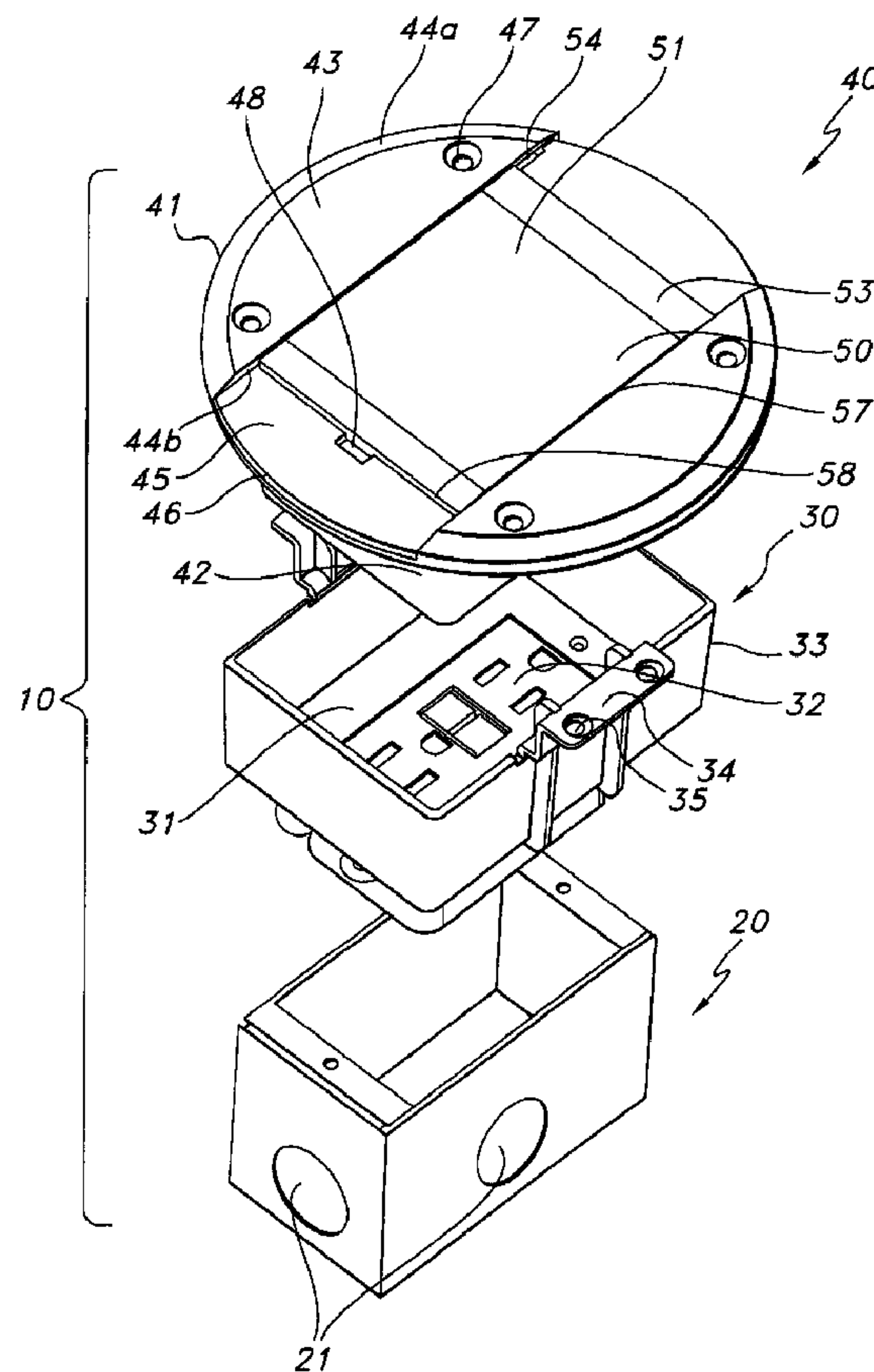




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(57) **Abrégé/Abstract:**

An electrical floor box assembly and cover are provided. The floor box cover includes an access door that is designed to be repositioned. The access door is repositioned by lifting, sliding, or moving back and securing into one of at least two closed (flat)

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

positions. When the access door is secured in a closed "not in service" position, the access door is watertight with a single gasket or seal. A second gasket or seal is provided below the cover for further watertightness. When the access door is secured in a closed "in service" position, one or more apertures for cords are revealed, thereby permitting cords plugged into an outlet within the floor box assembly to protrude through the apertures.

ABSTRACT

An electrical floor box assembly and cover are provided. The floor box cover includes an access door that is designed to be repositioned. The access door is repositioned by lifting, sliding, or moving back and securing into one of at least two closed (flat) positions. When the access door is secured in a closed “not in service” position, the access door is watertight with a single gasket or seal. A second gasket or seal is provided below the cover for further watertightness. When the access door is secured in a closed “in service” position, one or more apertures for cords are revealed, thereby permitting cords plugged into an outlet within the floor box assembly to protrude through the apertures.

## FLOOR BOX COVER

**[0001]**

### FIELD OF THE INVENTION

**[0002]** In general, the present invention relates to an electrical floor box assembly and cover and, in particular, to a floor box cover with an access door that lifts, slides or moves with tether back and secures into a closed position leaving one or more apertures for cords, and floor box assemblies utilizing the same.

### BACKGROUND OF THE INVENTION

**[0003]** Floor box assemblies provide a convenient means for placing electrical, data, and/or communication outlets near a user without running cords on the floor, which can be a safety hazard. It is desirable to provide a floor box assembly with a cover that has an access door that is designed to be repositioned by lifting, sliding, or moving back and securing into closed (“flat”) positions that are either watertight with a single gasket and/or reveal one or more apertures for cords plugged into an outlet within the floor box assembly.

SUMMARY OF THE INVENTION

**[0004]** One aspect of the present invention is to provide an electrical floor box cover comprising a cover plate having an aperture to permit access within said assembly and a repositionable access door pivotally mounted to said cover plate by a hinge, wherein said hinge is capable of sliding to allow said access door to be positioned in a plurality of closed positions that cover all or a portion of said aperture.

**[0005]** Another aspect of the invention is to provide an electrical floor box cover comprising a cover plate having an aperture to permit access within said assembly and a removable and repositionable access door attached to said cover plate by a tether, wherein said tether allows said access door to be positioned in a plurality of closed positions that cover all or a portion of said aperture.

**[0006]** A further aspect of the invention is to provide an electrical floor box assembly comprising an outlet (recessed) box and an electrical box cover assembly, wherein said electrical box cover assembly comprises a cover plate having an aperture to permit access within said assembly and an access door, wherein said access door is selected from the group consisting of a repositionable access door pivotally mounted to said cover plate by a hinge, wherein said hinge is capable of sliding to allow said access door to be positioned in a plurality of closed positions that cover all or a portion of said aperture or a removable and repositionable access door attached to said cover plate by a tether, wherein said tether allows said access door to be positioned in a plurality of closed positions that cover all or a portion of said aperture.



BRIEF DESCRIPTION OF THE DRAWINGS

**[0007]** Further advantages of the invention will become apparent by reference to the detailed description of preferred embodiments when considered in conjunction with the drawings:

**[0008]** **FIG. 1** is a perspective view of a floor box assembly with electrical box, recessed floor (outlet) box, and the cover assembly according to one embodiment of the present invention with the access door in a closed “not in service” position.

**[0009]** **FIG. 2A** is a perspective view of the cover according to the embodiment of the present invention shown in **FIG. 1** with the access door open.

**[0010]** **FIG. 2B** is a perspective view of the cover according to the embodiment of the present invention shown in **FIG. 1** with the access door in a closed “in service” position leaving two apertures **63a & 63b** for cords, cables, wires, etc.

**[0011]** **FIG. 3A** is a perspective view of the cover assembly according to another embodiment of the present invention with the access door in a closed “not in service” position.

**[0012]** **FIG. 3B** is a perspective view of the cover according to the embodiment of the present invention shown in **FIG. 3A** with the access door open.

**[0013]** **FIG. 3C** is a perspective view of the cover according to the embodiment of the present invention shown in **FIG. 3A** with the access door in a closed “in service” position leaving two apertures **163a & 163b** for cords, cables, wires, etc.

**[0014]** FIG. 4A is a perspective view of the cover assembly according to another embodiment of the present invention with the access door in a closed “not in service” position.

**[0015]** FIG. 4B is a perspective view of the cover according to the embodiment of the present invention shown in FIG. 4A with the access door open.

**[0016]** FIG. 4C is a perspective view of the cover according to the embodiment of the present invention shown in FIG. 4A with the access door in a closed “in service” position leaving two apertures **263a** & **263b** for cords, cables, wires, etc.

**[0017]** FIG. 5A is a perspective view of the cover assembly according to yet another embodiment of the present invention with the access door in a closed “not in service” position and a pull lever **366** disposed in the top surface **351** of access door **350**.

**[0018]** FIG. 5B is a perspective view of the cover according to the embodiment of the present invention shown in FIG. 5A with the access door in a closed “not in service” position and a pull lever **366** lifted at approximately 45 degrees.

**[0019]** FIG. 5C is a perspective view of the cover according to the embodiment of the present invention shown in FIG. 5A with the access door open.

**[0020]** FIG. 5D is a perspective view of the cover according to the embodiment of the present invention shown in FIG. 5A with the access door in a closed “in service” position leaving one aperture **363** for cords, cables, wires, etc.

**[0021]** FIG. 6 a floor box assembly with integrated electrical box and recessed floor (outlet) box, and the cover assembly according to a further embodiment of the present invention

with shortened recessed walls (flange) showing the access door in a closed “in service” position leaving one aperture **463** for cords, cables, wires, etc.

**[0022]** FIG. 7A is a top plan view of the cover assembly cover plate **441** with the access door not shown.

**[0023]** FIG. 7B is a cross-sectional view of the cover plate **441** shown in FIG. 7A highlighting the shortened flange **442**.

**[0024]** FIG. 7C is a perspective view of the cover plate **441** shown in FIG. 7A with the access door not shown.

#### DETAILED DESCRIPTION

**[0025]** The following detailed description is presented to enable any person skilled in the art to make and use the invention. For purposes of explanation, specific details are set forth to provide a thorough understanding of the present invention. However, it will be apparent to one skilled in the art that these specific details are not required to practice the invention. Descriptions of specific applications are provided only as representative examples. Various modifications to the preferred embodiments will be readily apparent to one skilled in the art, and the general principles defined herein may be applied to other embodiments and applications without departing from the scope of the invention. The present invention is not intended to be limited to the embodiments shown, but is to be accorded the widest possible scope consistent with the principles and features disclosed herein.



**[0026]** The present invention provides an electrical floor box assembly and cover and, in particular, a floor box cover with an access door that lifts, slides, or moves with a tether and secures into a closed position leaving one or more apertures for cords (cords, wires, cables, etc.) and a floor box assembly utilizing the cover described. When no cords are inserted into the floor box, the access door may be moved and/or slid and secured into a closed “not in service” position. The access door is lifted to expose an aperture in the cover plate for inserting cords into the floor box. The access door is then moved and/or slid and secured into a closed “in service” position along a recessed plane leaving one or more apertures for said cords to be placed.

**[0027]** Referring to the drawings, **FIG. 1** shows a perspective view of a floor (or electrical) box assembly **10** comprising electrical box **20**, recessed floor (outlet) box **30**, and cover assembly **40** according to one embodiment of the present invention. Electrical box **20** may have one or more knockout holes **21** for access to and installing cords to supply electricity, data, and/or communication to the assembly. One or more gaskets are placed under cover assembly **40** or above/around recessed (outlet) box **30** to prevent water or other liquids from entering the assembly **10**. Preferably, at least two gaskets are used: one under cover assembly **40** and one around the top portion of recessed box **30** (or integrated box **430**). Alternatively, caulking around electrical box **20** and/or recessed floor box **30** under cover assembly **40** can be used to prevent water or other liquids from entering the assembly **10**. Floor box assembly **10** is capable of being positioned or attached to a floor structure or poured concrete flooring, and, therefore, may take on any size and shape as necessary according to the functional or aesthetic needs of a consumer. Therefore, it is within the contemplation of the invention that all components of floor

box assembly **10** can be of any shape or size as known in the art or designed for a specific application according to the functional or aesthetic needs of a consumer. Although floor box assembly **10** is depicted with single-gang electrical box **20**, recessed floor box **30**, and electrical receptacle **31** having two grounded 120 volt outlets, it should be understood that floor box assembly **10** & **410** may also be configured for single-gang applications for data, communication, or other low voltage connections. It should also be understood that floor box assembly **10** may be configured for multi-gang applications for data, communication, or other low voltage outlets (audio-visual, coaxial, etc.), or electrical outlets (with any useable or desired voltage output), or applications having a combination of electrical outlets and data, communication, or other low voltage outlets by positioning a voltage divider (not shown). All such possible configurations are within the contemplation of the invention, but only a single configuration is described in detail for sake of brevity.

**[0028]** The cover assembly **40** is comprised of at least cover plate **41** and repositionable access door **50**. Cover assembly **40** can be made of any metal or plastic material known in the art. Preferably, cover assembly **40** is made of steel, brass, aluminum, or polycarbonate reinforced with a steel plate. In **FIG. 1**, cover assembly **40** is shown with the access door **50** in a closed “not in service” position, meaning that no cords are plugged into outlet **32** of recessed box **33**. When in the closed “not in service” position, cover assembly **40** is water resistant and prevents dust and debris from entering recessed floor box **30**. Cover plate **41** may include exposed fastener holes **47** for attachment of cover plate **41** to another object, for example a floor structure. Any acceptable fastener device may be used. As shown in **FIG. 1**, fastener holes **47** are configured for a countersunk screw or bolt (not shown) to maintain a



substantially flat surface of cover assembly 40. Cover plate 41 may be configured in any size or shape as necessary according to the functional or aesthetic needs of a consumer. As shown in FIG. 1, cover plate 41 is provided in a round shape, but other shapes are possible, see for example FIG. 4A. Also, cover plate 41 may be configured to have recessed walls (flange) 42 surrounding all sides extending down toward electrical box 20 and recessed floor box 30. Recessed walls 42 or the lower surface of cover plate 41 may provide elements (not shown) for attachment corresponding to box flange 34 and fastener holes 35. Recessed walls 42 may be configured to maintain a desired depth for receptacle 31. Recessed walls 42 terminate at an opening at one end to expose the receptacle 31, and at the other end as aperture 56 (see FIG. 2A).

**[0029]** Cover plate 41 has a planar top surface 43 that is substantially flat to minimize tripping or furniture becoming obstructed by cover assembly 40. Alternatively, top surface 43 may be configured to have a recessed top surface (not shown) for receiving flooring material to match or coordinate with its installation location. Fastener holes 47 may be positioned on top surface 43, as shown in FIG. 1, or located elsewhere on cover plate 41. To further minimize tripping or furniture becoming obstructed by cover assembly 40, top surface 43 has outward facing edges 44a that are preferably tapered, beveled, or rounded. Cover plate 41 further has a channel or recessed portion 45 (in relation to top surface 43) in which access door 50 is positioned. Recessed portion 45 is preferably configured to be just wider than access door 50 so that only a minimal amount of space will exist between access door 50 side edges 57 and top surface 43 side edges 44b. The outward facing edges 46 of recessed portion 45 may similarly be rounded, tapered, or beveled.

**[0030]** Access door **50** has a planar top surface **51** that is substantially flat to minimize tripping or furniture becoming obstructed by cover assembly **40**. Alternatively, top surface **51** may be configured to have a recessed top surface (not shown) for receiving flooring material to match or coordinate with its installation location. Now referring to **FIG. 2A**, access door **50** has side edges **57** that face toward side edges **44b** of top surface **43**, and side edges **58** that face toward recessed portion **45**. Edges **44b** of top surface **43** are substantially the same height as top surface **51** alongside edges **57**, so that top surface **43** and top surface **51** are flush. The end portions **53** of top surface **51** near side edges **58** are preferably tapered, beveled, or rounded to minimize tripping or furniture becoming obstructed by cover assembly **40**. At one end of access door **50**, positioned on either side of the junction of edges **44b** and recessed portion **45**, a pair of slots or grooves **54** (see **FIG. 1**) is configured for receiving attachment portion or sliding hinge **55** of access door **50** to pivotally mount access door **50** to cover plate **41**. As shown in the embodiment in **FIG. 2A**, sliding hinge **55** consists of two extension portions (one on either side of access door **50** corresponding to grooves **54**) on side edges **57** near side edge **58** opposite the plurality of notches **48**.

**[0031]** In **FIG. 2A**, there is shown the bottom surface **52** of access door **50**. Bottom surface **52** includes securing apparatus, such as access door lock bracket **59**. Access door lock bracket **59** is attached to bottom surface **52** by fasteners, which may include screws, bolts, rivets, or similar fasteners (not shown) corresponding to holes **60**. Access door lock bracket **59** shown here includes a pair of opposite facing spring clips **61**. As shown in the embodiment depicted in **FIG. 2A**, spring clips **61** are spring operated to contact the inner surface of walls **42** to effect a resilient engagement with walls **42**. Optionally, spring clips **61** may contain one or more



protrusions **61a** on the outer surface to strengthen the resilient connection. Spring clips **61** can be made of any strong resilient material, such as metals or hard plastics. Preferably, spring clips **61** are made of any suitable resilient material, and more preferably made of steel. Further, optional protrusions **61a** may engage corresponding notches (not shown) in the inner surface of walls **42** to perfect a latching engagement. Alternatively, protrusions **61a** may work to add extra spring force against a flush inner surface of walls **42** to perfect a resilient engagement. The resilient engagement secures access door **50** when placed in a closed “in service” position or closed “not in service” position. A user may then insert a finger or tool into a notch **48** to lift and open access door **50** to work against the spring force of spring clips **61**. Bottom surface **52** also includes a gasket **62** positioned around all edges (**57 & 58**) of access door **50** designed to prevent water, other liquids, and/or debris entry into floor box assembly **10**. Gasket **62** can be held in place by adhesive or by friction within a groove (not shown) on bottom surface **52**.

**[0032]** When access door **50** is lifted, a protrusion or tab portion **49** of recessed portion **45** that extends into aperture **56** is exposed. Tab portion **49** is preferably positioned in the middle of one side of recessed portion **45**. A plurality of notches **48** are positioned on the surface of recessed portion **45** corresponding with the positioning of one side edge **58** (opposite the side edge **58** with sliding hinge **55**) to aid in opening access door **50**. Thus, a first notch **48** (closest to edge **46**) meets the positioning of side edge **58** in the closed “not in service” position shown in **FIG. 1**. A finger or tool can be inserted into first notch **48** and lift access door **50** by applying upward pressure on side edge **58**. The access door **50** is lifted to expose aperture **56** and the harbored receptacle(s). In this open “cabling” position, shown in **FIG. 2A**, cords are permitted to enter the floor box assembly **10** to reach a receptacle or prior plugged cords may be

adjusted, inspected, or removed. While in the “cabling” position, sliding hinge **55** of access door **50** is capable of sliding along grooves **54** to reach a second access door **50** “cabling” position (as indicated by the “slide” arrow in **FIG. 2A**).

**[0033]** Once in a second “cabling” position, the access door **50** is lowered to engage the spring clips **61** with walls **42**, as shown in **FIG. 2B**. This closed “in service” position reveals cord ports **63a & 63b**, through which cords may be placed allowing the access door **50** to remain shut and secured while cords are plugged into a receptacle in floor box assembly **10**. Access door **50**, thus, may be positioned in a plurality of closed positions that cover all or a portion of aperture **56**. When covering a portion of aperture **56**, at least one of cord ports **63a & 63b** is revealed. The size of a cord port **63** may depend on how far sliding hinge **55** is slid along grooves **54**. In some embodiments, a cord port **63** is designed to have a pre-determined size by including a stop mechanism to secure access door **50** in a particular closed “in service” position (note, a stop mechanism may also work to secure the access door **50** in a particular closed “not in service” position). A stop mechanism is usually comprised of at least one element on the cover plate and the access door that work in concert together to better secure the access door in a closed position. Another advantage of a stop mechanism is to protect cords in a closed “in use” position by preventing access door **50** from slipping or otherwise being slid onto the cords protruding through cord port **63**. One such stop mechanism may be accomplished by utilizing protrusions **155** on access door with corresponding notches **154** in top surface **143** (see embodiment shown in **FIGS. 3A & 3C**), which results in the access door remaining secured in one of a plurality of pre-set closed positions. Another stop mechanism may be accomplished by utilizing latch members **264** and latch stopper **247** in latch receiving groove **246** (see



embodiment shown in **FIGS. 4A & 4C**). A further stop mechanism may be accomplished by utilizing self-alignment pins **371** and pin stoppers **372** (see embodiment shown in **FIGS. 5C**). A still further stop mechanism may be accomplished by utilizing optional protrusions **61a** on spring clips **61** and corresponding notches (not shown) in the inner surface of walls **42**. A still further stop mechanism (not shown) may be accomplished by utilizing an optional protrusion on access door side edge **58** (nearest notches **48**) that corresponds and fits into notches **48** (or a portion thereof) in recessed portion **45**. Other locking or stop mechanisms may be used as known in the field, such as turning locks and sliding latches (see, e.g., U.S. Pat. No. 8,357,852 to Drane).

**[0034]** Now referring to **FIGS. 3A-3C**, another embodiment of the present invention is depicted. The cover assembly **140** is comprised of at least cover plate **141** and removable and repositionable access door **150**. Cover assembly **140** can be made of any metal or plastic material known in the art. Preferably, cover assembly **140** is made of steel, brass, aluminum, or polycarbonate reinforced with a steel plate. In **FIG. 3A**, cover assembly **140** is shown with the access door **150** in a closed “not in service” position, meaning that no cords are plugged into an outlet of a receptacle, such as receptacle **31**. When in the closed “not in service” position, cover assembly **140** is water resistant and prevents dust and debris from entering the assembly. Cover plate **141** may include exposed fastener holes **147** for attachment of cover plate **141** to another object, for example a floor structure. Any acceptable fastener device may be used. As shown in **FIGS. 3A-3C**, fastener holes **147** are configured for a countersunk screw or bolt (not shown) to maintain a substantially flat surface of cover assembly **140**. Cover plate **141** may be configured in any size or shape as necessary according to the functional or aesthetic needs of a consumer. As shown in **FIGS. 3A-3C**, cover plate **141** is provided in a round shape, but other shapes are

possible. Also, cover plate **141** may be configured to have recessed walls (flange) **142** surrounding all sides and extending downward. Recessed walls **142** may be configured to maintain a desired depth for a receptacle or recessed box assembly. Recessed walls **142** terminate at an opening at one end to expose a receptacle, such as receptacle **31**, and at the other end as aperture **156** (see **FIG. 3B**).

**[0035]** Cover plate **141** has a planar top surface **143** that is substantially flat to minimize tripping or furniture becoming obstructed by cover assembly **140**. Alternatively, top surface **143** may be configured to have a recessed top surface (not shown) for receiving flooring material to match or coordinate with its installation location. Fastener holes **147** may be positioned on top surface **143**, as shown in **FIGS. 3A-3C**, or located elsewhere on cover plate **141**. To further minimize tripping or furniture becoming obstructed by cover assembly **140**, top surface **143** has outward facing edges **144a** that are preferably tapered, beveled, or rounded. Cover plate **141** further has a channel or recessed portion **145** (in relation to top surface **143**) in which access door **150** is positioned. Recessed portion **145** is designed to be just wider than access door **150** so that only a minimal amount of space will exist between access door **150** side edges **157** and top surface **143** side edges **144b**. The outward facing edges **146** of recessed portion **145** may similarly be rounded, tapered, or beveled.

**[0036]** Access door **150** has a planar top surface **151** that is substantially flat to minimize tripping or furniture becoming obstructed by cover assembly **140**. Alternatively, top surface **151** may be configured to have a recessed top surface (not shown) for receiving flooring material to match or coordinate with its installation location. Now referring to **FIG. 3B**, access



door **150** has side edges **157** that face toward side edges **144b** of top surface **143**, and side edges **158** that face toward recessed portion **145**. Edges **144b** of top surface **143** are designed to be substantially the same height as top surface **151** alongside edges **157**, so that top surface **143** and top surface **151** are flush. The end portions **153** of top surface **151** near side edges **158** are preferably tapered, beveled, or rounded to minimize tripping or furniture becoming obstructed by cover assembly **140**. Also, in this embodiment, access door **150** has an extension portion **164**. Extension portion **164** allows for larger cord ports **163** or a smaller tab portion **149** of recessed portion **145**.

**[0037]** Side edges **157** include a pair of protrusions **155** as a stop mechanism. Protrusions **155** are designed to fit into pairs of dimples or notches **154a & 154b** located in top surface **143** along edges **144b**, thereby securing access door **150** in one position (e.g., closed “not in service” as shown in **FIG. 3A**) by preventing access door **150** from sliding into another position (e.g., closed “in service” as shown in **FIG. 3C**). While a pair of protrusions **155** is preferable, some embodiments may have a single protrusion on one side edge **157** with corresponding single notches **154a & 154b** along a single corresponding side edge **144b**. Some embodiments may have more than two pair of notches **154a & 154b** to allow for more than two closed positions, especially if graduated closed “in service” positions are desirable (i.e., only one cord port **163** is open in one closed “in service” position, while two cord ports **163** are available in a second closed “in service” position).

**[0038]** In **FIG. 3B**, there is shown the bottom surface **152** of access door **150**. Bottom surface **152** includes securing apparatus, such as access door lock bracket **159**. Access door lock bracket **159** is attached to bottom surface **152** by fasteners, which may include screws,

bolts, rivets, or similar fasteners (not shown) corresponding to holes **160**. Access door lock bracket **159** includes a pair of opposite facing securing members **161**. Securing members **161** may be made of any resilient material such as rubber or suitable plastics. Preferably, securing members **161** are made of resilient plastic. As shown in the embodiment depicted in **FIG. 3B**, securing members **161** include protrusions **161a** that are configured to effect a resilient engagement with walls **142**, thereby securing the access door **150** in a closed position by exerting force against a flush inner surface of wall **142**. A user may then insert a finger or tool into a notch **148** to lift and open access door **150** to work against the exerted force of securing members **161** and protrusions **161a**. As shown in **FIG. 3B**, this embodiment does not include a sliding hinge and corresponding groove. To keep access door **150** from being misplaced and/or to limit its usable positioning, access door **150** is attached to cover plate **141** by tether **165**. Access door attachment end **167** of tether **165** is attached to bottom surface **152** by adhesive or fasteners, which may include screws, bolts, rivets, or similar fasteners (not shown) corresponding to some or all of holes **160**. Plate attachment end **166** of tether **165** is attached to an inner surface of walls **142** by adhesive, fastener, or other suitable attachment means. Tether **165** may be made of any strong but flexible material, for example leather, flexible rubber, neoprene, or suitable plastics. Bottom surface **152** also includes a gasket **162** positioned around all edges (**157 & 158**) of access door **150** designed to prevent water, other liquids, and/or debris entry into floor box assembly **10**. Gasket **162** can be held in place by adhesive or by friction within a groove (not shown) on bottom surface **152**.

**[0039]** When access door **150** is lifted, a protrusion or tab portion **149** of recessed portion **145** that extends into aperture **156** is exposed. Tab portion **149** is preferably positioned



in the middle of one side of recessed portion **145**. Extension portion **164** lies on top of tab portion **149** when in the closed “not in service” position. As mentioned above, extension portion **164** allows for larger cord ports **163** or a smaller tab portion **149** of recessed portion **145**. A plurality of notches **148** are positioned on the surface of recessed portion **145** corresponding with the positioning of one side edge **158** (on extension portion **164**) to aid in opening access door **150**. Thus, a first notch **148** (closest to edge **146**) meets the positioning of side edge **158** on extension portion **164** in the closed “not in service” position shown in **FIG. 3A**. A finger or tool can be inserted into first notch **148** and lift access door **150** by applying upward pressure on side edge **158**.

**[0040]** The access door **150** is lifted to expose aperture **156** and the harbored receptacle(s). In this open “cabling” position, shown in **FIG. 3B**, cords are permitted to enter the floor box assembly **10** to reach a receptacle or prior plugged cords may be adjusted, inspected, or removed. While in the “cabling” position, a user may slide or position access door **150** along recessed portion **145** and edges **144b** to ready access door **150** to be placed in a closed “in service” position (as indicated by the straight arrow in **FIG. 3B**). As noted above, access door **150** is limited in its movement by tether **165**.

**[0041]** The access door **150** is lowered to engage securing members **161** and protrusions **161a** with walls **142**, as shown in **FIG. 3C**. This closed “in service” position reveals cord ports **163a** & **163b**, through which cords may be placed allowing the access door **150** to remain shut and secured while cords are plugged into a receptacle in floor box assembly **10**. Access door **150**, thus, may be positioned in a plurality of closed positions that cover all or a portion of aperture **156**. When covering a portion of aperture **156**, at least one of cord ports **163a**

**& 163b** is revealed. The size of a cord port **163** may depend on the positioning of protrusions **155** in notches **154a & 154b** along edge **144b**. In the embodiment shown in **FIGS. 3A-3C**, cord ports **163a & 163b** are designed to have a pre-determined size by including a stop mechanism (**154a & 154b** plus **155**) to secure access door **150** in a particular closed “in service” position (note, a stop mechanism also works to secure the access door **150** in a particular closed “not in service” position). Another advantage of a stop mechanism is to protect cords in a closed “in use” position by preventing access door **150** from slipping or otherwise being moved onto the cords protruding through cord ports **163a & 163b**. As discussed above, other stop mechanisms are contemplated within the present invention.

**[0042]** Now referring to **FIGS. 4A-4C**, a further embodiment of the present invention is depicted. The cover assembly **240** is comprised of at least cover plate **241** and repositionable access door **250**. Cover assembly **240** can be made of any metal or plastic material known in the art. Preferably, cover assembly **240** is made of steel, brass, aluminum, or polycarbonate reinforced with a steel plate. In **FIG. 4A**, cover assembly **240** is shown with the access door **250** in a closed “not in service” position, meaning that no cords are plugged into an outlet of a receptacle, such as receptacle **31**. When in the closed “not in service” position, cover assembly **240** is water resistant and prevents dust and debris from entering the assembly. Cover plate **241** may include exposed fastener holes for attachment of cover plate **241** to another object, for example a floor structure. Alternatively, cover plate **241** may be attached to another object, for example a floor structure, by utilizing hidden fastener holes (not shown) on the underneath side of cover plate **241**. Any acceptable fastener device may be used. Cover plate **241** may be configured in any size or shape as necessary according to the functional or aesthetic needs of a



consumer. As shown in **FIGS. 4A-4C**, cover plate **241** is provided in a rectangular shape, but other shapes are possible. Also, cover plate **241** may be configured to have recessed walls (flange, not shown) surrounding all sides and extending downward or flush walls **242**. Walls **242** may be configured to maintain a desired depth for a receptacle or recessed box assembly, or, as shown in **FIG. 4B**, to be flush with a mounting site of a floor structure (i.e., the cover plate **241** rests on the floor structure and does not extend downward into the floor at the mounting site). Walls **242** terminate at an opening at one end to expose a receptacle, such as receptacle **31**, and at the other end as aperture **256** (see **FIG. 4B**).

**[0043]** Cover plate **241** has a planar top surface **243** that is substantially flat to minimize tripping or furniture becoming obstructed by cover assembly **240**. As shown in **FIG. 4A**, top surface **243** is very small in this embodiment, as the majority of the top surface of cover assembly **240** is dominated by the access door **250**. Alternatively, in embodiments with a larger top surface **243**, this feature may be configured to have a recessed top surface (not shown) for receiving flooring material to match or coordinate with its installation location. To further minimize tripping or furniture becoming obstructed by cover assembly **240**, top surface **243** has outward facing edges **244a** that are preferably tapered, beveled, or rounded on all sides. Cover plate **241** further has a channel or recessed portion **245** (in relation to top surface **243**) in which access door **250** is positioned. Recessed portion **245** is designed to be just wider than access door **250** so that only a minimal amount of space will exist between access door **250** side edges **257** and top surface **243** side edges **244b**. The outward facing edges **245a** of recessed portion **245** may similarly be rounded, tapered, or beveled (not shown).

**[0044]** Access door **250** has a planar top surface **251** that is substantially flat to minimize tripping or furniture becoming obstructed by cover assembly **240**. Alternatively, top surface **251** may be configured to have a recessed top surface (not shown) for receiving flooring material to match or coordinate with its installation location. As shown in **FIG. 4B**, access door **250** has side edges **257** that face toward side edges **244b** of top surface **243**, and side edges **258** that face toward recessed portion **245**. Edges **244b** of top surface **243** are designed to be the same height as top surface **251** alongside edges **257**, so that top surface **243** and top surface **251** are flush. The end portions **253** of top surface **251** near side edges **258** are preferably tapered, beveled, or rounded to minimize tripping or furniture becoming obstructed by cover assembly **240**. Also, in this embodiment, top surface **251** has a pair of alignment or position indicator marks **261** alongside edges **257**. Marks **261** correspond to a plurality of alignment or position indicator marks **260a & 260b** on top surface **243**. The corresponding marks (**261** and **260a & 260b**) indicate that access door **250** is in one of two closed positions, as shown in **FIGS. 4A & 4C**. In this embodiment, when marks **261** line up with marks **260a**, the access door **250** is in the closed “not in service” position (see **FIG. 4A**). In this embodiment, when marks **261** line up with marks **260b**, the access door **250** is in the closed “in service position” (see **FIG. 4C**). In other embodiments, more than two closed positions can be indicated with additional marks (not shown), such as a graduated configuration (i.e., only one cord port **263** is open in one closed “in service” position, while two cord ports **263** are available in a second closed “in service” position).

**[0045]** In **FIG. 4B**, there is shown the bottom surface **252** of access door **250**. Bottom surface **252** includes securing apparatus, such as alignment pins **259**. Alignment pins



**259** are attached to bottom surface **252** by fasteners, which may include screws, bolts, rivets, or similar fasteners (not shown). Alternatively, and as shown in **FIG. 4B**, alignment pins **259** are a molded feature of bottom surface **252**. Alignment pins **259** include a pair of opposite facing latch (protrusion) members **264** located at its ends. Bottom surface **252** also includes a gasket **262** positioned around all edges (**257 & 258**) of access door **250** designed to prevent water, other liquids, and/or debris entry into floor box assembly **10**. Gasket **262** can be held in place by adhesive or by friction within a groove (not shown) on bottom surface **252**.

**[0046]** As shown in the embodiment depicted in **FIG. 4B**, latch members **264** are configured to correspond to a slot or groove or series of slots or grooves **246a & 246b** in the inner surface of walls **242**, thereby securing the access door **250** in a closed position by resilient engagement. Grooves **246a & 246b** contain stop mechanism (stopper **247** plus **264**), discussed below. The resilient engagement secures access door **250** when placed in a closed “in service” position or closed “not in service” position. A user may then insert a finger or tool into a notch **248** and/or corresponding notch **265** to lift and open access door **250** to work against the resilient engagement of latch members **264** and grooves **246a & 246b**. At one end of access door **250**, positioned on either side of the junction of edges **244b** and recessed portion **245**, a pair of slots or grooves **254** is configured for receiving attachment portion or sliding hinge **255** of access door **250** to pivotally mount access door **250** to cover plate **241**. As shown in the embodiment in **FIG. 4B**, sliding hinge **255** consists of two extension portions (one on either side of access door **250** corresponding to grooves **254**) on side edges **257** near side edge **258** opposite the plurality of notches **248**.

**[0047]** When access door **250** is lifted, a protrusion or tab portion **249** of recessed portion **245** that extends into aperture **256** is exposed. Tab portion **249** is preferably positioned in the middle of one side of recessed portion **245**. A plurality of notches **248** are positioned on the surface of recessed portion **245** corresponding with the positioning of one side edge **258** (opposite sliding hinge **255**) to aid in opening access door **250**. Thus, a first notch **248** (closest to edge **245a**) meets the positioning of side edge **258** and notch **265** in the closed “not in service” position shown in **FIG. 4A**. In the closed “not in service” position, latch members **264** is matched with grooves **246a**. A finger or tool can be inserted into first notch **248** and/or notch **265** to lift access door **250** by applying upward pressure on side edge **258**. The access door **250** is lifted to expose aperture **256** and the harbored receptacle(s). In this open “cabling” position, shown in **FIG. 4B**, cords are permitted to enter the floor box assembly **10** to reach a receptacle or prior plugged cords may be adjusted, inspected, or removed. While in the “cabling” position, sliding hinge **255** of access door **250** is capable of sliding along grooves **254** to reach a second access door **250** “cabling” position (as indicated by the “slide” arrow in **FIG. 4B**).

**[0048]** Once in a second “cabling” position, the access door **250** is lowered to engage alignment pins **259** and latch members **264** with latch receiving grooves **246b**, as shown in **FIG. 4C**. This closed “in service” position reveals cord ports **263a & 263b**, through which cords may be placed allowing the access door **250** to remain shut and secured while cords are plugged into a receptacle in floor box assembly **10**. Access door **250**, thus, may be positioned in a plurality of closed positions that cover all or a portion of aperture **256**. When covering a portion of aperture **256**, at least one of cord ports **263a & 263b** is revealed. The size of a cord port **263** may depend on the positioning of sliding hinge **255** and a stop mechanism (e.g., latch stopper **247** that



separates or divides grooves **246a & 246b** that prevents latch members **264** from moving further in grooves **246a & 246b**). In the embodiment shown in **FIGS. 4A-4C**, cord ports **263a & 263b** are designed to have a pre-set size as determined by stopper **247** to secure access door **250** in a particular closed “in service” position (note, a stop mechanism also works to secure the access door **250** in a particular closed “not in service” position as shown in **FIG. 4A**). Latch stopper **247** divides grooves **246a & 246b**, thereby preventing sliding hinge **255** from sliding beyond a certain point. Although only one latch stopper **247** is provided in the embodiment shown in **FIG. 4B**, multiple latch stoppers **247** may be provided in a graduated configuration (not shown). Another advantage of a stop mechanism is to protect cords in a closed “in use” position by preventing access door **250** from slipping or otherwise being slid onto the cords protruding through cord ports **263a & 263b**. As discussed above, other stop mechanisms are contemplated within the present invention.

**[0049]** Now referring to **FIGS. 5A-5D**, a further embodiment of the present invention is depicted. The cover assembly **340** is comprised of at least cover plate **341** and removable and repositionable access door **350**. Cover assembly **340** can be made of any metal or plastic material known in the art. Preferably, cover assembly **340** is made of steel, brass, aluminum, or polycarbonate reinforced with a steel plate. In **FIGS. 5A & 5B**, cover assembly **340** is shown with the access door **350** in a closed “not in service” position, meaning that no cords are plugged into an outlet of a receptacle, such as receptacle **31**. When in the closed “not in service” position, cover assembly **340** is water resistant and prevents dust and debris from entering the assembly. Cover plate **341** may include exposed fastener holes **347** for attachment of cover plate **341** to another object, for example a floor structure. Any acceptable fastener device may be

used. As shown in **FIGS. 5A-5D**, fastener holes **347** are configured for a countersunk screw or bolt **347a** to maintain a substantially flat surface of cover assembly **340**. Cover plate **341** may be configured in any size or shape as necessary according to the functional or aesthetic needs of a consumer. As shown in **FIGS. 5A-5D**, cover plate **341** is provided in a round shape, but other shapes are possible. Also, cover plate **341** may be configured to have recessed walls (flange) **342** surrounding all sides and extending downward toward recessed box assembly **30**. Recessed walls **342** may be configured to maintain a desired depth for a receptacle or recessed box assembly. Recessed walls **342** terminate at an opening at one end to expose a receptacle, such as receptacle **31**, and at the other end as aperture **356** (see **FIG. 5C**).

**[0050]** Cover plate **341** has a planar top surface **343** that is substantially flat to minimize tripping or furniture becoming obstructed by cover assembly **340**. Alternatively, top surface **343** may be configured to have a recessed top surface (not shown) for receiving flooring material to match or coordinate with its installation location. Fastener holes **347** may be positioned on top surface **343**, as shown in **FIGS. 5A-5D**, or located elsewhere on cover plate **341**. To further minimize tripping or furniture becoming obstructed by cover assembly **340**, top surface **343** has outward facing edges **344a** that are preferably tapered, beveled, or rounded. Cover plate **341** further has a channel or recessed portion **345** (in relation to top surface **343**) in which access door **350** is positioned. Recessed portion **345** is designed to be just wider than access door **350** so that only a minimal amount of space will exist between access door **350** side edges **357** and top surface **343** side edges **344b**. The outward facing edges **346** of recessed portion **345** may similarly be rounded, tapered, or beveled.



**[0051]** Access door **350** has a planar top surface **351** that is substantially flat to minimize tripping or furniture becoming obstructed by cover assembly **340**. Alternatively, top surface **351** may be configured to have a recessed top surface (not shown) for receiving flooring material to match or coordinate with its installation location. As shown in **FIGS. 5B & 5C**, access door **350** has side edges **357** that face toward side edges **344b** of top surface **343**, and side edges **358** that face toward recessed portion **345**. Edges **344b** of top surface **343** are designed to be the same height as top surface **351** alongside edges **357**, so that top surface **343** and top surface **351** are flush. The end portions **353** of top surface **351** near side edges **358** are preferably tapered, beveled, or rounded to minimize tripping or furniture becoming obstructed by cover assembly **340**. Also, in this embodiment, top surface **351** has a plurality of alignment or position indicator marks **360b & 360c** alongside edges **357**. Marks **360b & 360c** correspond to a pair of alignment or position indicator marks **361** on top surface **343**. The corresponding marks (**360b & 360c** and **361**) indicate that access door **350** is in one of two closed positions, as shown in **FIGS. 5A & 5D**. In this embodiment, when marks **361** line up with marks **360b**, the access door **350** is in the closed “not in service” position (see **FIGS. 5A & 5B**). In this embodiment, when marks **361** lines up with marks **360c**, the access door **350** is in the closed “in service position” (see **FIG. 5D**). In other embodiments, more than two closed positions can be indicated with additional marks (not shown), such as a graduated configuration (i.e., only one cord port **363** is open in one closed “in service” position, while two cord ports **363** are available in a second closed “in service” position). Also, in this embodiment, access door **350** has two extension portions **364** flanking an access door indentation portion **370**. Extension portions **364** and access door indentation portion **370** allow for a larger cord port **363** or a smaller tab portion **349** of recessed portion **345**.



**[0052]** In **FIG. 5C**, there is shown the bottom surface **352** of access door **350**. Bottom surface **352** includes securing apparatus, such as access door lock bracket **359**. Access door lock bracket **359** is attached to bottom surface **352** by fasteners, which may include screws, bolts, rivets, or similar fasteners (not shown) corresponding to holes **380**. Access door lock bracket **359** includes a pair of opposite facing securing members **360**. Securing members **360** may be made of any resilient material such as rubber or suitable plastics. Preferably, securing members **360** are made of resilient plastic. As shown in the embodiment depicted in **FIG. 5C**, securing members **360** include protrusions **360a** that are configured to effect a resilient engagement with walls **342**, thereby securing the access door **350** in a closed position by exerting force against a flush inner surface of wall **342**. Notch **348** is disposed in top surface **351** and designed for a user to insert a finger into it and to lift on pull lever **366** disposed in top surface **351**, thereby causing pull lever **366** to lift up, preferably in an arc that is less than 90° and more preferably 45°, exposing an underside **369**, as shown in **FIGS. 5B-5C**. Underside **369** is preferably arch-shaped to provide the user with a “handle” for better pulling ability. By pulling up on pull lever **366**, access door **350** is opened by working against the exerted force of securing members **360** and protrusions **360a**. Pull lever **366** is pivotally hinged to access door **350** by hinge member **368**. Pull lever **366** may optionally include a spring member (not shown) to resiliently maintain pull lever **366** in the lowered, flush position, as shown in **FIGS. 5A & 5D**, when not being actively pulled. Alternatively, gravity can be utilized to maintain pull lever **366** in the lowered, flush position when not being actively pulled.

**[0053]** As shown in **FIGS. 5B & 5C**, this embodiment does not include a sliding hinge and corresponding groove. To keep access door **350** from being misplaced and/or to limit

its usable positioning, access door **350** is attached to cover plate **341** by tether **365**. Access door attachment end **365b** of tether **365** is attached to bottom surface **352** by adhesive or fasteners, which may include screws, bolts, rivets, or similar fasteners (not shown) corresponding to some or all of holes **380**. Plate attachment end **365a** of tether **365** is attached to an inner surface of walls **342** by adhesive, fastener, or other suitable attachment means. Tether **365** may be made of any strong but flexible material, for example leather, flexible rubber, neoprene, or suitable plastics. Bottom surface **352** also includes a gasket **362** positioned around all edges (**357 & 358**) of access door **350** designed to prevent water, other liquids, and/or debris entry into floor box assembly **10**. Gasket **362** can be held in place by adhesive or by friction within a groove (not shown) on bottom surface **352**.

**[0054]** As shown in the embodiment depicted in **FIG. 5C**, bottom surface **352** also includes a plurality of self-alignment pins **371** protruding down toward aperture **356**. Self-alignment pins **371** are configured to correspond to a plurality of pin stoppers **372** positioned on the inner surface of walls **342**. Self-alignment pins **371** and pin stoppers **372** together operate as a stop mechanism, discussed further below.

**[0055]** When access door **350** is lifted, protrusions or tab portions **349** of recessed portion **345** that extend into aperture **356** are exposed. Tab portions **349** are preferably positioned on the sides of recessed portion **345** nearest edges **344b**, thereby creating a single extension **356a** in aperture **356**. In this open “cabling” position, shown in **FIG. 5C**, cords are permitted to enter the floor box assembly **10** to reach a receptacle or prior plugged cords may be adjusted, inspected, or removed. While in the “cabling” position, a user may slide or position access door **350** along recessed portion **345** and edges **344b** to ready access door **350** to be



placed in a closed “in service” position. As noted above, access door **350** is limited in its movement by tether **365**.

**[0056]** The access door **350** is lowered to engage securing members **360** and protrusions **360a** with walls **342**, as shown in **FIG. 5D**. This closed “in service” position reveals cord port **363**, through which cords may be placed allowing the access door **350** to remain shut and secured while cords are plugged into a receptacle in floor box assembly **10**. Access door **350**, thus, may be positioned in a plurality of closed positions that cover all or a portion of aperture **356**. When covering a portion of aperture **356**, at least one of cord ports **363** is revealed. The size of a cord port **363** may depend on the positioning of self-alignment pins **371** and/or pin stoppers **372**. In the embodiment shown in **FIGS. 5A-5D**, cord port **363** is designed to have a pre-determined size by including a stop mechanism (**371** plus **372**) to secure access door **350** in a particular closed “in service” position (note, a stop mechanism also works to secure the access door **350** in a particular closed “not in service” position). Another advantage of a stop mechanism is to protect cords in a closed “in use” position by preventing access door **350** from slipping or otherwise being moved onto the cords protruding through cord port **363**. As discussed above, other stop mechanisms are contemplated within the spirit and scope of the present invention.

**[0057]** Now referring to **FIGS. 6** and **7A-7C**, a still further embodiment of the present invention is depicted. As can be appreciated in **FIG. 6**, the cover assembly **440** is comprised of at least cover plate **441** and removable and repositionable access door **450** (similar as shown in **FIGS. 5A-5D**). Cover assembly **440** can be made of any metal or plastic material known in the art. Preferably, cover assembly **440** is made of steel, brass, aluminum, or



polycarbonate reinforced with a steel plate. In **FIG 6**, cover assembly **440** is shown with the access door **450** in a closed “in service” position, meaning that one or more cords may be plugged into an outlet of a receptacle, such as receptacle **31**. When in the closed “not in service” position, cover assembly **440** is water resistant and prevents dust and debris from entering the assembly (see, e.g., **FIG. 5A**). Cover plate **441** may include exposed fastener holes **447** for attachment of cover plate **441** to another object, for example a floor structure. Any acceptable fastener device may be used. As shown in **FIG. 6**, fastener holes **447** are configured for a countersunk screw or bolt **447a** to maintain a substantially flat surface of cover assembly **440**. Cover plate **441** may be configured in any size or shape as necessary according to the functional or aesthetic needs of a consumer. As shown in **FIGS. 6** and **7A-7C**, cover plate **441** is provided in a round shape, but other shapes are within the scope and spirit of the present invention. Also, cover plate **441** may be configured to have recessed walls (flange) **442** surrounding all sides and extending downward toward a recessed box assembly **30**, or in some embodiments an integrated box **430** (integrated electrical box and recessed floor box). Integrated box **430** may be comprised of a u-shaped body member **423** and two side body members **422**, forming an open end for receiving a cover plate. Preferably, each side body members **422** is welded to body member **423** at marks **424** and **425**, respectively. A receptacle supporting board **433** may be included within the integrated box **430** for supporting electrical, coax, data, or other port, and may be fastened to the integrated box **430** reversibly (e.g., by screw, bolt, or other acceptable fastener) at fastener holes **426** and **427**, or permanently (e.g., by welding). Integrated box **430** may contain one or more knockout holes disposed on the lower body member **423** and/or the side body members **422**.

**[0058]** Recessed walls **442** may be configured to maintain a desired depth for a receptacle or recessed box assembly (not shown). Alternatively, and as shown in **FIG. 6**, the recessed walls **442** are configured to fasten (or otherwise attached) to an integrated box **430** by any acceptable means known in the art (e.g., screws, bolts, welding, etc.). For example, a nut and bolt (not shown) can be employed to fasten cover plate **441** at fastener hole **473** (see **FIG. 7C**) to integrated box **430** at fastener hole **428**. Recessed walls **442** terminate at an opening at one end to expose a receptacle, such as receptacle **31**, which can be held to supporting board **433** shown in **FIG. 6**, and at the other end as aperture **456** (see **FIG. 7A & 7C**).

**[0059]** Cover plate **441** has a planar top surface **443** that is substantially flat to minimize tripping or furniture becoming obstructed by cover assembly **440**. Alternatively, top surface **443** may be configured to have a recessed top surface (not shown) for receiving flooring material to match or coordinate with its installation location. Fastener holes **447** may be positioned on top surface **443**, as shown in **FIGS. 6 & 7A**, or located elsewhere on cover plate **441**. To further minimize tripping or furniture becoming obstructed by cover assembly **440**, top surface **443** has outward facing edges **444a** that are preferably tapered, beveled, or rounded. Cover plate **441** further has a channel or recessed portion **445** (in relation to top surface **443**) in which access door **450** is positioned. Recessed portion **445** is designed to be just wider than access door **450** so that only a minimal amount of space will exist between access door **450** side edges **457** and top surface **443** side edges **444b**. The outward facing edges **446** of recessed portion **445** may similarly be rounded, tapered, or beveled.

**[0060]** Access door **450** has a planar top surface **451** that is substantially flat to minimize tripping or furniture becoming obstructed by cover assembly **440**. Alternatively, top



surface **451** may be configured to have a recessed top surface (not shown) for receiving flooring material to match or coordinate with its installation location. As shown in **FIGS. 6 & 7C**, access door **450** has side edges **457** that face toward side edges **444b** of top surface **443**, and side edges **458** that face toward recessed portion **445**. Edges **444b** of top surface **443** are designed to be substantially the same height as top surface **451** alongside edges **457**, so that top surface **443** and top surface **451** are flush. The end portions **453** of top surface **451** near side edges **458** are preferably tapered, beveled, or rounded to minimize tripping or furniture becoming obstructed by cover assembly **440**. Also, in this embodiment, top surface **451** has a plurality of alignment or position indicator marks **460a & 460b** alongside edges **457**. Marks **460a & 460b** correspond to a pair of alignment or position indicator marks **461** on top surface **443**. The corresponding marks (**460a & 460b** and **461**) indicate that access door **450** is in one of two closed positions, (see **FIGS. 5A & 6**). In this embodiment, when marks **461** line up with marks **460b**, the access door **450** is in the closed “not in service” position (see **FIGS. 5A**). In this embodiment, when marks **461** lines up with marks **460a**, the access door **450** is in the closed “in service position” (see **FIG. 6**). In other embodiments, more than two closed positions can be indicated with additional marks (not shown), such as a graduated configuration (i.e., only one cord port **463** is open in one closed “in service” position, while two cord ports **463** are available in a second closed “in service” position). Also, in this embodiment, access door **450** has two extension portions **464** flanking an access door indentation portion **470**. Extension portions **464** and access door indentation portion **470** allow for a larger cord port **463** or a smaller tab portion **449** of recessed portion **445**.



**[0061]** In **FIG. 5C**, there is shown the bottom surface **352** of access door **350**, which is compatible with the embodiment shown in **FIGS. 6 & 7A-7C** (see description above for details). The main difference between the access door **450** (shown in **FIG. 6**) and access door **350** (shown in **FIG. 5C**) is that the tether **465** (not shown) may be shorter due to the shortened recessed walls **442** and proximity to the attachment holes **474** therein for attaching the tether **465** to the cover plate **441**. Access door lock bracket **459** includes a pair of opposite facing securing members **460**, and securing members **460** may be made of any resilient material such as rubber or suitable plastics (not shown, see **FIG. 5C** for details). Preferably, securing members **460** are made of resilient plastic. Securing members **460** include protrusions **460c** that are configured to effect a resilient engagement with walls **442**, thereby securing the access door **450** in a closed position by exerting force against a flush inner surface of wall **442** (not shown, see **FIG. 5C** for details).

**[0062]** Notch **448** is disposed in top surface **451** and designed for a user to insert a finger into it and to lift on pull lever **466** disposed in top surface **451**, thereby causing pull lever **466** to lift up, preferably in an arc that is less than  $90^\circ$  and more preferably  $45^\circ$  (see **FIG. 6**). Underside **469** is preferably arch-shaped to provide the user with a “handle” for better pulling ability. By pulling up on pull lever **466**, access door **450** is opened by working against the exerted force of securing members **460** and protrusions **460c**. Pull lever **466** is pivotally hinged to access door **450** by hinge member **468** (not shown, see **FIG. 5C** for details). Pull lever **466** may optionally include a spring member (not shown) to resiliently maintain pull lever **466** in the lowered, flush position, as shown in **FIG. 6**, when not being actively pulled. Alternatively,

gravity can be utilized to maintain pull lever **466** in the lowered, flush position when not being actively pulled.

**[0063]** Similar to the embodiment shown in **FIG. 5C**, the embodiment shown in **FIG. 6** does not include a sliding hinge and corresponding groove. To keep access door **450** from being misplaced and/or to limit its usable positioning, access door **450** is attached to cover plate **441** by tether **465** (not shown) at the attachment holes **474**. Alternatively, access door **451** tether **465** may be attached to a recessed wall **442** by adhesive. Tether **465** may be made of any strong but flexible material, for example leather, flexible rubber, neoprene, or suitable plastics (not shown). Bottom surface **452** also includes a gasket **462** (not shown, see **FIG. 5C** for details) positioned around all edges (**457 & 458**) of access door **450** designed to prevent water, other liquids, and/or debris entry into floor box assembly **410**. Gasket **462** can be held in place by adhesive or by friction within a groove (not shown) on bottom surface **452**.

**[0064]** The embodiment depicted in **FIGS. 6 & 7A-7C**, bottom surface **452** also includes a plurality of self-alignment pins **471** (not shown, see **FIG. 5C** for details) protruding down toward aperture **456**. Self-alignment pins **471** (not shown) are configured to correspond to a plurality of pin stoppers **472** (see **FIGS. 7A-7C**) positioned on the inner surface of walls **442**. Self-alignment pins **471** and pin stoppers **472** together operate as a stop mechanism, discussed further below.

**[0065]** When access door **450** is lifted, protrusions or tab portions **449** of recessed portion **445** that extend into aperture **456** are exposed. Tab portions **449** are preferably positioned on the sides of recessed portion **445** nearest edges **444b**, thereby creating a single



extension **456a** in aperture **456** (see **FIGS. 6, 7A, & 7C**). In an open “cabling” position (see **FIG. 5C** for details), cords are permitted to enter the floor box assembly **410** to reach a receptacle or prior plugged cords may be adjusted, inspected, or removed. While in the “cabling” position, a user may slide or position access door **450** along recessed portion **445** and edges **444b** to ready access door **450** to be placed in a closed “in service” position (shown in **FIG. 6**). As noted above, access door **450** is limited in its movement by tether **465**.

**[0066]** The access door **450** is lowered to engage securing members **460** and protrusions **460c** with walls **442**, as shown in **FIG. 6**. This closed “in service” position reveals cord port **463**, through which cords may be placed allowing the access door **450** to remain shut and secured while cords are plugged into a receptacle in floor box assembly **410**. Access door **450**, thus, may be positioned in a plurality of closed positions that cover all or a portion of aperture **456**. When covering a portion of aperture **456**, at least one of cord ports **463** is revealed. The size of a cord port **463** may depend on the positioning of self-alignment pins **471** and/or pin stoppers **472**. In the embodiment shown in **FIGS. 6 & 7A-7C**, cord port **463** is designed to have a pre-determined size by including a stop mechanism (**471** plus **472**) to secure access door **450** in a particular closed “in service” position (note, a stop mechanism also works to secure the access door **450** in a particular closed “not in service” position). Another advantage of a stop mechanism is to protect cords in a closed “in use” position by preventing access door **450** from slipping or otherwise being moved onto the cords protruding through cord port **463**. As discussed above, other stop mechanisms are contemplated within the present invention.

**[0067]** The terms "comprising," "including," and "having," as used in the claims and specification herein, shall be considered as indicating an open group that may include other



elements not specified. The terms "a," "an," and the singular forms of words shall be taken to include the plural form of the same words, such that the terms mean that one or more of something is provided. The term "one" or "single" may be used to indicate that one and only one of something is intended. Similarly, other specific integer values, such as "two," may be used when a specific number of things is intended. The terms "preferably," "preferred," "prefer," "optionally," "may," and similar terms are used to indicate that an item, condition or step being referred to is an optional (not required) feature of the invention.

**[0068]** The invention has been described with reference to various specific and preferred embodiments and techniques. However, it should be understood that many variations and modifications may be made. For example, a tab portion can be positioned on one side of the aperture resulting in a single cord port. By way of another example, the disclosed cover assemblies could be used with boxes installed in walls, furniture, or other flat surfaces. It will be apparent to one of ordinary skill in the art that methods, devices, device elements, materials, procedures and techniques other than those specifically described herein can be applied to the practice of the invention as broadly disclosed herein without resort to undue experimentation. All art-known functional equivalents of methods, devices, device elements, materials, procedures and techniques described herein are intended to be encompassed by this invention. Whenever a range is disclosed, all subranges and individual values are intended to be encompassed. This invention is not to be limited by the embodiments disclosed, including any shown in the drawings or exemplified in the specification, which are given by way of example and not of limitation. The scope of the claims should not be limited by the preferred embodiments set forth

in the examples, but should be given the broadest interpretation consistent with the description as a whole.

**[0069]** While the invention has been described with respect to a limited number of embodiments, those skilled in the art, having benefit of this disclosure, will appreciate that other embodiments can be devised which do not depart from the scope of the invention as disclosed herein. Accordingly, the scope of the invention should be limited only by the attached claims.

**What is claimed is:**

1. A floor box cover assembly comprising:  
a cover plate having an aperture to permit access within said assembly; and  
a repositionable access door pivotally mounted to said cover plate by a sliding hinge,  
wherein said sliding hinge slides to allow said access door to be positioned in a  
plurality of closed positions, wherein said plurality of closed positions comprises  
a closed not in service position that covers all of said aperture and a closed in  
service position that covers a portion of said aperture and wherein said access  
door is maintained as a substantially flat surface when positioned in each of said  
plurality of closed positions.
2. The floor box cover assembly of claim 1, further comprising a recessed box  
assembly.
3. The floor box cover assembly of claim 2, wherein said cover plate has at least one tab  
portion projecting into said aperture.
4. The floor box cover assembly of claim 3, wherein said cover plate has a raised top  
surface and a recessed portion, wherein said at least one tab portion extends from a  
middle of said recessed portion.
5. The floor box cover assembly of claim 4, wherein said cover plate has a hinge  
groove.
6. The floor box cover assembly of claim 2, wherein said cover plate and said access  
door each have a stop mechanism that work in concert to prevent movement of said  
access door while in each of said plurality of closed positions.



7. The floor box cover assembly of claim **2**, wherein said access door has a securing apparatus that engages said cover plate in each of said plurality of closed positions.
8. The floor box cover assembly of claim **7**, wherein said securing apparatus has protrusions.
9. The floor box cover assembly of any one of claims **1 to 8**, wherein said access door has a pull lever.
10. The floor box cover assembly of any one of claims **1 to 9**, wherein said access door has a first gasket positioned around all edges of a bottom side of said access door and a second gasket positioned around all edges of a top portion of a recessed box.
11. The floor box cover assembly of any one of claims **1 to 10**, wherein when said access door is positioned in said closed in service position at least one cord port is revealed.
12. The floor box cover assembly of any one of claims **2 to 11**, wherein said recessed box assembly comprises an integrated box having both electrical box and recessed floor box components.
13. A floor box cover assembly comprising:
  - a cover plate having an aperture to permit access within said assembly, wherein said cover plate has a raised top surface, a recessed portion, and a tab portion which projects into said aperture from a middle of said recessed portion; and
  - a removable and repositionable access door attached to said cover plate by a tether, wherein said tether allows said access door to be positioned in a plurality of closed positions, wherein said plurality of closed positions comprises a closed not in service position that covers all of said aperture and a closed in service position

that covers a portion of said aperture and wherein said access door is maintained as a substantially flat surface when positioned in each of said plurality of closed positions.

14. The floor box cover assembly of claim **13**, further comprising a recessed box assembly.
15. The floor box cover assembly of claim **14**, wherein said cover plate and said access door each have a stop mechanism that work in concert to prevent movement of said access door while in each of said plurality of closed positions.
16. The floor box cover assembly of claim **14**, wherein said access door has a securing apparatus that engages said cover plate in each of said plurality of closed positions.
17. The floor box cover assembly of claim **16**, wherein said securing apparatus has protrusions.
18. The floor box cover assembly of any one of claims **13 to 17**, wherein said access door has a pull lever.
19. The floor box cover assembly of any one of claims **13 to 18**, wherein said access door has a first gasket positioned around all edges of a bottom side of said access door and a second gasket positioned around all edges of a top portion of a recessed box.
20. The floor box cover assembly of any one of claims **13 to 19**, wherein when said access door is positioned in said closed in service position at least one cord port is revealed.

21. The floor box cover assembly of any one of claims **14 to 20**, wherein said recessed box assembly comprises an integrated box having both electrical box and recessed floor box components.
22. A electrical box assembly comprising:  
an outlet box;  
an electrical box; and  
an electrical box cover assembly, wherein said electrical box cover assembly comprises:  
a cover plate having an aperture to permit access within said assembly; and  
an access door, wherein said access door is selected from the group consisting of  
a repositionable access door pivotally mounted to said cover plate by a sliding hinge and a removable and repositionable access door attached to said cover plate by a tether, wherein said sliding hinge slides to allow and said tether allows said repositionable access door and said removable and repositionable access door, respectively, to be positioned in a plurality of closed positions, wherein said plurality of closed positions comprises a closed not in service position that covers all of said aperture and a closed in service position that covers a portion of said aperture; and wherein said repositionable access door and said removable and repositionable access door are maintained as a substantially flat surface when positioned in each of said plurality of closed positions.



23. The electrical box assembly of claim **22**, wherein when said repositionable access door or said removable and repositionable access door is positioned in said closed in service position at least one cord port is revealed.
24. The electrical box assembly of claim **22 or 23**, wherein said repositionable access door or said removable and repositionable access door has a first gasket positioned around all edges of a bottom side of said repositionable access door or said removable and repositionable access door, respectively, and a second gasket positioned around all edges of a top portion of a recessed box.
25. The electrical box assembly of any one of claims **22 to 24**, wherein said outlet box and said electrical box comprise a single integrated box having both outlet box and electrical box components.

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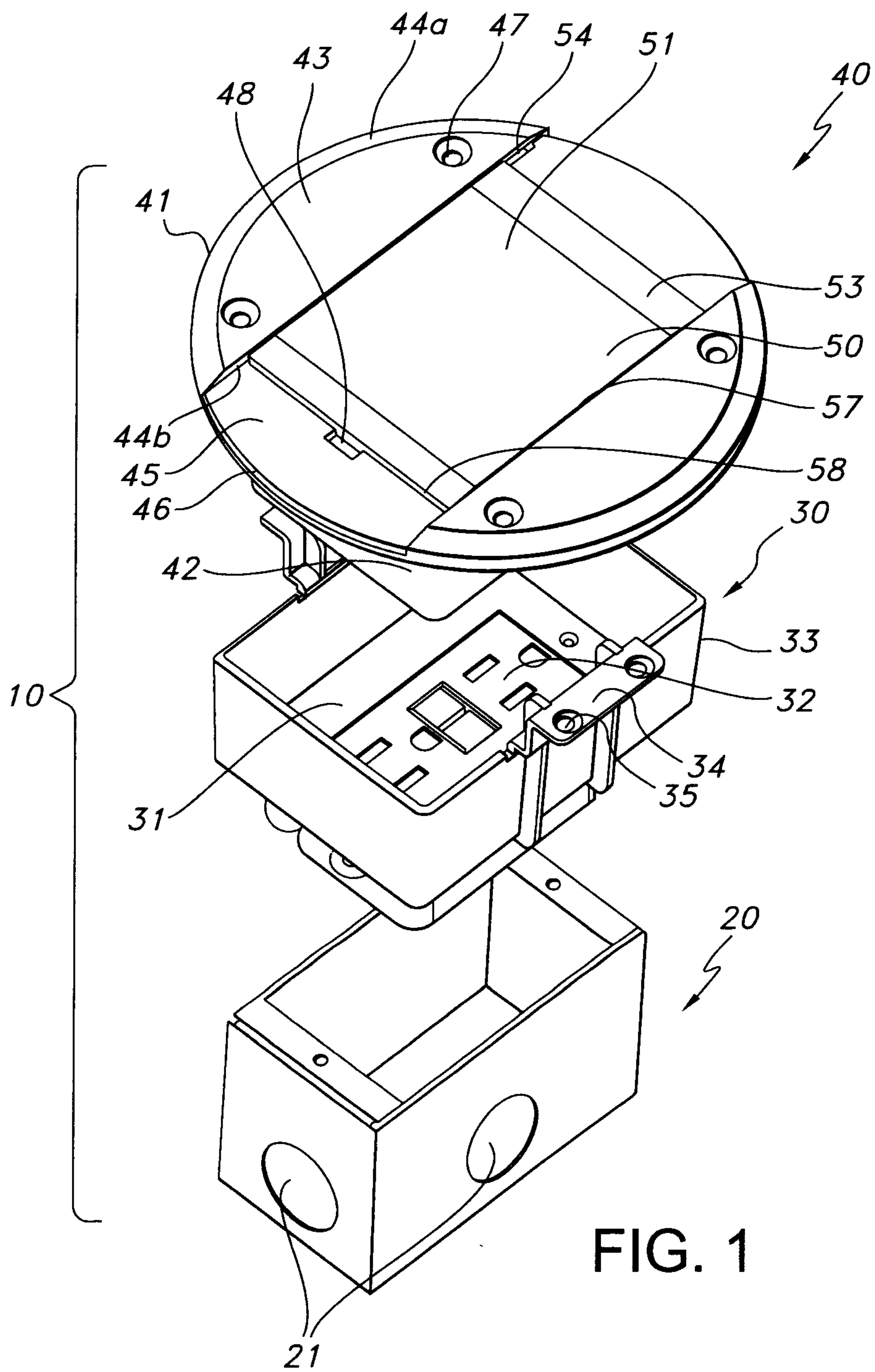


FIG. 1

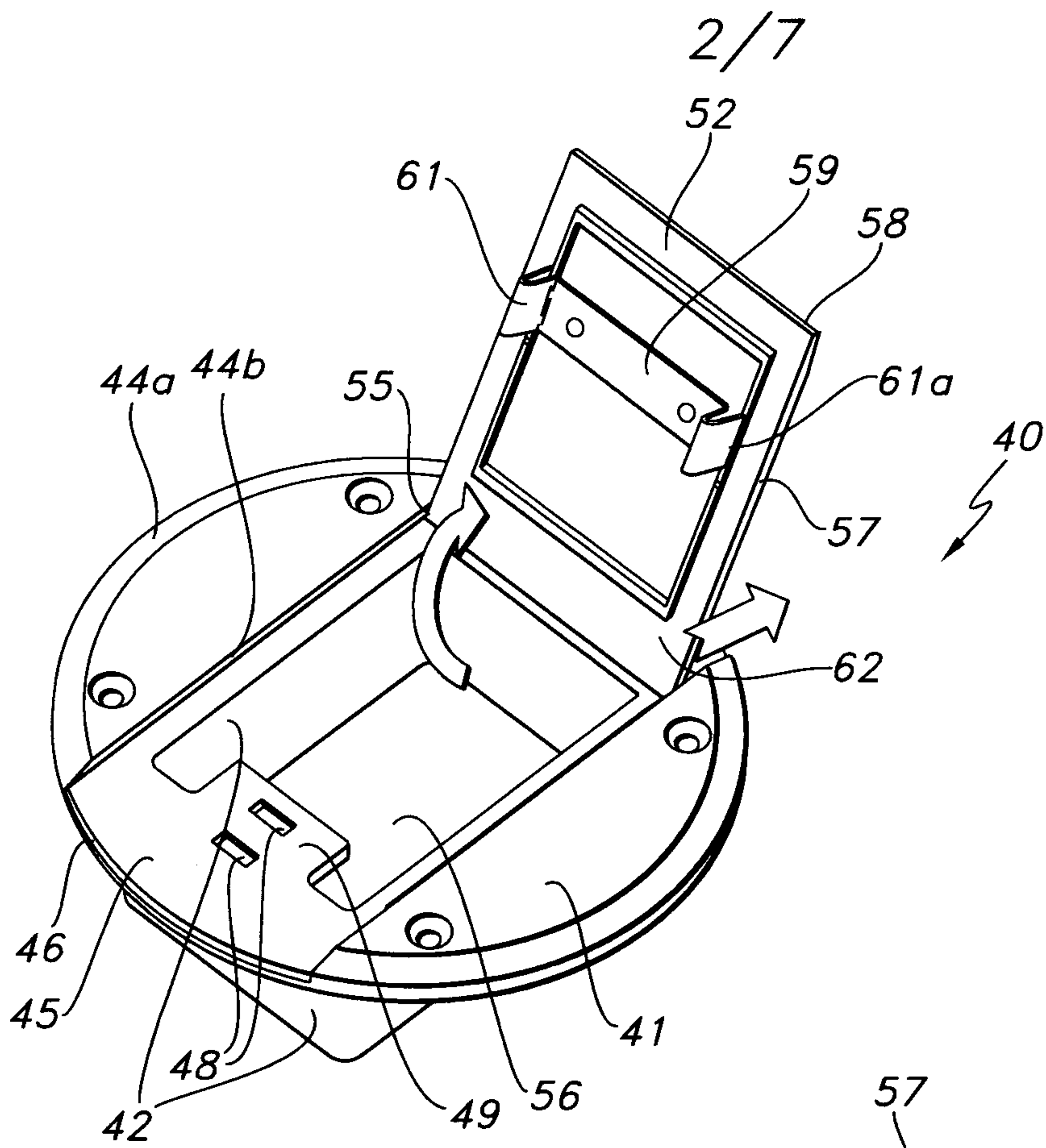


FIG. 2A

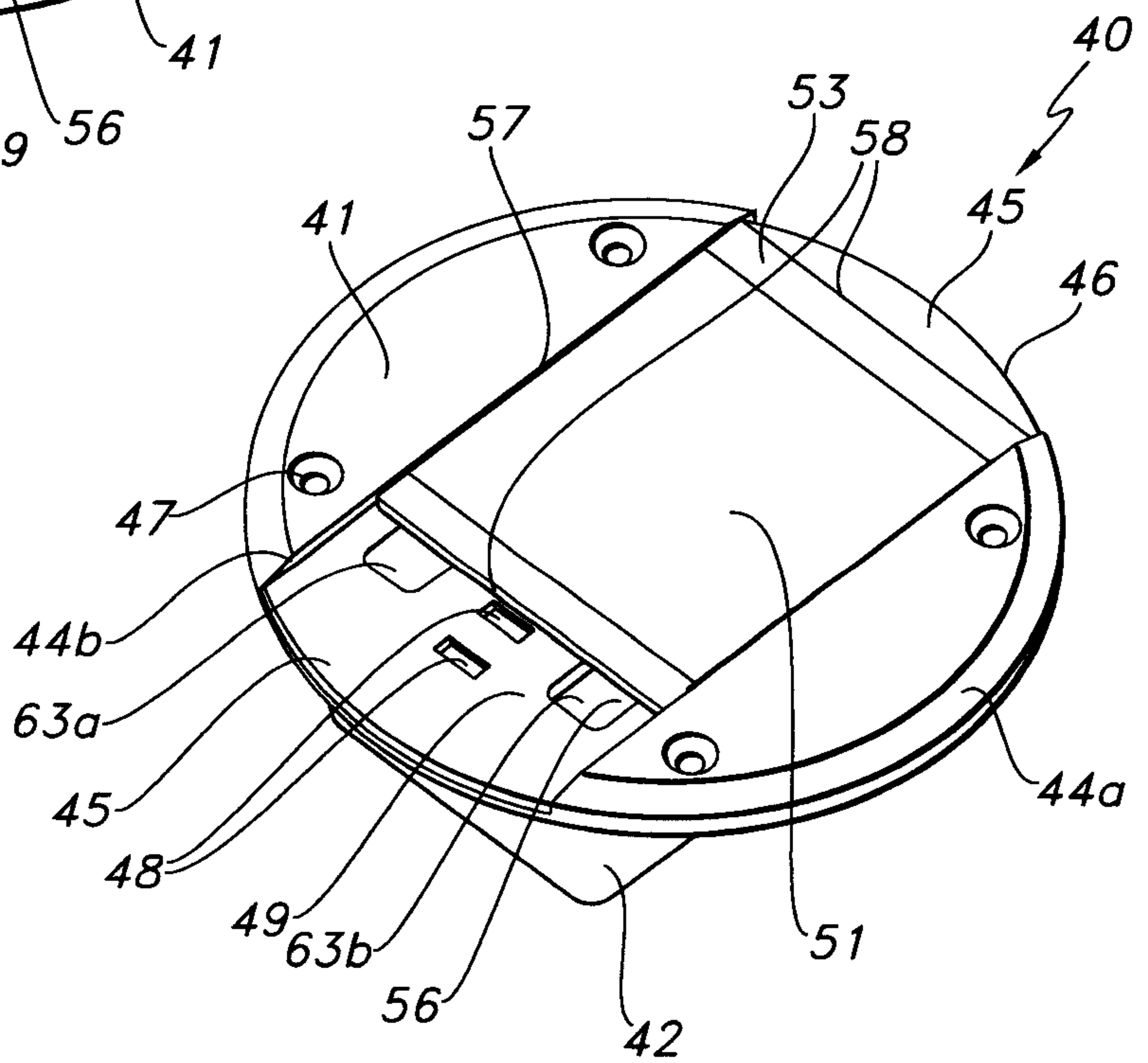


FIG. 2B



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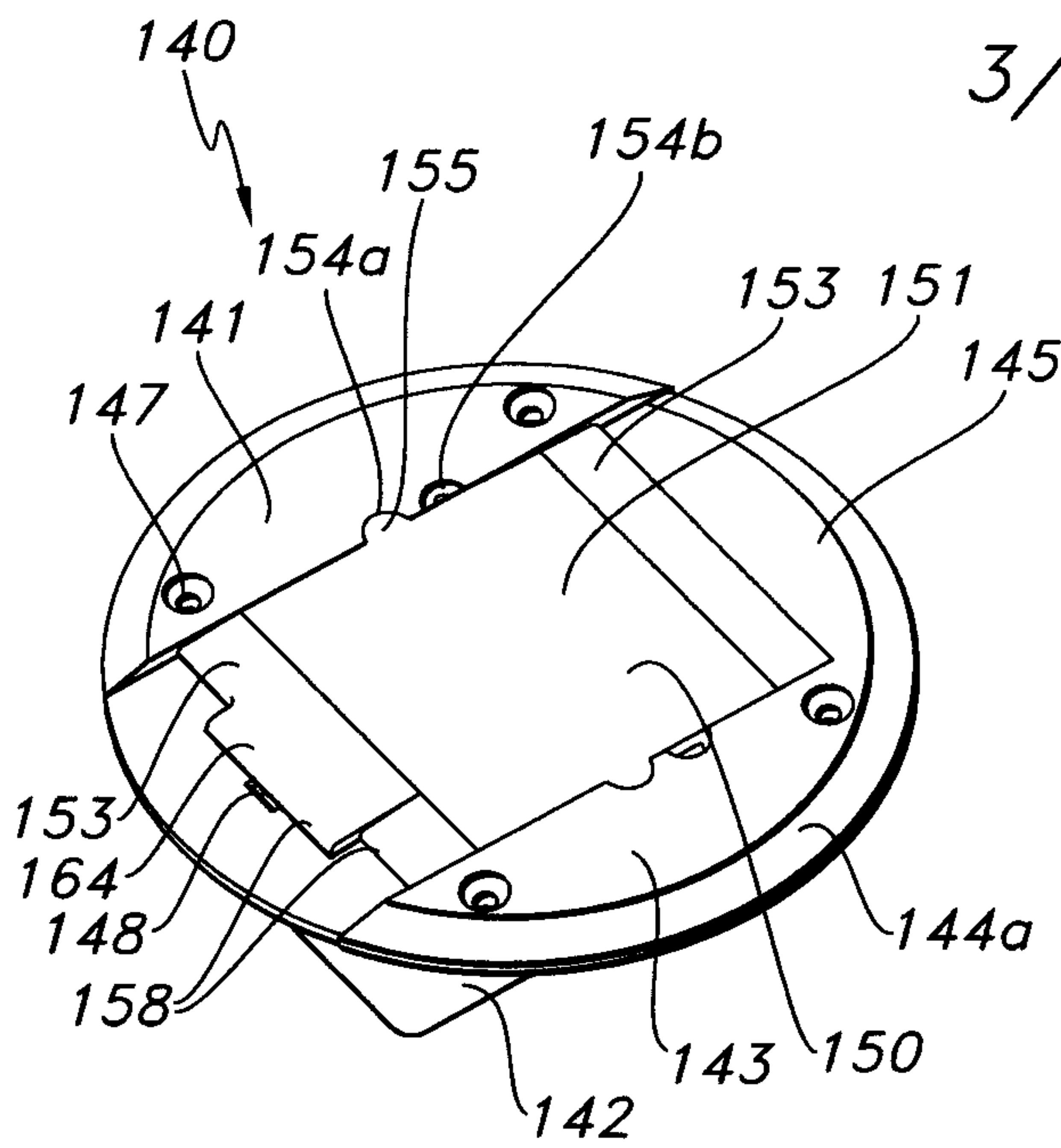


FIG. 3A

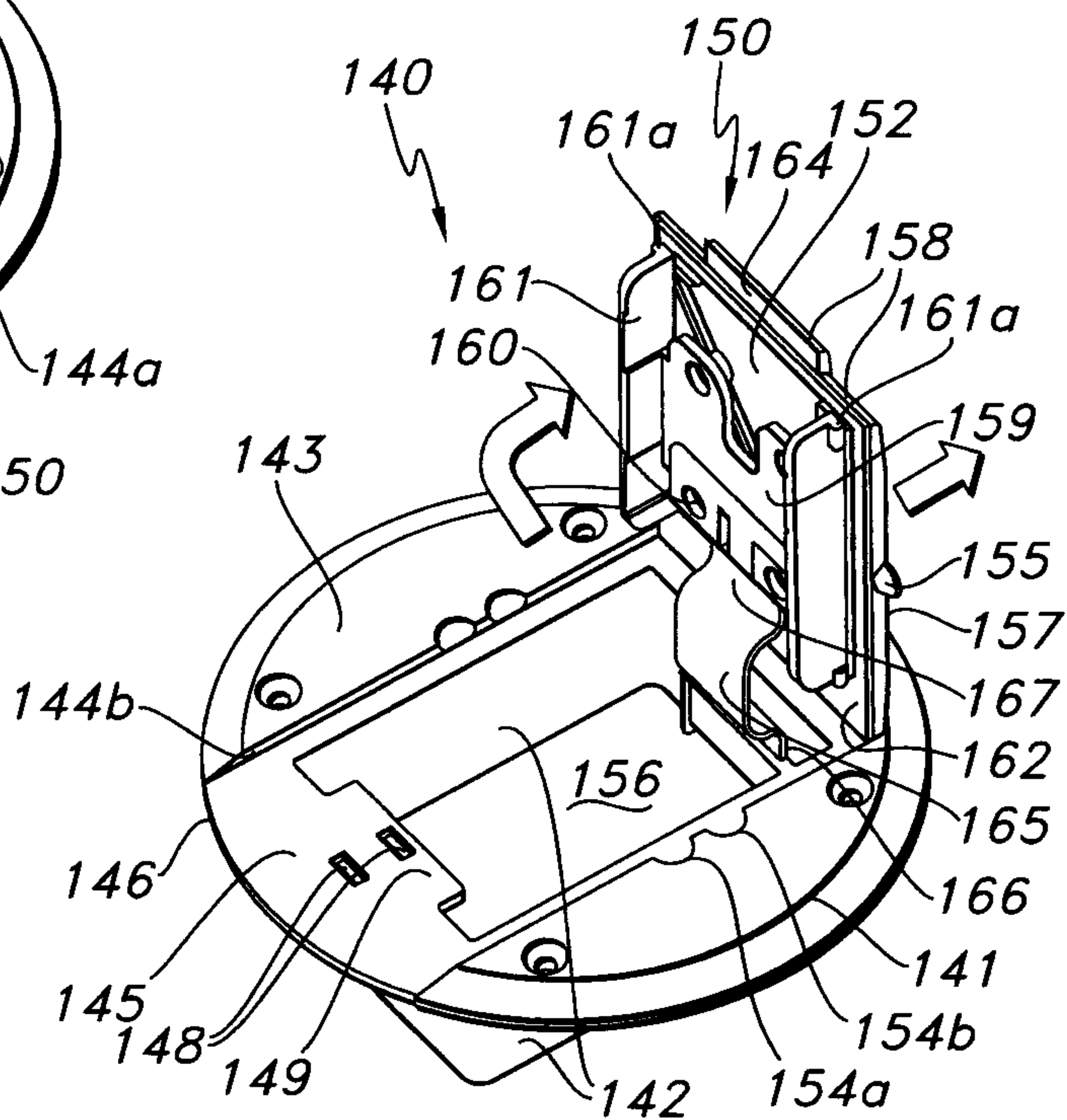


FIG. 3B

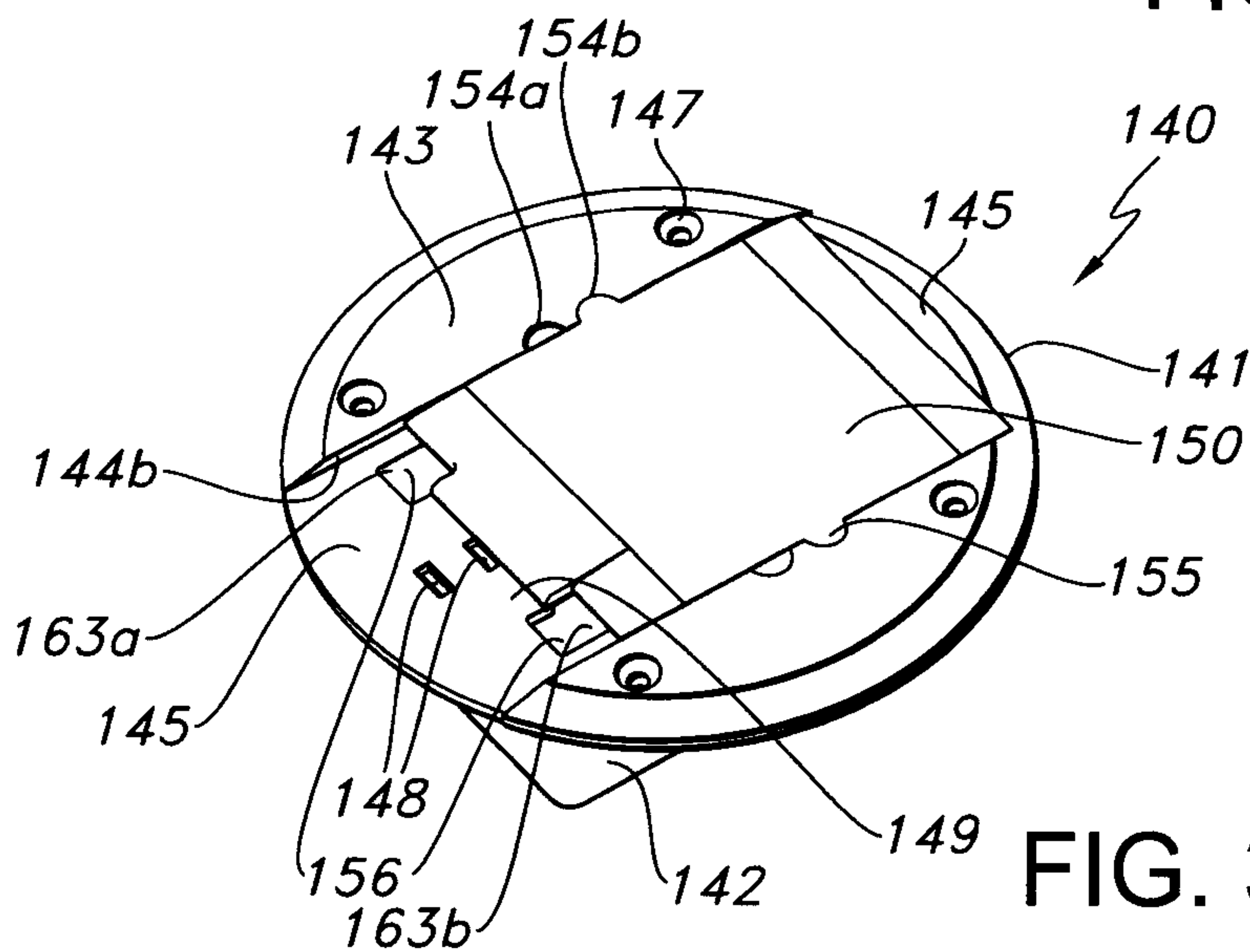


FIG. 3C

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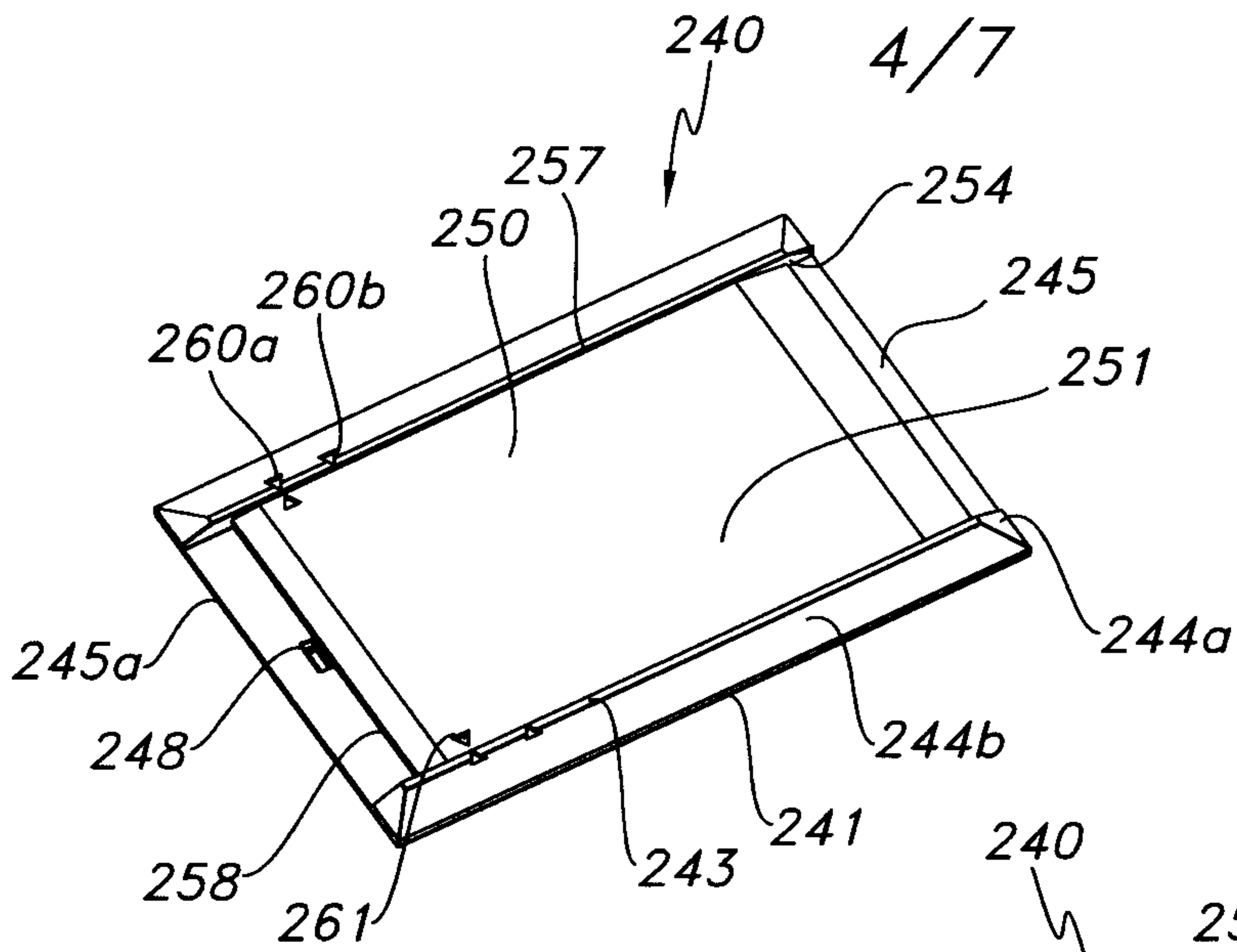


FIG. 4A

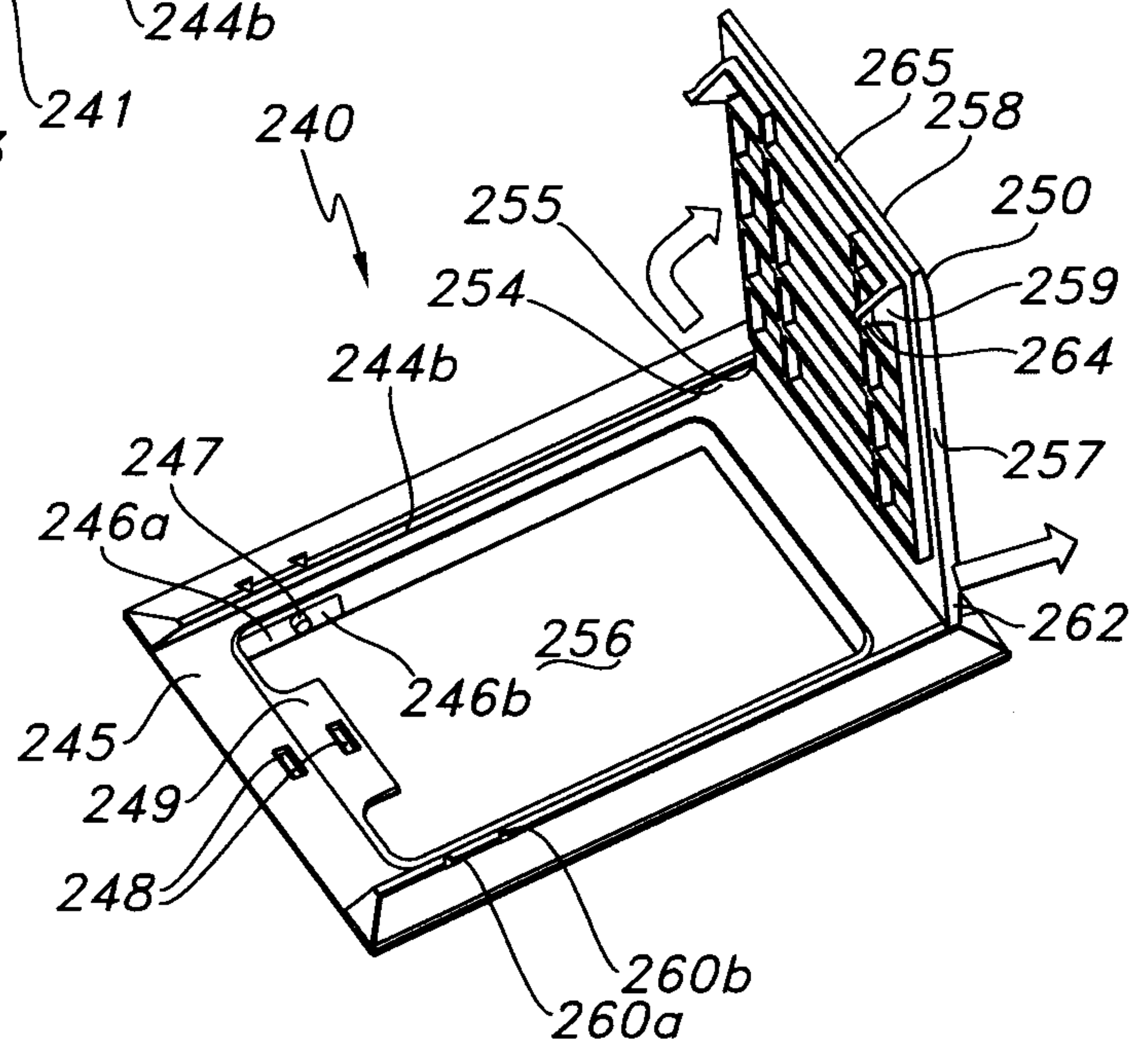


FIG. 4B

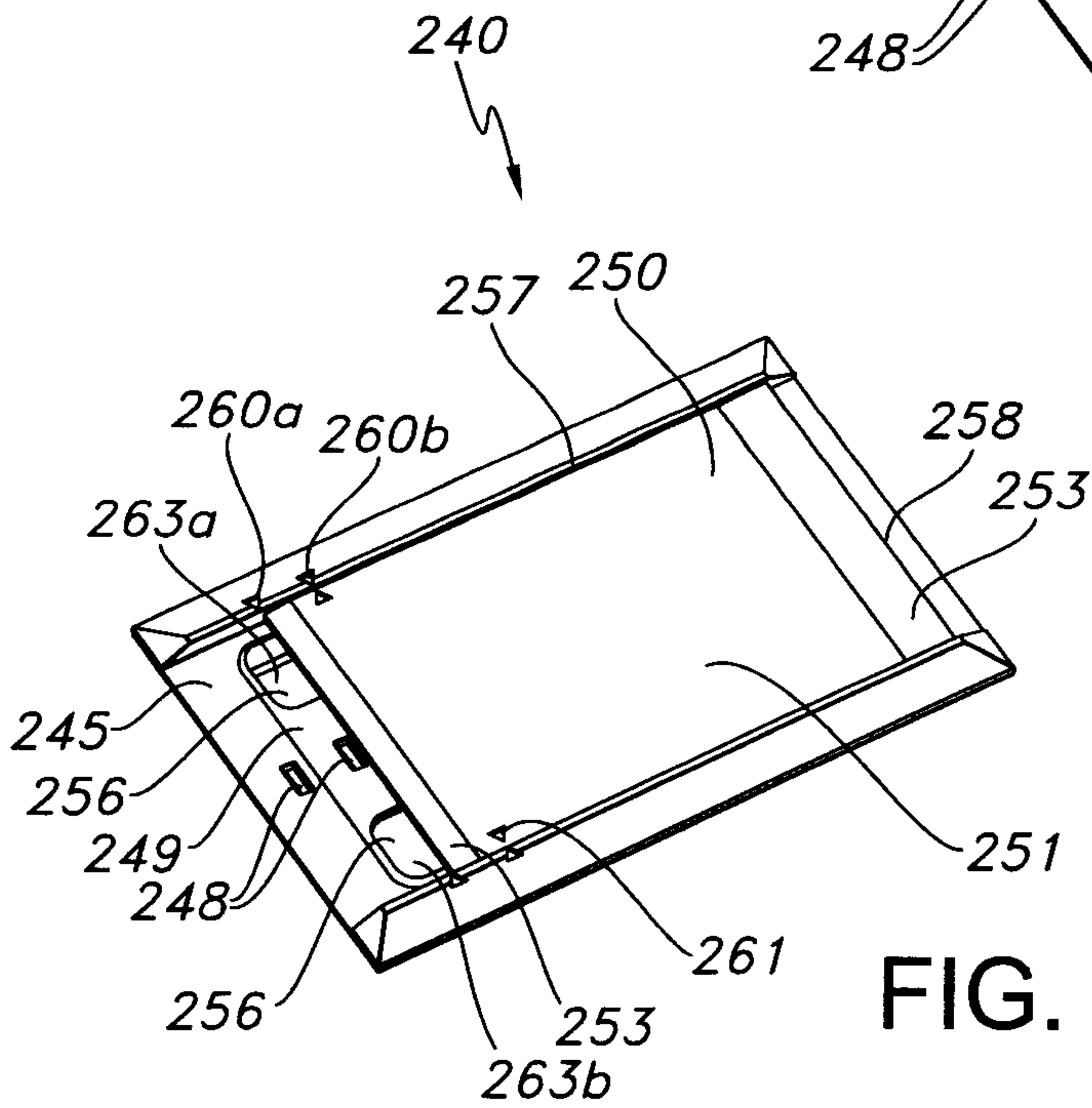


FIG. 4C



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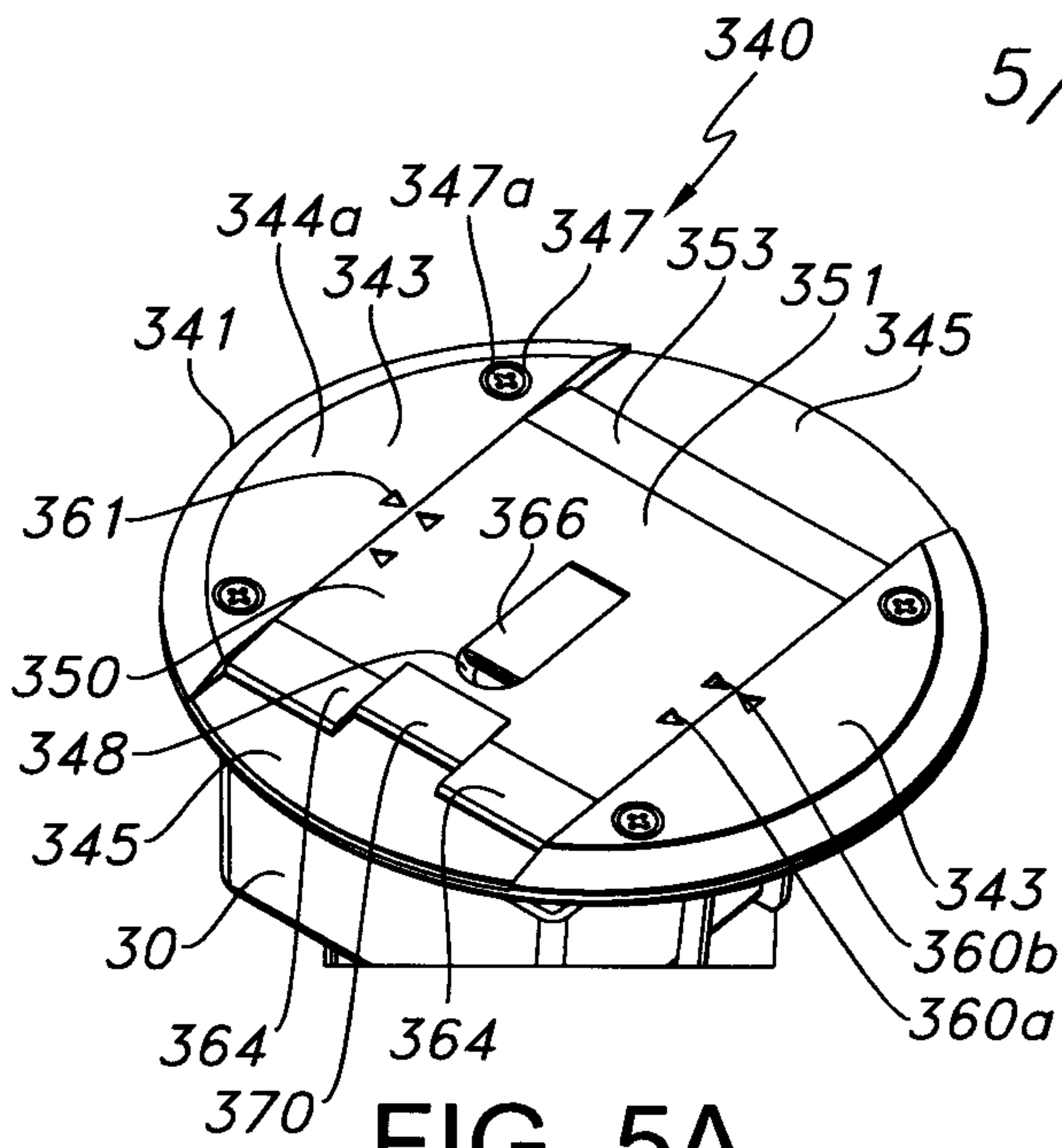


FIG. 5A

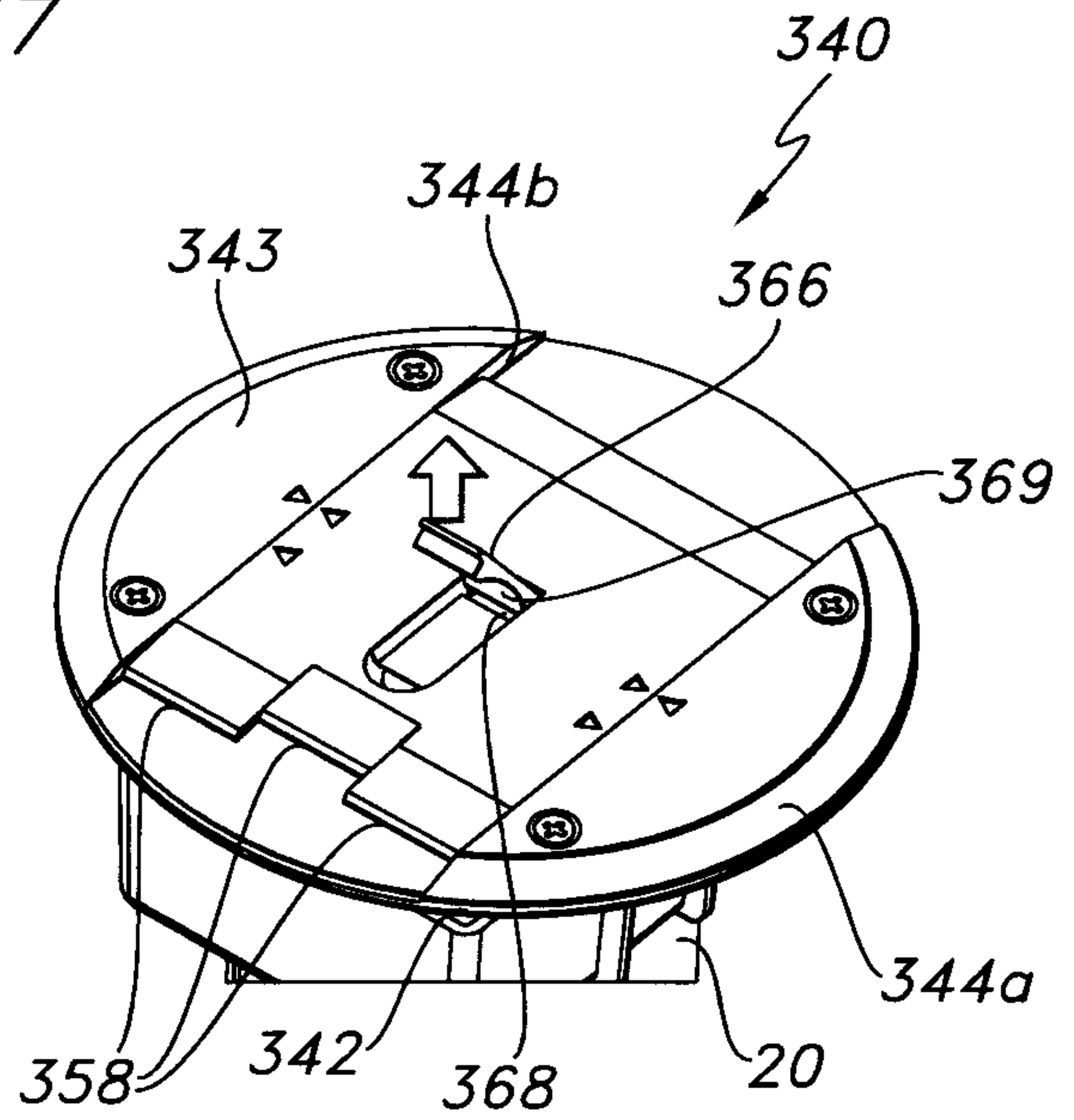


FIG. 5B

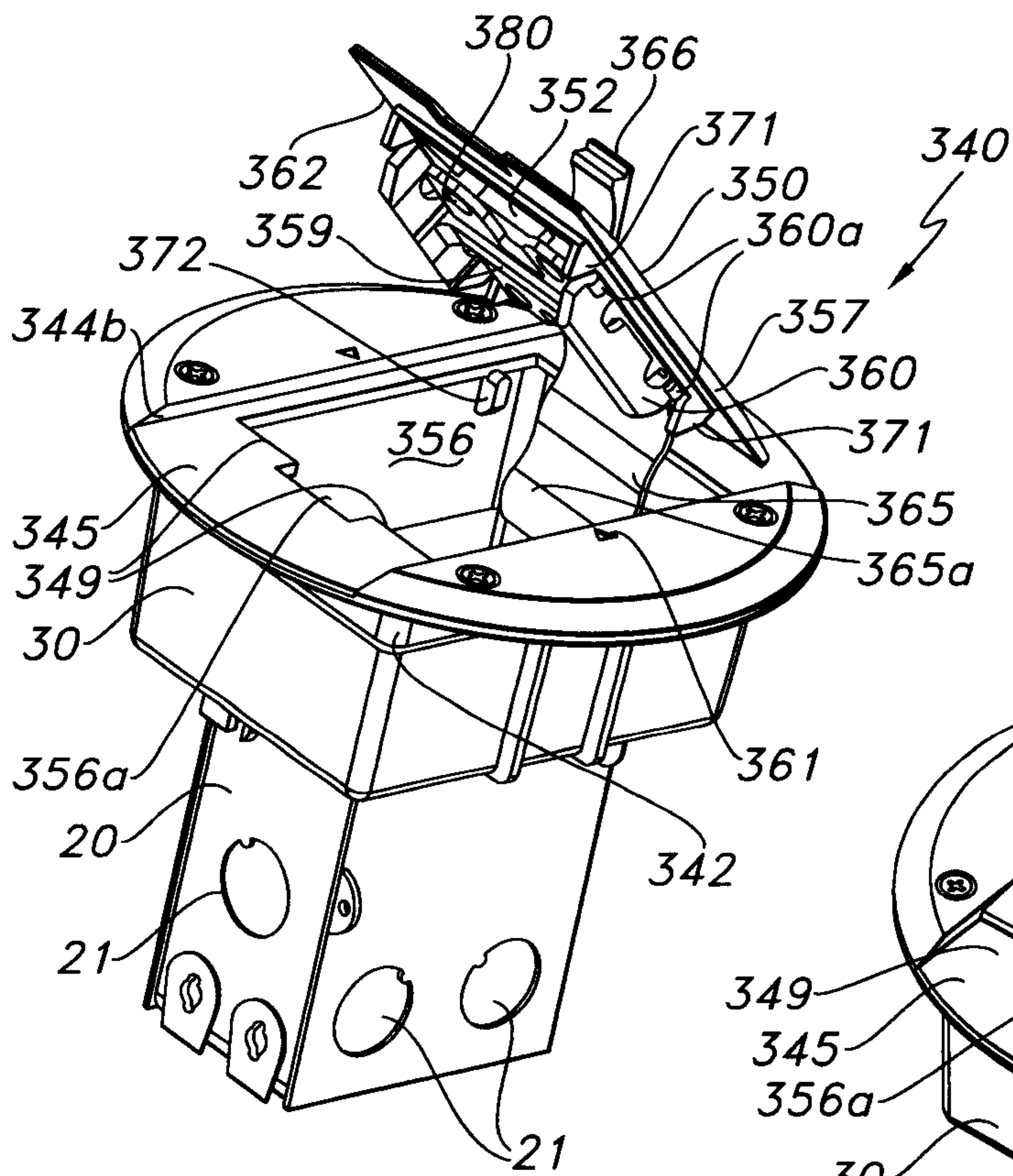


FIG. 5C

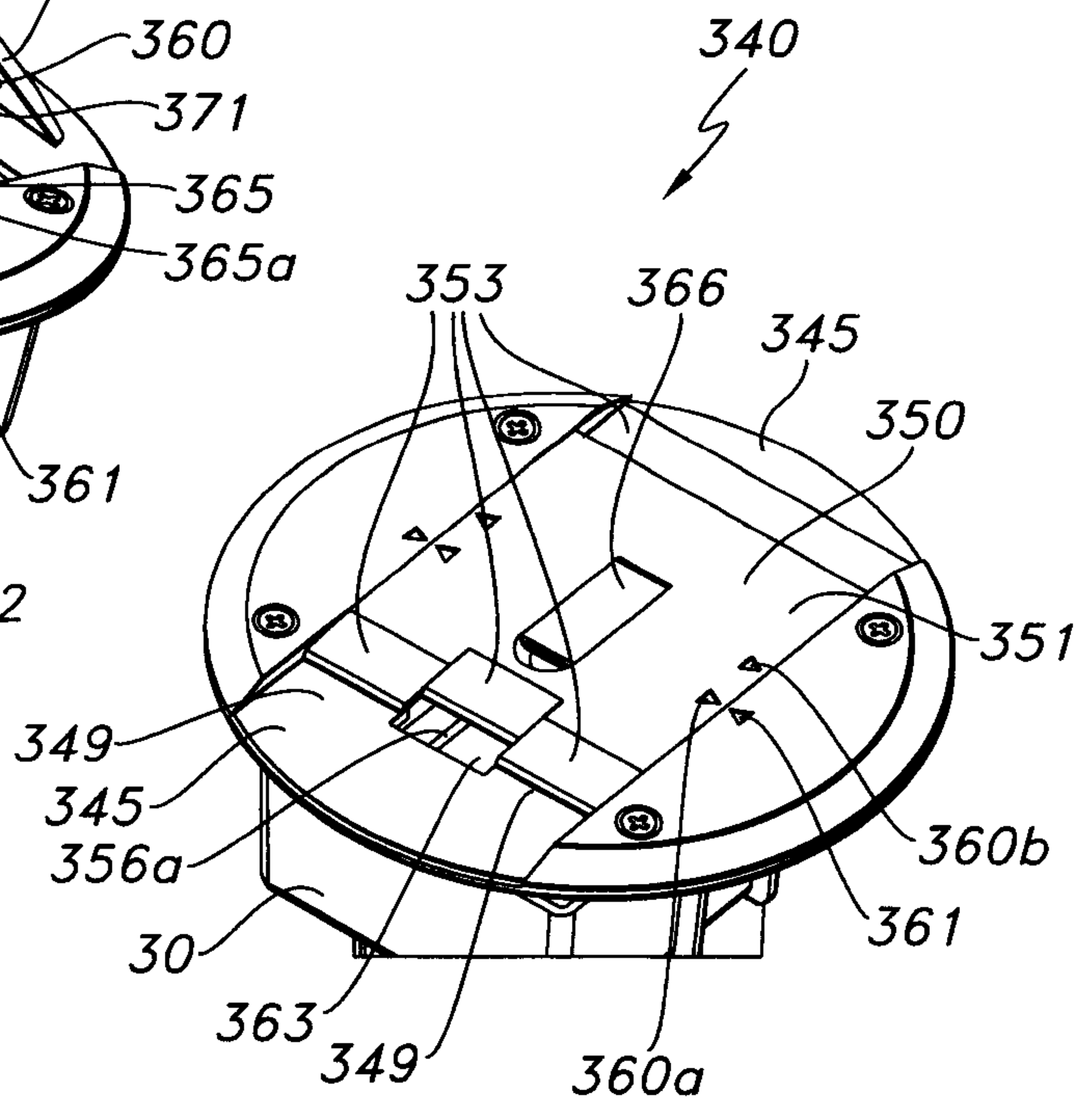


FIG. 5D

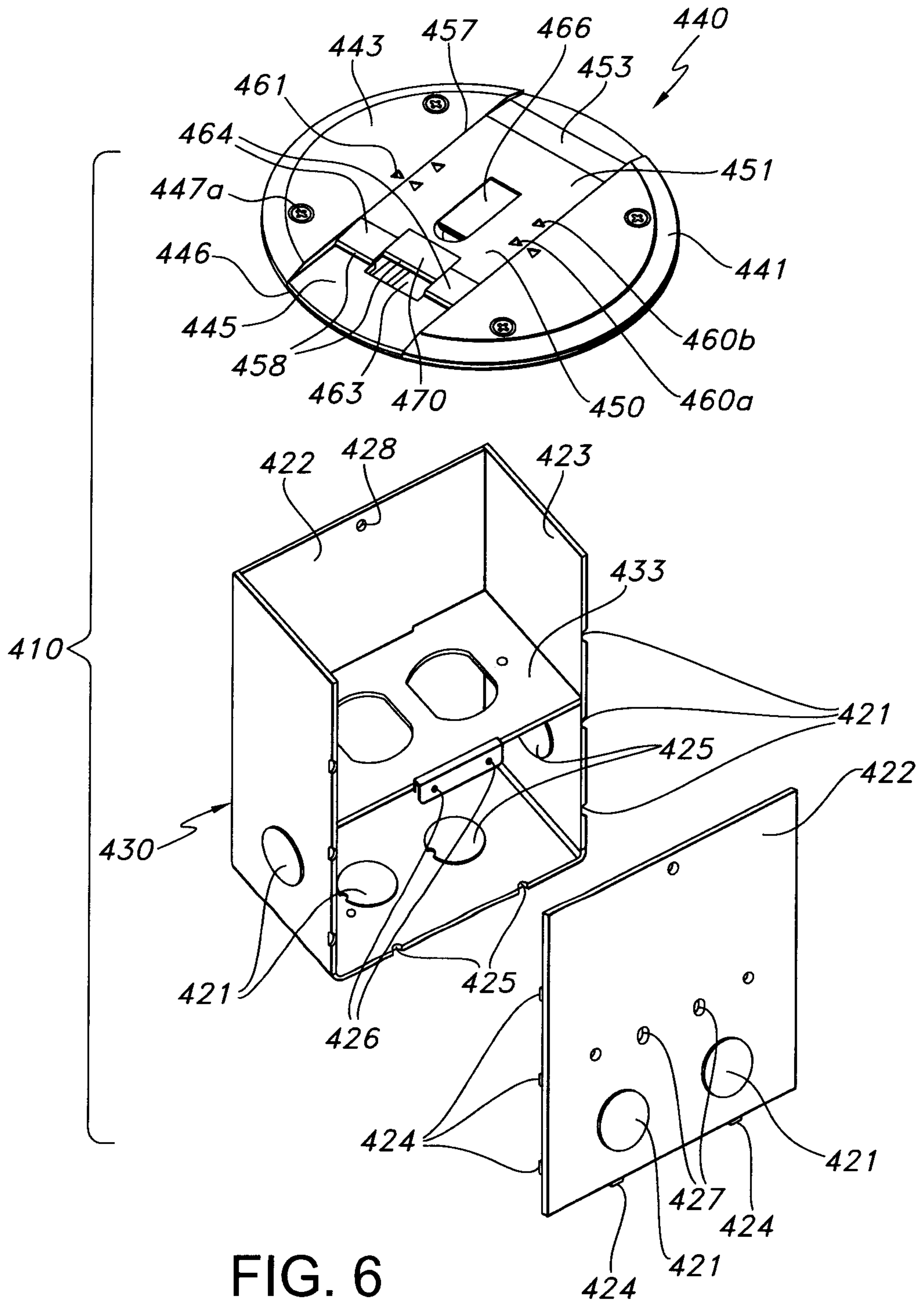


FIG. 6



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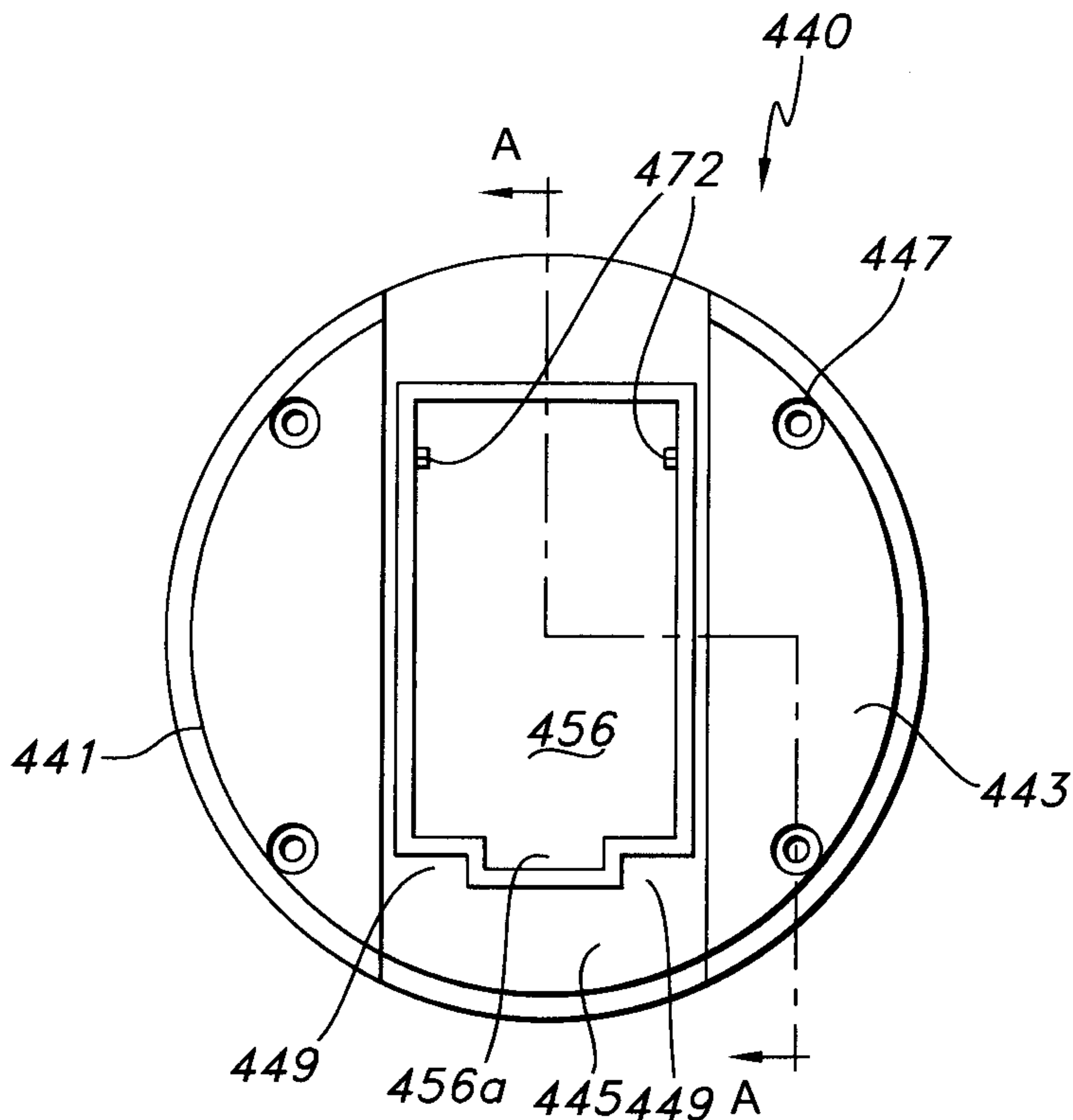


FIG. 7A

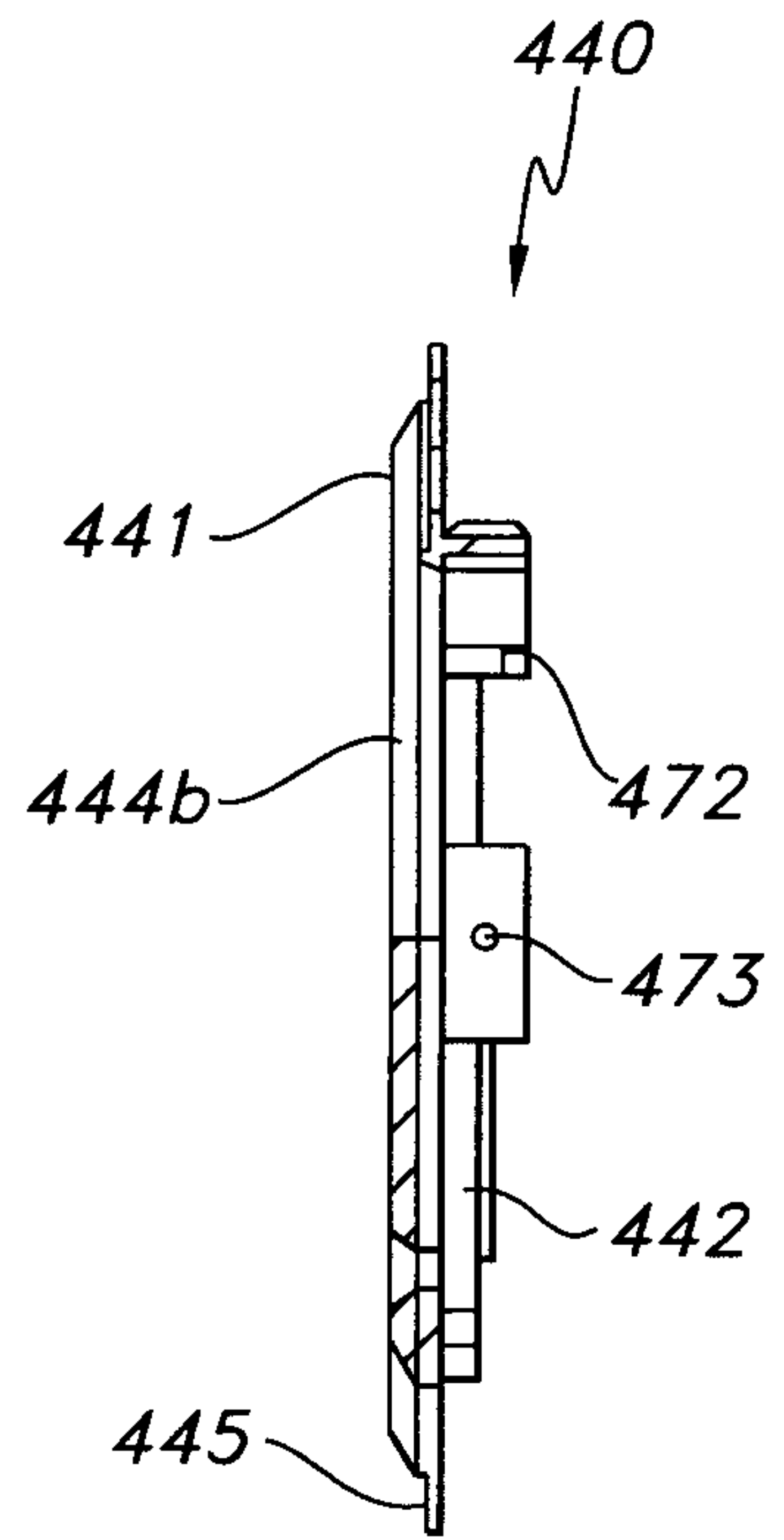


FIG. 7B

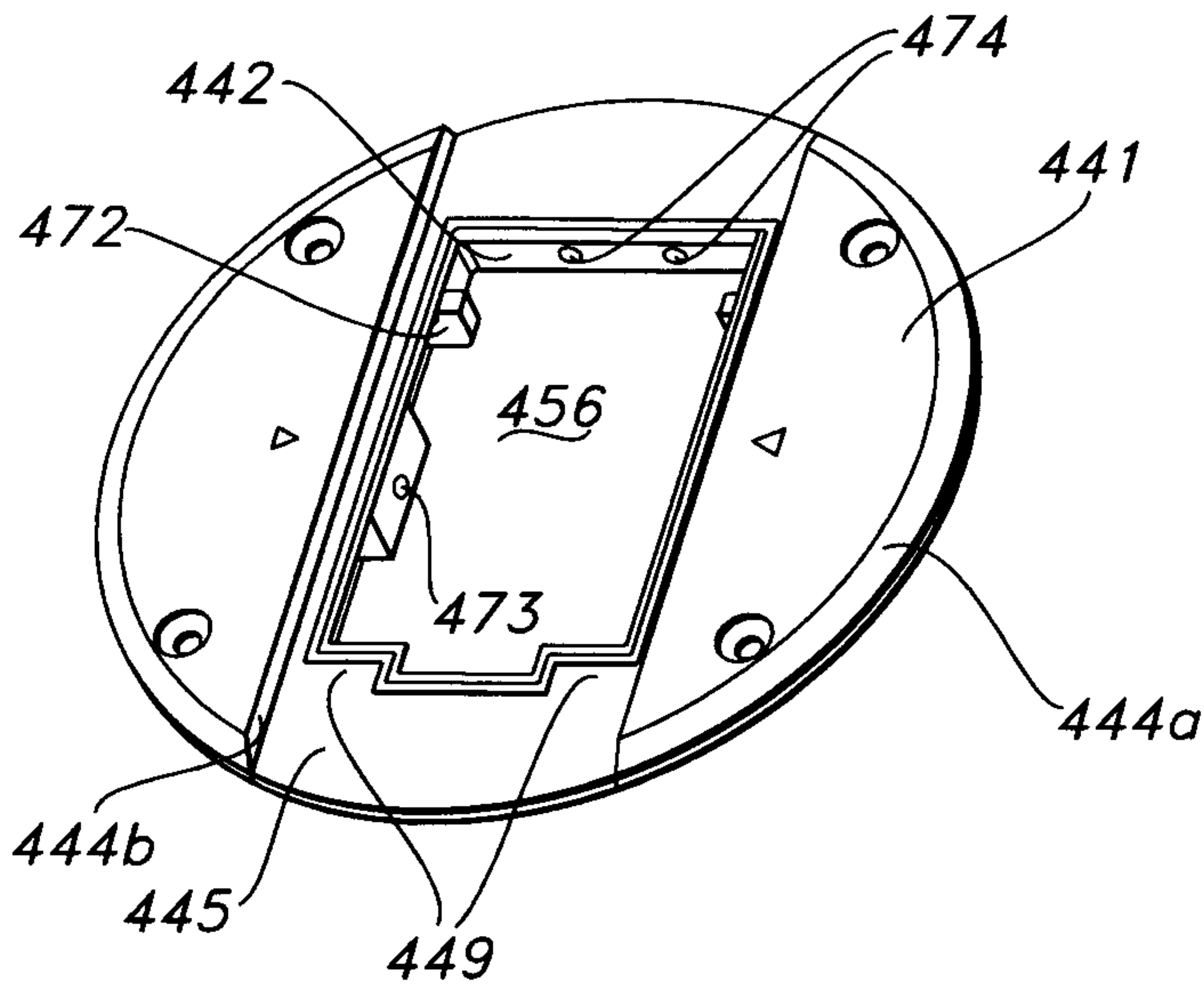


FIG. 7C

