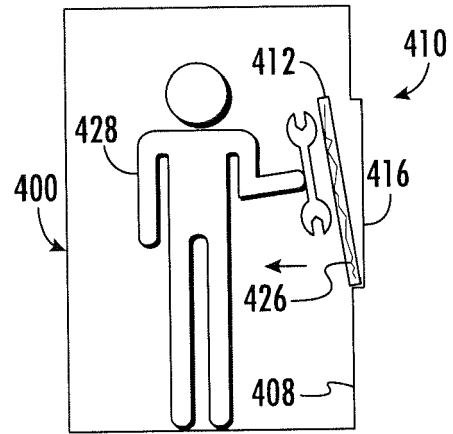


FIG. 4B

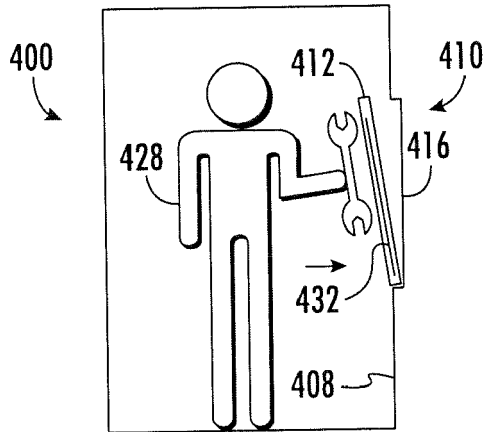


FIG. 4C

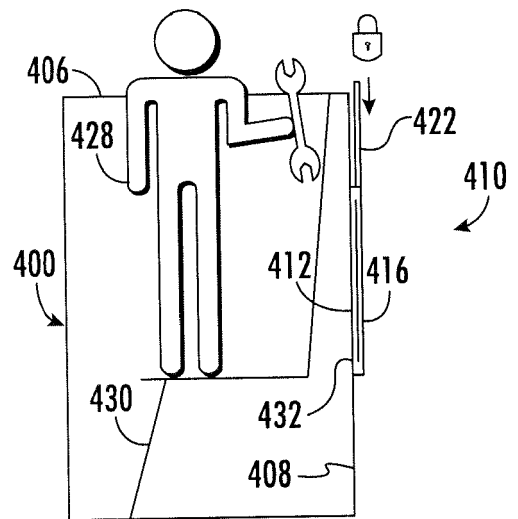


FIG. 4D

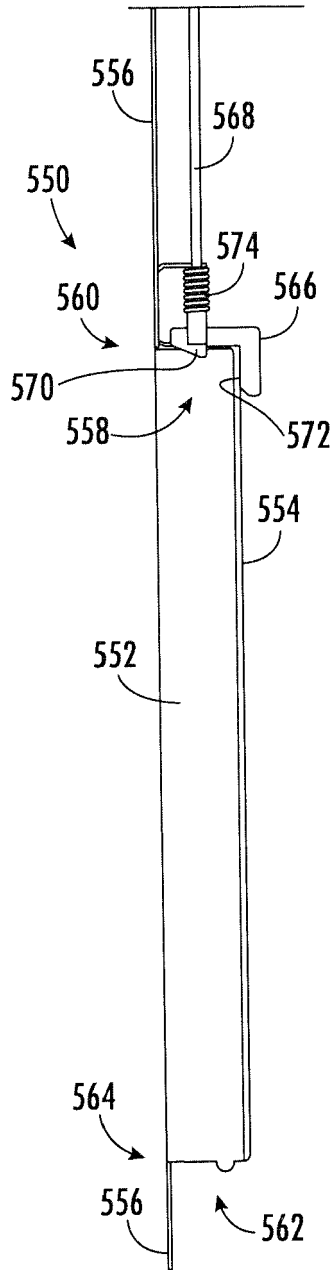


FIG. 5A

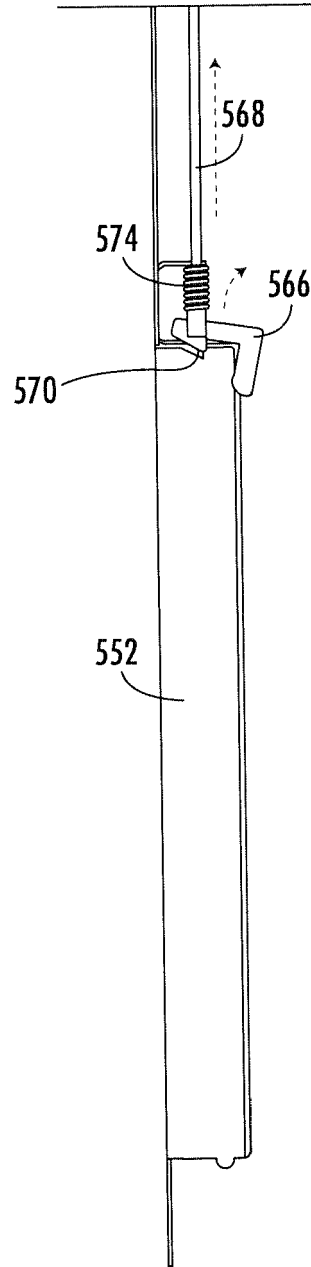


FIG. 5B

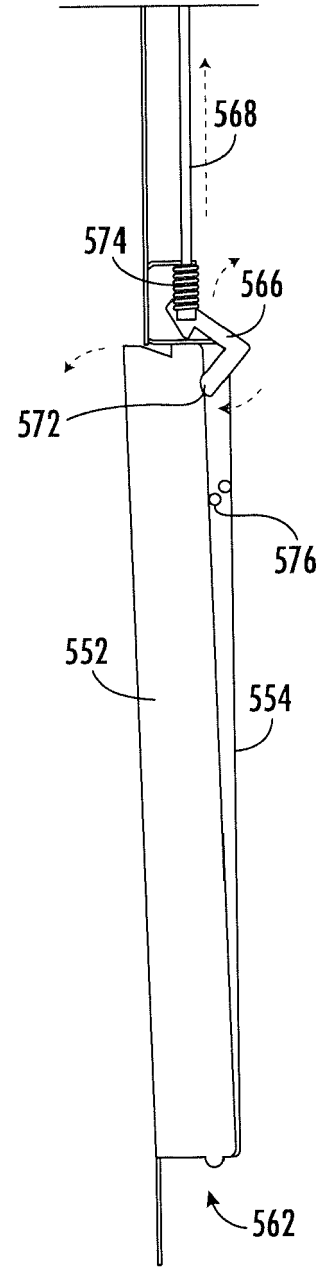


FIG. 5C

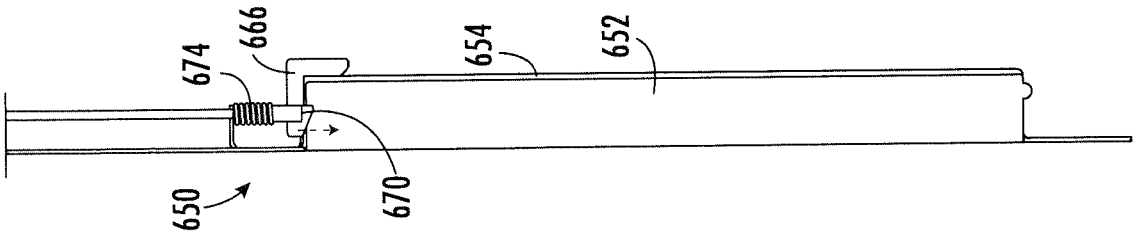


FIG. 6D

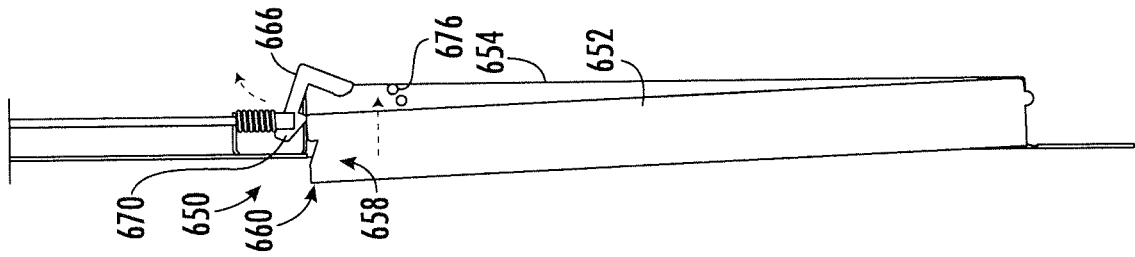


FIG. 6C

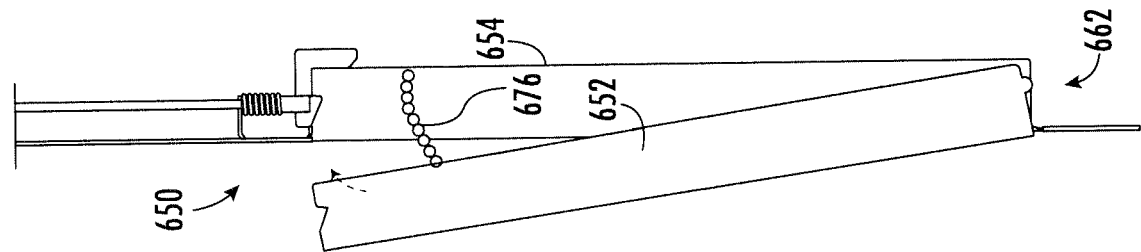


FIG. 6B

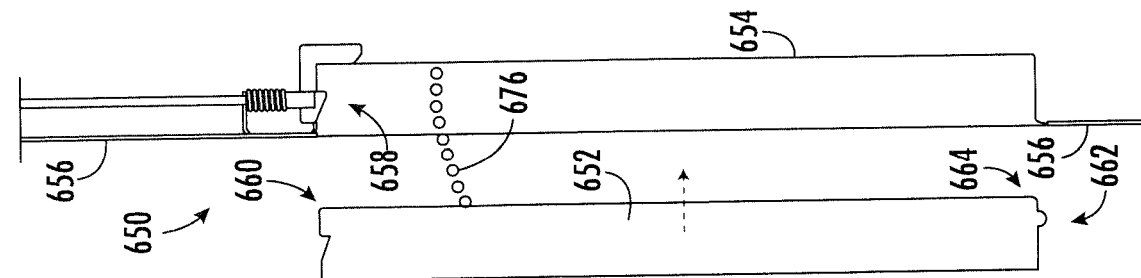


FIG. 6A



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			TECHNICAL FIELDS SEARCHED (IPC)
			B66B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 29 August 2018	Examiner Oosterom, Marcel
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