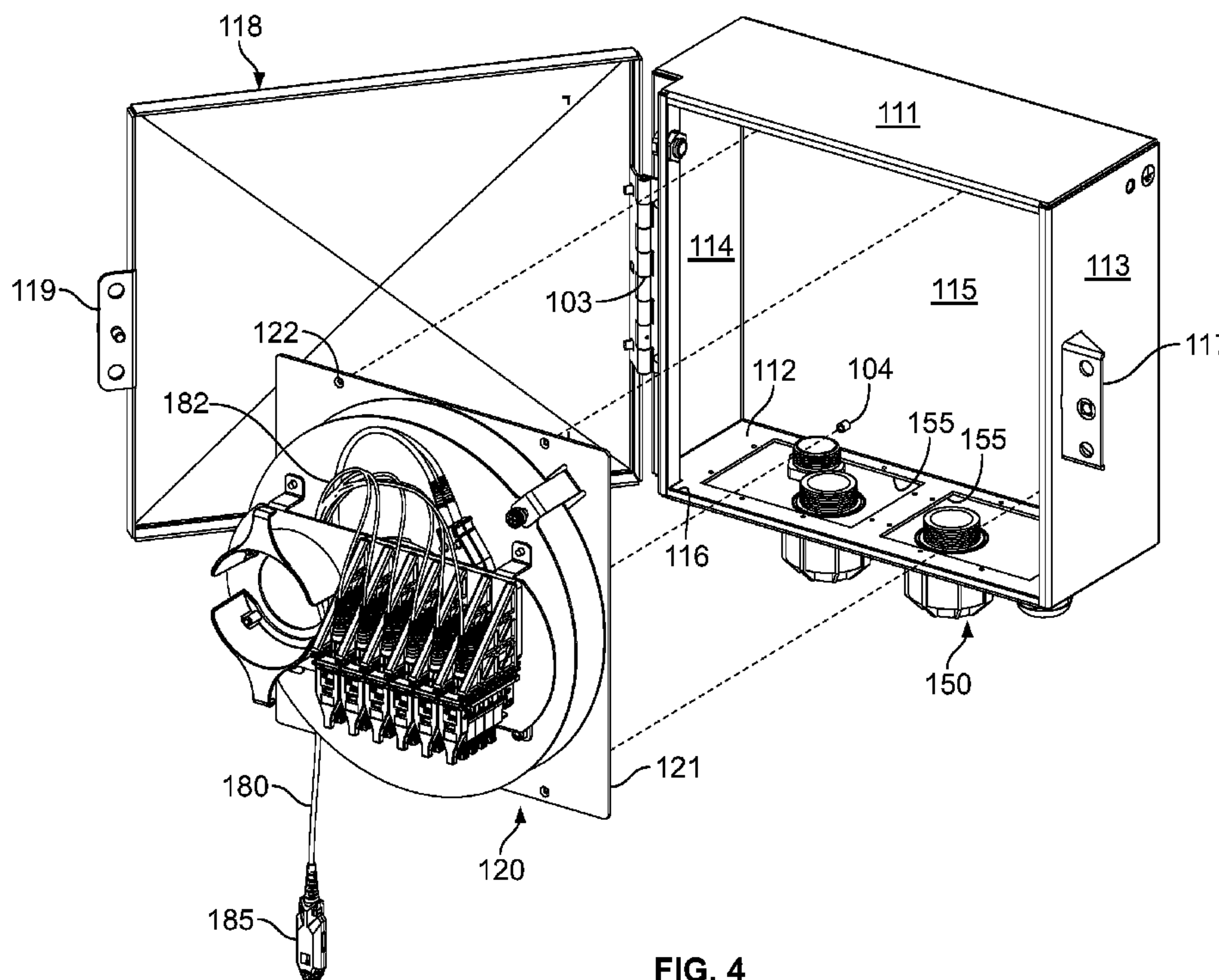




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(54) **Titre : BOITIER DE DISPOSITIF DE CONNEXION EN FIBRES DOTE D'ENSEMBLES PLAQUE MODULAIRES**  
 (54) **Title: FIBER TERMINATION ENCLOSURE WITH MODULAR PLATE ASSEMBLIES**



**FIG. 4**

(57) **Abrégé/Abstract:**

Certain types of fiber termination enclosures include an enclosure and at least one of a plurality of plate module mounting assemblies. Example plate module mounting assemblies include a termination panel plate assembly; a splice tray plate assembly; a cable spool plate assembly; and a drop-in plate assembly. Example cable spool plate assemblies include a cable spool arrangement rotationally coupled to a mounting plate, which fixedly mounts within the enclosure housing. A stand-off mount element may be disposed on the front of the cable spool arrangement to rotate in unison with the cable spool arrangement. The stand-off mount element may include one or more termination adapters.

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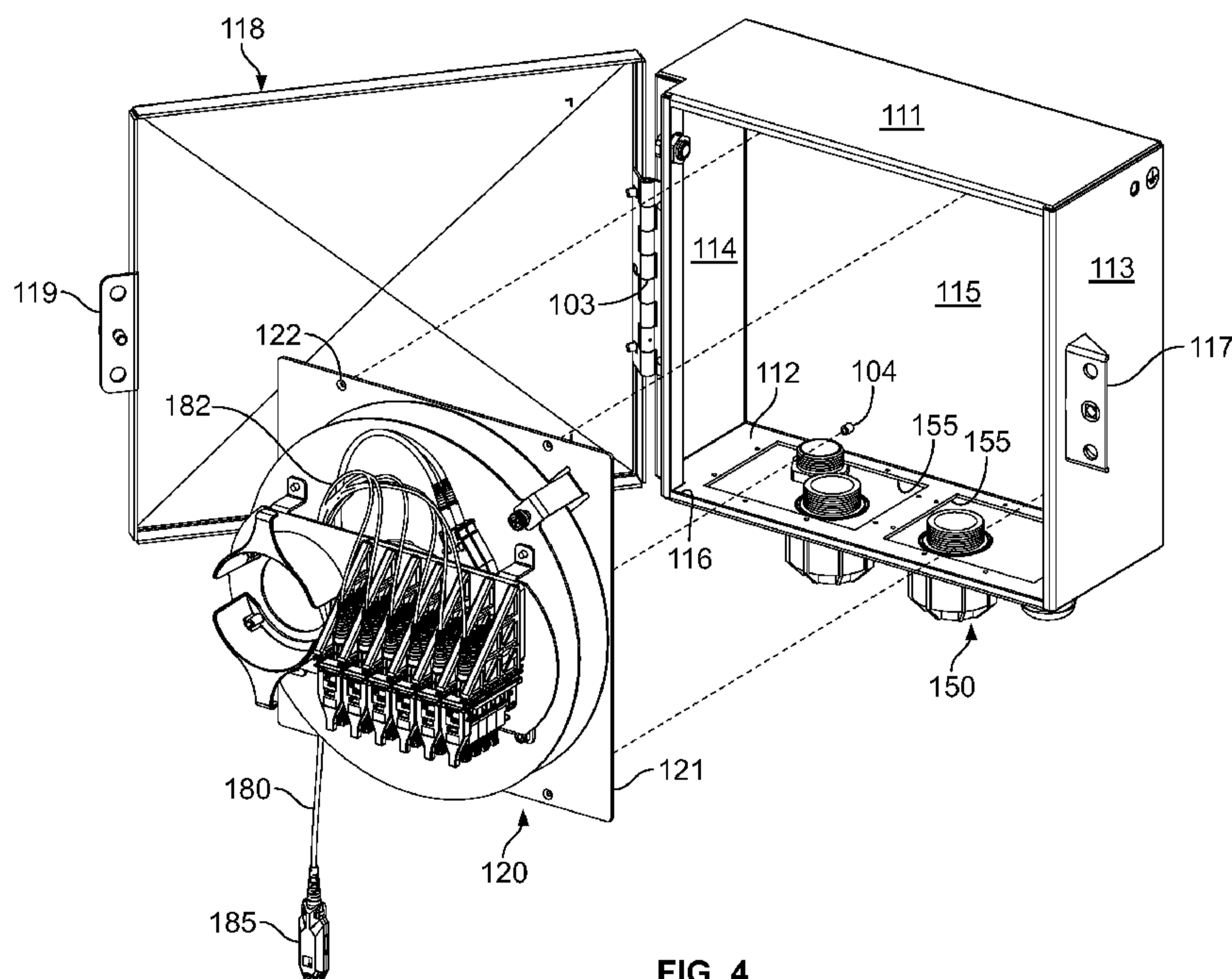


FIG. 4

(57) Abstract: Certain types of fiber termination enclosures include an enclosure and at least one of a plurality of plate module mounting assemblies. Example plate module mounting assemblies include a termination panel plate assembly; a splice tray plate assembly; a cable spool plate assembly; and a drop-in plate assembly. Example cable spool plate assemblies include a cable spool arrangement rotationally coupled to a mounting plate, which fixedly mounts within the enclosure housing. A stand-off mount element may be disposed on the front of the cable spool arrangement to rotate in unison with the cable spool arrangement. The stand-off mount element may include one or more termination adapters.

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**FIBER TERMINATION ENCLOSURE**  
**WITH MODULAR PLATE ASSEMBLIES**

**Cross-Reference to Related Applications**

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July 2011, the disclosures of which are incorporated herein by reference in their  
entirety.

15

**Technical Field**

The present disclosure relates to fiber optic enclosure, and more  
particularly, to a fiber optic enclosure with cable payout.

**Background**

As demand for the telecommunication services increases, fiber optic  
20 networks are being extended in more and more areas (e.g., multiple dwelling units,  
apartments, condominiums, businesses, distributed antenna systems, cell towers,  
rural areas, single family residences). This growth has been particularly notable in  
the area of wireless communications, e.g., cellular, personal communication services  
(PCS) and other mobile radio systems. To efficiently distribute fiber optic services  
25 to these various different subscribers, system design flexibility is significant.  
System design flexibility can include the ability to efficiently provide different  
varying fiber optic cable lengths and the ability to efficiently provide fiber optic  
enclosures having interior components customized to meet a given customer's  
needs.

### Summary

An aspect of the present disclosure relates to a fiber optic enclosure assembly. The fiber optic enclosure includes an enclosure housing that is adapted to optically connect incoming fibers to outgoing fibers. One or more modular plate assemblies may be mounted within an interior of the enclosure to customize the fiber optic enclosure.

In accordance with some aspects of the disclosure, certain types of modular plate assemblies include termination adapter arrangements. In accordance with some aspects of the disclosure, certain types of modular plate assemblies include splice trays arrangements. In accordance with some aspects of the disclosure, certain types of modular plate assemblies include cable spool arrangements.

In accordance with some aspects of the disclosure, modular cable port arrangements may be disposed at the enclosure housing. In some implementations, various types of modular cable port arrangements can be selectively mounted at the enclosure housing.

In accordance with certain aspects of the disclosure, a cable spool arrangement is connected to an interior of the enclosure to rotate relative to the enclosure. One or more fiber cables may be paid out from the enclosure by pulling one end of the fiber cable through a cable port to unwind the fiber cable from the cable spool arrangement. In certain implementations, one or more adapters may be disposed on the cable spool arrangement to rotate in unison with the cable spool arrangement. In certain implementations, the termination adapters are disposed on a stand-off mount element that is spaced from the cable spool arrangement, but configured to rotate in unison with the cable spool arrangement.

A variety of additional aspects will be set forth in the description that follows. These aspects can relate to individual features and to combinations of features. It is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory only and are not restrictive of the broad concepts upon which the embodiments disclosed herein are based.

**Brief Description of the Drawings**

FIG. 1 is a schematic diagram of a fiber termination enclosure having an example mounting assembly disposed therein in accordance with the principles of the present disclosure;

5 FIG. 2 is a front, top perspective view of an example fiber termination enclosure including an enclosure configured in accordance with the principles of the present disclosure and shown with a door in a closed position;

FIG. 3 is a front, bottom perspective view of the example fiber termination enclosure of FIG. 2 in which two cable port modules are visible;

10 FIG. 4 is a front, top perspective view of the example fiber termination enclosure of FIG. 2 shown with the door in the open position and a cable spool mounting assembly exploded from the interior of the enclosure;

FIG. 5 is a schematic diagram of the fiber termination enclosure of FIG. 4 configured in accordance with the principles of the present disclosure;

15 FIG. 6 is a front, top perspective view of the example fiber termination enclosure of FIG. 4 in which with the cable spool mounting assembly is exploded to show various example components of the cable spool mounting assembly including a mounting plate, a cable spool arrangement, and a stand-off mount element;

20 FIG. 7 is a front, top perspective view of the example fiber termination enclosure of FIG. 6 shown with the cable spool mounting assembly installed within the interior of the enclosure housing;

FIG. 8 is a front, top perspective view of the example fiber termination enclosure of FIG. 2 shown with an example splice tray reel mounting assembly installed within the interior of the enclosure housing;

25 FIG. 9 is a front, top perspective view of the example fiber termination enclosure of FIG. 2 shown with an example termination panel mounting assembly installed within the interior of the enclosure housing;

30 FIG. 10 is a front, top perspective view of the example fiber termination enclosure of FIG. 9 shown with an example cover disposed over the cable spool mounting assembly;

FIG. 11 is a front, top perspective view of the example fiber termination enclosure of FIG. 2 shown with the door in the open position, an example sliding adapter mounting assembly disposed within the interior of the

enclosure, and an example drop-in plate mounting assembly exploded from the interior of the enclosure;

FIG. 12 is a front, top perspective view of the example fiber termination enclosure of FIG. 11 shown with the example drop-in plate mounting assembly disposed within the interior of the enclosure and partially cabled;

FIG. 13 is a front, top perspective view of the example fiber termination enclosure of FIG. 12 shown with cabling extending between the example drop-in plate mounting assembly and the example sliding adapter mounting assembly;

FIG. 14 is a front, top perspective view of the example fiber termination enclosure of FIG. 2 shown with an example splice tray mounting assembly and an example sliding adapter mounting assembly disposed within the interior of the enclosure housing;

FIG. 15 is a front, top perspective view of the example fiber termination enclosure of FIG. 14 shown with an example cover disposed over the splice tray mounting assembly; and

FIG. 16 is a schematic representation of a telecommunications network having exemplary features of aspects in accordance with the principles of the present disclosure.

## Detailed Description

Reference will now be made in detail to the exemplary aspects of the present disclosure that are illustrated in the accompanying drawings. Wherever possible, the same reference numbers will be used throughout the drawings to refer to the same or like structure.

FIG. 1 is a schematic diagram of an example fiber optic enclosure 100. The fiber optic enclosure 100 includes a housing, generally designated 110, at which telecommunications cables (e.g., optical and/or electrical cables) can be optically coupled and/or stored. One or more modular plate assemblies 120 may be mounted within the interior of the enclosure housing 110. Each modular plate assembly 120 includes a mounting plate 121 that is configured to mount to the enclosure housing 110 in a stationary configuration. Each modular plate assembly 120 includes a coupling arrangement 170 at which one or more optical fibers 182 of at least a first fiber cable 180 are optically coupled to optical fibers 192 of at least a

second fiber cable 190. The fiber cables 180, 190 enter the enclosure housing 110 through cable ports 101.

In use, the enclosure housing 110 is deployed by securing the enclosure housing 110 to a mounting location (e.g., a wall, a pole, etc.). In some implementations, the enclosure housing 110 has brackets disposed on the top and bottom walls 111, 112. In other implementations, the enclosure housing 110 may have brackets disposed on other walls to secure the enclosure housing 110 to the mounting location. In still other implementations, the enclosure housing 110 is adapted to be otherwise secured to a mounting location.

FIGS. 2-4 illustrate one example enclosure housing 110 having a top wall 111, a bottom wall 112 (FIG. 3), a first side wall 113, a second side wall 114 (FIG. 4), and a rear wall 115 (FIG. 4) defining an interior. The enclosure housing 110 also defines an open front 116 that provides access to the interior of the enclosure housing 110 (see FIG. 4). At least one cover 118 is coupled to the enclosure housing 110 to selectively close the open front 116 of the enclosure housing 110. The cover 118 is pivotally coupled to the enclosure housing 110 using one or more hinges 103 disposed on one of the side walls 113, 114 (see FIG. 4). The hinge 103 allows the cover 118 to selectively pivot between a closed position (shown in FIG. 2) and an open position (shown in FIG. 4). The cover 118 can be held closed using locking flanges 117, 119 (FIG. 4). In one implementation, the enclosure housing 110 is molded from a plastic material. In one implementation, the enclosure housing 110 is molded from a plastic material. In another implementation, the enclosure housing 110 is molded from a metal material.

In some implementations, the enclosure housing 110 defines one or more cable ports 101 (FIG. 1) at which cables 180, 190 may enter and exit the interior of the enclosure housing 110. In certain implementations, the cable ports 101 are disposed at the bottom wall 112 of the enclosure housing 110. In other implementations, however, the cable ports 101 may be disposed elsewhere on the enclosure housing 110, such as at the top wall 111, the rear wall 115, or one of the side walls 113, 114.

In some implementations, the enclosure housing 110 is configured to receive one or more cable port modules 150 at the cable ports 101 (e.g., see FIGS. 3 and 4). For example, the cable ports 101 may define openings 155 (FIG. 4) in one or more walls 111-115 of the enclosure housing 110 at which the cable port modules

150 may be received. Each cable port module 150 receives one or more cables 180, 190. In some implementations, a first cable port module 150 may receive one or more service cables and a second cable port module 150 may receive one or more subscriber cables. In other implementations, the same cable port module 150 may receive both service cables and subscriber cables. In still other implementations, the enclosure housing 110 may receive an even greater number of cable port modules 150, each of which may receive service cables and/or subscriber cables.

In certain implementations, a variety of cable port modules 150 may be configured to fit at the same opening 155, thereby enabling a user to select which of the cable port modules 150 to mount at the opening 155. In certain implementations, the cable port modules 150 may be removably mounted to the enclosure housing at the openings 155, thereby enabling a user to switch which cable port modules 150 are mounted at any particular enclosure housing 110.

Two example implementations of cable port modules 150, 150' are shown in FIGS. 3 and 4. Each of the cable port modules 150, 150' includes a port panel 151 configured to be mounted at an opening 155 defined in an enclosure housing 110. For example, the port panel 151 may define one or more openings 152 through which fasteners (e.g., screws, bolts, etc.) may extend to secure the port panel 151 to one of the walls 111-115 of the enclosure housing 110. One or more grommets extend through the port panel 151. Each grommet enables one or more cables 180, 190 or fibers to enter the enclosure housing 110 while inhibiting the ingress of environmental contaminants, such as water, dirt, and rodents.

A first example cable port module 150 includes a first type of grommet 153 and a second type of grommet 154. The second type of grommet 154 is larger than the first type of grommet 153. In the example shown, a cable 180 to be dispensed extends through the smaller grommet 153. A second example cable port module 150' includes only the second type of grommet 154 extending through the port panel 151. Other implementations may include still other types of cable port modules, each having its own configuration of grommets.

Referring to FIGS. 4-15, the mounting plates 121 of the modular plate assemblies 120 are adapted and configured to be mounted to the rear wall 115 of the enclosure housing 110. In some implementations, the rear wall 115 defines one or more openings through which fasteners may extend to secure a mounting plate 121 to the rear wall 115. In other implementations, the rear wall 115 may

include one or more pegs over which the mounting plate 121 may be pressed. In other implementations, one or more panel fastening structures can be attached, secured, or mounted to the rear wall 115. In still other implementations, the rear wall 115 may include one or more pems 104 that are pressed into the rear wall 115 (see FIG. 4). The pems 104 are sized and configured to be inserted through openings 122 defined in the mounting plate 121. The pems 104 define threaded passages that are configured to receive fasteners that secure the mounting plate 121 to the rear wall 115, or can be exterior threaded shanks.

In accordance with some aspects, the mounting plates 121 of the modular plate assemblies 120 extend over a majority of the area of the rear wall 115. In some implementations, a mounting plate 121 has a rectangular shape (e.g., see FIG. 4). In other implementations, a mounting plate 121 may define one or more cutouts 129 or otherwise have a non-rectangular shape (e.g., see FIGS. 9-12). In accordance with other aspects, the mounting plates 121 of the modular plate assemblies 120 may extend over only a portion of the area of the rear wall 115. For example, some implementations, of the mounting plates 121 may be configured to extend over about half of the area of the rear wall 115 (e.g., see FIGS 11-14).

FIGS. 4-7 illustrate a first implementation of a modular plate assembly 120 that includes a cable spool arrangement 130 (FIG. 6) that is rotationally mounted to the modular plate assembly 120. As shown in FIG. 5, the cable spool arrangement 130 includes a first storage area 102, a second storage area 104, and a termination region 108. In some implementations, the termination region 108 is spaced from the second storage area 104, which is spaced from the first storage area 102. In certain implementations, the termination region 108 is spaced forwardly of the second storage region 104, which is spaced forwardly of the first storage region 102 (e.g., see FIG. 4). In certain implementations, the second storage area 104 forms part of a protected fiber management region 106 at which optical fibers can be separated out from optical cables.

At least a first fiber cable (e.g., distribution cable) 180 and at least a second cable (e.g., subscriber cable) 190 enter the housing 110 through cable ports 101. Fibers 192 of the second fiber cable 190 are routed to the termination region 108. The first fiber cable 180 is routed to the first storage area 102 of the cable spool arrangement 130. From the first storage area 102, the first fiber cable 180 is routed to the second storage area 104. The first fiber cable 180 is broken out into

individual optical fibers 182 at the protected fiber management region 106. The fibers 182 are routed to the termination region 108 at which the optical fibers 184 are connected to optical fibers 192 of the second fiber cable 190.

The fiber optic enclosure 100 provides an enclosure from which  
5 lengths of a cable (e.g., a distribution cable) 180 can be dispensed following the mounting of the fiber optic enclosure 100 to a mounting location. The distribution cable 180 is dispensed from the fiber optic enclosure 100 by pulling on an end (e.g., a connectorized end) 185 of the cable 180 (see FIGS. 4 and 7). As the distribution cable 180 is dispensed, the cable spool arrangement 130 rotates about an axis  
10 relative to the stationary mounting plate 121 of the fiber optic enclosure 100. In the event that there is a residual length of distribution cable 180 that is not dispensed during the cable payout, the fiber optic enclosure 100 can store this residual length.

As shown in FIG. 6, the cable spool mounting assembly 120 includes a mounting plate 121 and a cable spool arrangement 130. The mounting plate 121  
15 includes a first side 124 and an opposite second side 123. The mounting plate 121 is adapted for stationary mounting to the rear wall 115 of the housing enclosure. In certain implementations, the second side 123 of the mounting plate 121 is configured to be mounted to an interior surface of the rear wall 115 so that the mounting plate 121 is disposed within the interior of the housing enclosure 110. For  
20 example, in certain implementations, the mounting plate 121 defines one or more fastener openings 122 that are disposed to align with fastener openings provided on the rear wall 115 of the housing enclosure 110. Certain types of mounting plates 121 extend along substantially the entire rear wall 115 of the enclosure housing 110.

The cable spool arrangement 130 includes a drum 131 extending  
25 between first and second support flanges 132, 133 to form a first cable spool 134. The first cable spool 134 defines the first storage region 102 (FIG. 5). In some implementations, the cable spool arrangement 130 also includes a termination region 108 (FIG. 5). In certain implementations, a protected fiber management region 106 (FIG. 5) is defined between the first storage region 102 and the termination region  
30 108. For example, in certain implementations, in FIG. 6, the cable spool arrangement 130 includes a stand-off mounting assembly 140, at which the termination region 108 (FIG. 5) is disposed as will be described in more detail herein. The protected fiber management region 106 (FIG. 5) is defined between the

stand-off mounting assembly 140 and one of the first cable spool 134 (e.g., see FIG. 4).

In certain implementations, the drum portion 131 of the first cable spool 134 is generally cylindrical in shape. The drum portion 131 includes a first  
5 end portion that couples to the first support flange 132 and an oppositely disposed second end portion that couples to the second support flange 133. The support flanges 132, 133, which are generally parallel to each other, are configured to rotate with the drum 131. An outer surface of the drum 131 and inner surfaces of the support flanges 132, 133 define the first storage region 102 (FIG. 5) within which  
10 optical fibers or cables (e.g., distribution cable 180) may be coiled.

The drum portion 131 has a sufficient diameter to provide bend radius protection to optical fibers wound around the fiber spool 134. The drum portion 131 defines a central bore that extends through the drum portion 131. In the subject embodiment, the central bore is adapted to receive a spindle 129 (FIG. 6). In  
15 certain implementations, the spindle 129 extends through the bore in the drum 131 and secures to the second side 123 of the mounting plate 121. For example, in certain implementations, the mounting plate 121 defines openings 125 at which the spindle 129 is fastened to the mounting plate 121. The first cable spool 134 is configured to rotate about the spindle 129 relative to the mounting plate 121.

20 The support flanges 132, 133 are sized and shaped to retain the optical fibers wound around the drum 131 in the first storage region 102. In some implementations, the support flanges 132, 133 are generally circular. In certain implementations, the support flanges 132, 133 have a sufficient diameter to cover a majority of a surface area of the mounting plate 121. In other implementations,  
25 however, one or both of the support flanges 132, 133 may have a smaller diameter.

In some implementations, the cable spool arrangement 130 is configured to be releasably locked in a rotationally fixed position relative to the mounting plate 121. For example, in certain implementations, the mounting plate 121 includes a forwardly extending flange 126 that is configured to extend past the  
30 support flanges 132, 133 of the drum 131 to interact with the front of the cable spool arrangement 130 (see FIG. 6). The forwardly extending flange 126 defines an opening 127. The second flange 133 of the cable spool 134 defines an opening 136 that is disposed to align with the opening 127 of the forwardly extending flange 126 when the cable spool arrangement 130 is disposed in one rotational position. In

certain implementations, the opening 136 is defined in a tab 135 that extends outwardly from the generally annular circumference of the second support flange 133. A fastener 128 may be inserted through the openings 136, 127 to lock the cable spool arrangement 130 in the rotationally fixed position.

5                   In some implementations, the second support flange 133 of the cable spool 134 defines an aperture 139 through which optical fibers or cables (e.g., distribution cable 180) may pass between the first storage area 102 and the front of the cable spool 134. In certain implementations, the cables pass through aperture 139 from the first storage region 102 to the protected fiber management region 106.  
10 For example, in certain implementations, the aperture 139 is located directly adjacent to the protected fiber management region 106 and allows cables from inside the first storage region 102 of the spool to be routed from the drum surface 131 to the protected storage region 106.

The protected fiber management region 106 (FIG. 5) provides a  
15 mounting location for a fan out arrangement. The fan out arrangement includes one or more fan outs 138 disposed between the back side of the stand-off 140 and the front side of the cable spool 134 (see FIG. 4). For example, the fan outs 138 may be disposed on the front side of the second support flange 133 of the cable spool 134. Accordingly, the fan outs 138 rotate with the cable spool 134. The cable 180  
20 wrapped around the supplemental spool region 104 can be routed to one of the fan outs 138 where individual optical fiber are broken out to form individual fiber optic pigtails 182. The pigtails 182 have ends connectorized by fiber optic connectors that are inserted into the fiber optic adapters 147 at the termination field 108 (see FIG. 4). Fiber optic connectors corresponding to fibers 192 of subscriber cables 190 also  
25 may be inserted into the adapters 147 to provide optical connections between the subscriber cables 190 and the cables 180 routed from the first cable spool 134.

The protected fiber management region 106 also can include bend radius protectors 137 attached to the front spool flange 133 (FIG. 6). The bend radius protector 137 can form a supplemental spooling region 104 where cables  
30 routed from drum 131 through aperture 139 can be wrapped/spooled to provide cable storage and cable management. The pigtails 182 also may be wrapped/spooled around the bend radius limiters 137. In some implementations, the supplemental spooling region 104 provides strain relief to the cables (e.g., distribution cables) 180. Axial loads applied to the outside end 185 of the cables

180 will be transferred through the cable 180 to the wrapped portions of the cable 180. However, the axial loads will not be transferred to the connectorized ends of the pigtails 182. Accordingly, pulling on the first cable end 185 will not detach the connectorized pigtails 182 from the adapters 147 at the termination region 108.

5                    Still referring to FIGS. 4-7, a stand-off mount element 140 may be coupled to the front of the first cable spool 134. For example, the stand-off mount element 140 may be secured to the second support flange 133 of the first cable spool 134 so that the stand-off mount element 140 unitarily rotates with the first cable spool 134. The stand-off mount element 140 provides a front plate 141 where  
10 optical components (e.g., fiber optic adapters, splitters, splice trays, spools, bend radius protector, etc.) can be mounted. For example, fiber optic adapters 147 may form a termination region 108 on the front plate 141. Cable management structures (e.g., bend radius limiters, spools, etc.) 148 also may be provided on the stand-off plate 141. In the example shown, two opposing bend radius limiters 148 form a  
15 fiber spool on the stand-off plate 141.

In certain implementations, one or more legs 142 extend rearwardly from the stand-off plate 141 of the stand-off mount element 140. Each leg 142 defines an opening 143 configured to receive a peg 145 or fastener to secure the feet 143 to the front support flange 133 of the cable spool 134. In the example shown,  
20 the stand-off mount element 140 includes four legs 142. In other implementations, however, the stand-off mount element 140 may include greater or fewer legs 142. In still other implementations, the legs 142 may be unitary with the cable spool 134 and secure to the stand-off plate 141.

The stand-off plate 141 is forwardly offset from the front side of the  
25 spool flange 133, thereby forming the protected fiber management region 106 between the front side of the first cable spool 134 and back side of the stand-off mount element 140 (e.g., see FIG. 4). The separated fibers 184 in the protected fiber management region 106 are routed around the bend radius limiters 137 or other management structures on the front of the cable spool 134 to the stand-off mount  
30 element 140. In the example shown, the separated fibers 184 have connectorized ends that plug into first ports of termination adapters 147 disposed at the stand-off plate 141.

Components disposed on the stand-off mount element 140 are spaced forwardly of the cable spool 134. Accordingly, the fiber optic adapters 147 are

disposed on a different layer or plane than the fan outs 138, which are disposed on a different layer or plane than the first cable spool 134. In certain implementations, the fan outs 138 are disposed on the same layer or plane as the bend radius limiters 137. The spacing between the cable spool layer and the stand-off layer enhances slack storage of optical fibers routed through the protected fiber management region 106. In some implementations, the spacing between the cable spool layer and the stand-off layer inhibits over-bending of the fibers when routed between the fan out arrangements 138 and the fiber optic adapters 147.

In certain implementations, the termination adapters 147 are included in one or more termination modules 146. In certain implementations, the adapter modules 146 are sliding adapter modules. Similar sliding adapter modules have been described in commonly owned U.S. Patent Nos. 5,497,444; 5,717,810; 6,591,051; and 7,416,349, the disclosures of which are hereby incorporated by reference. In the example shown, the stand-off mount element 140 includes six sliding adapter modules 146, each holding four fiber optic adapters 147. In other implementations, the stand-off mount element 140 may include greater or fewer sliding adapter modules 146 holding greater or fewer termination adapters 147. In certain implementations, sufficient slack length of the separated fibers 182 is left between the fan out arrangement 138 and the adapters 147 to accommodate the sliding movement of the sliding adapter modules 146.

In some implementations, the cable spool arrangement 130 may be precabled at the factory or manufacturing center with one or more optical fibers or cables 180. For example, one or more multi-fiber cables 180 may be wound around the storage area 102 of the cable spool 134. In certain implementations, the multi-fiber cables 180 may be precabled to pass through the aperture 139 to the fan out arrangement 138 disposed in the protected fiber management region 106 (e.g., see FIG. 4 and 7). The fan out arrangement 138 separates the cables 180 into pigtails 182. In certain implementations, the fan out arrangement 138 also upjackets the fibers 182. In other implementations, however, the cable spool arrangement 130 may be cabled with the one or more multi-fiber cables 180 after the enclosure housing 110 is deployed.

The precabled cable spool mounting assembly 120 is mounted within the enclosure housing 110. For example, the mounting plate 121 is secured to a rear wall 115 of the enclosure housing 110. When the mounting assembly 120 is

installed in the enclosure housing 110, the second ends of the multi-fiber cables 180 may be routed through one of the cable ports so that the second ends are disposed outside of the enclosure housing 110. In some implementations, the second ends of the one or more precabled multi-fiber cables 180 may be terminated at one or more multi-fiber connectors 185. In other implementations, the second end of a precabled multi-fiber cable 180 is separated into two or more connectorized optical fibers (jacketed or unjacketed). In still other implementations, the second ends of the multi-fiber cables 180 are configured to be spliced to one or more optical fiber cables.

10 A user may pull on the second ends to dispense the stored length of cable 180 from the cable spool arrangement 130. For example, a user may pull a second end of a cable 180 to a fiber distribution hub, drop terminal, or other network connection. Because the adapters 147 rotate in unison with the cable spool arrangement 130, the second end of each multi-fiber cable 180 may be paid out without interfering with the cabling of the first ends of the multi-fiber cable 180. When the second ends 185 of the one or more multi-fiber cables 180 are each connected to the network, the fastener 128 may be inserted through aligned openings 135, 128 to secure the cable spool arrangement 130 in a fixed rotational position relative to the mounting plate 121.

20 When the cable spool arrangement 130 is secured in a rotationally fixed position, additional optical fiber cables may be routed into the enclosure housing 110 to secure to second ports of the termination adapters 147. For example, the additional optical fiber cables may be routed into the enclosure through one or more cable ports defined in the enclosure housing 110. The termination adapters 25 147 are configured to align and optically couple connectors terminating the additional optical cables with the connectorized ends of the multi-fiber cable 180 plugged into the first ports of the adapters 147.

FIG. 8 illustrates a second example modular plate assembly 220 implemented as a second example cable spool mounting assembly 120 for mounting within the enclosure housing 110. The second cable spool mounting assembly 220 includes a rectangular mounting plate 221 that extends over a majority of the rear wall 115. A cable spool arrangement 241 is disposed on the mounting plate 221 and is configured to rotate relative to the mounting plate 221 (e.g., about a spindle). Since the mounting plate 221 is configured to remain stationary on the rear wall 115,

the cable spool arrangement 241 is configured to rotate relative to the enclosure housing 110.

The cable spool arrangement 241 defines a storage area including a drum about which optical fibers or cables (e.g. of a multi-fiber distribution cable 180) may be coiled. The drum has a sufficient diameter to provide bend radius protection to optical fibers wound around the fiber spool arrangement 241. Rotating the cable spool arrangement 241 dispenses or retracts the optical fibers or cables wound around the drum. In some implementations, the cable spool arrangement 241 may be locked in a rotational orientation relative to the mounting plate 221.

In certain implementations, one or more splice trays 242 are disposed on the cable spool arrangement 241. Each splice tray 242 is configured to optically couple together two or more optical fibers. For example, each splice tray 242 may optically couple together at least one optical fiber of the distribution cable 180 and at least one optical fiber of a subscriber cable 190 (FIG. 1). Certain types of splice tray 242 may be pivoted between open and closed positions to provide access to the splices contained therein. In certain implementations, the splice trays 242 are stacked upon each other so that a bottom of the stack extends over the cable spool arrangement 241 and a top of the stack faces the open front 116 of the enclosure housing 110.

One or more fiber management structures may be disposed on the cable spool arrangement 241. For example, in certain implementations, one or more bend radius limiters 243 are disposed on a front of the cable spool arrangement 241. In the example shown, four bend radius limiters are disposed at a top, bottom, and sides of the cable spool arrangement 241. The cable spool arrangement 241 also defines one or more channels 244 through which optical fibers or cables can pass between the storage area of the cable spool arrangement 241 and the splice trays 242. In the example shown, the cable spool arrangement 241 defines four openings 244 spaced between the bend radius limiters 243.

In some implementations, the second cable spool mounting assembly 220 may be precabled at the factory or manufacturing center with one or more distribution cables 180. The one or more distribution cables 180 may be wound around the drum in the storage area of the second cable spool arrangement 241. In certain implementations, the first end of each distribution cable fiber may be routed through one of the openings 244 in the cable spool arrangement 241, around one or

more of the bend radius limiters 243, and into one of the splice trays 242 disposed at a front of the cable spool arrangement 241 (e.g., see FIG. 8).

The precabled second cable spool mounting assembly 220 is mounted within the enclosure housing 110 to deploy the one or more distribution cables 180.

5 For example, the mounting plate 221 is secured to the rear wall 115 of the enclosure housing 110 as described above. The second ends 185 of the distribution cables 180 may be routed out of the housing 110 through one of the cable port modules 101 so that the second ends 185 are disposed outside of the enclosure housing 110 (e.g., see FIG. 8). Additional optical fiber cables (e.g., subscriber cables 190 of FIG. 1) may

10 be routed into the enclosure housing 110 (e.g., through the same or other port modules 101). Unconnectorized ends of the subscriber cable fibers may be optically coupled to the first ends of the service cable fibers at the splice trays 242. For example, each subscriber cable fiber may be routed from the respective cable port module 101 to the respective splice tray 242 (e.g., either directly or after being

15 wound around some of the bend radius limiters 243 of the second cable spool mounting assembly 220.

FIGS. 9 and 10 illustrate a third example modular plate assembly 120 implemented as a termination panel mounting assembly 320. The termination panel mounting assembly 320 includes a mounting plate 321 that is sized to extend over a

20 majority of the rear wall 115 of the enclosure housing 110. In particular, the mounting plate 321 has a height that extends over a majority of a height of the rear wall 115 and the mounting plate 321 has a width that extends over a majority of a width of the rear wall 115. The mounting plate 321 defines one or more apertures 322 or pems that facilitate connection to the rear wall 115.

25 Certain types of mounting plates 321 define one or more cutouts 329. In the example shown in FIG. 9, the mounting plate 321 defines a cutout 329 at an upper, right corner of the mounting plate 321, thereby resulting in an L-shaped mounting panel 321. In other implementations, the mounting plate 321 may have other configurations.

30 A termination plate 351 is coupled to the mounting plate 321. In some implementations, the termination plate 351 is a bent portion of the mounting plate 321. In other implementations, the termination plate 351 is a separate piece that attaches to the mounting plate 321 (e.g., via snap-fit connection, latches, fasteners, etc.). In the example shown, the termination plate 351 extends vertically

with a first side facing the first side wall 113 and a second side facing the second side wall 114 of the enclosure housing 110. In other implementations, the termination plate 351 has a first side that faces the rear wall 115 and a second side that faces the open front 116 of the enclosure housing 110.

5                   One or more termination adapters 352 are disposed on the termination plate 351. Each termination adapter 352 has a first port and a second port. In the example shown, the first port faces the first side wall 113 and the second port faces the second side wall 114 of the enclosure housing 110. In other implementations, the adapter ports may face the rear wall 115 and open front 116 of  
10 the enclosure housing 110. In still other implementations, the adapters 352 and the termination plate 351 may be oriented at any desired angle relative to the mounting plate 321. In certain implementations, adapter dust caps 353 may be provided at the adapter ports.

                  In certain implementations, one or more cable management structures  
15 may be provided on the termination plate 351 or mounting plate 321. In the example shown, four bend radius limiters 354 are disposed on a front of the mounting plate 321. The bend radius limiters 354 are configured to form two fiber spools. In certain implementations, the bend radius limiters 354 form a first fiber spool located between the termination plate 351 and the first side wall 113 of the  
20 housing 110 and a second fiber spool located between the termination plate 351 and the second side wall 114 of the housing 110. In certain implementations, the bend radius limiters 354 are located substantially below the termination plate 351. In other implementations, the same or other types of cable management structures may be disposed in different configurations.

25                   During deployment of the termination panel mounting assembly 350, one or more optical fiber cables (e.g., distribution cables 180) may be routed into the enclosure housing 110 (e.g., through one or more port modules 101). Connectorized ends of the distribution cables may be secured to the first ports of the termination adapters 352. Additional optical fiber cables (e.g., subscriber cables 190) also may  
30 be routed into the enclosure housing 110 (e.g., through the same or other port modules 101). Connectorized ends of the subscriber cables may be secured to the second ports of the termination adapters 352, which align and optically couple together the connectorized ends of the subscriber cables with the connectorized ends of the service cables.

In certain implementations, a cover 330 may be positioned within the enclosure housing 110 to enclose or otherwise inhibit access to at least a portion of the optical components location within the enclosure housing 110 (see FIG. 10). In some implementations, the cover 330 extends from one of the side walls 113, 114 to the termination plate 351 to block access to at least some of the fiber connectors plugged into one side of the termination adapters 352. In the example shown, the cover 330 extends from the second side wall 114 to the termination plate 351 to block access to any cables (e.g., service cables) entering the enclosure housing 110 through the left cable ports 101, while allowing access to the cables (e.g., subscriber cables) entering the enclosure housing 110 through the right cable ports 101. In other implementations, the cover 330 may extend across the entire termination panel mounting assembly 320.

In the example shown, the cover 330 includes a front plate 366 and a side plate 367 forming an L-shaped flange. The front plate 366 extends from the second side wall 114 of the enclosure to the termination plate 351, thereby covering the bend radius limiters 354 located to the left of the termination plate 351. The front plate 366 also blocks access to the second ports of the adapters 352 from the open front 116 of the enclosure housing 110. The side plate 367 extends downwardly from the termination plate 351 to inhibit access to the second side of the termination plate 351 from the right side of the enclosure housing interior. In other implementations, the cover 330 may include two side plates and be located at a central portion of the enclosure interior. In still other implementations, the cover 330 may include a planar panel that extends across the open front 116 of the enclosure housing 110.

In some implementations, the cover 330 defines one or more finger holes 368 by which the cover 330 may be installed and/or removed from the enclosure housing 110. For example, in one implementation, the front plate 366 of the cover 330 defines two finger holes 368. In other implementations, the cover 330 may include a handle or other structure to facilitate manipulation of the cover 330. In certain implementations, the cover 330 may be secured in place by a lock arrangement 369.

FIGS. 11-13 illustrate fourth and fifth example modular plate assemblies 120 implemented as an example drop-in plate mounting assembly 400 and an example sliding adapter mounting assembly 450, respectively. The fourth

and fifth modular plate assemblies 400, 450 each extend over only a portion of the rear wall 115. For example, each of the fourth and fifth modular plate assemblies 400, 450 includes a mounting plate 401, 451 that has a height that extends substantially over a height of the rear wall 115 and a width that extends over less than half of the rear wall 115. In some implementations, the mounting plate 401, 451 is rectangular. In other implementations, the mounting plate 401, 451 is generally rectangular with notched corners. The mounting plate 401, 451 defines one or more apertures 402, 452 through which fasteners extend to secure the mounting plate 401, 451 to the enclosure housing 110.

10 The drop-in plate assembly 400 includes a drop-in plate 411 defining one or more holes 412 at which adapters 413 may be secured. In some implementations, the drop-in plate 411 is formed from a bent portion of the mounting plate 401. In other implementations, the drop-in plate 411 is attached to the mounting plate 401. In some implementations, the drop-in plate 411 extends generally horizontally (i.e., parallel with the top wall 111 and bottom wall 112 of the enclosure housing 110). In other implementations, the drop-in plate 411 may be angled relative to the top and bottom walls 111, 112.

In certain implementations, the adapters 413 are snap-fit or press-fit into the holes 412 of the drop-in plate 411. In some implementations, the adapters 413 are configured to receive and align multi-fiber (MPO) connectors. A description of example MPO connectors can be found in U.S. Patent No. 5,214,730, the disclosure of which is hereby incorporated herein by reference. In certain implementations, the adapters 413 are configured to receive and align hardened multi-fiber adapters (HMFOCs). A description of example HMFOCs can be found in U.S. Patent No. 6,648,520, the disclosure of which is hereby incorporated herein by reference. In other implementations, the adapters 413 are configured to receive and align single optical connectors (e.g., LC-connectors, SC-connectors, ST-connectors, FC-connectors, etc.).

30 In certain implementations, the drop-in plate assembly 400 includes fiber management structures to facilitate routing optical fibers or cable between the adapters 413 and other components within the enclosure housing 110. For example, the drop-in plate assembly 400 may include bend radius limiters extending forwardly from the mounting plate 401. In the example shown, smaller bend radius limiters 414 are disposed above the drop-in plate 411 and larger bend radius limiters

415 are disposed below the drop-in plate 411. The larger bend radius limiters 415 form a slack storage spool.

The example sliding adapter mounting assembly 450 includes at least one sliding adapter module 461. Each sliding adapter module 461 includes a  
5 plurality of adapters that are slideably mounted to rails. In the example shown, each sliding adapter module 461 includes a row of six adapters. In the example shown, the example sliding adapter mounting assembly 450 includes a first group of two sliding adapter modules 461 spaced from another group of two sliding adapter  
10 modules 461. In other implementations, however, the example sliding adapter mounting assembly 450 may greater or fewer groups each having greater or fewer sliding adapter modules 461.

In some implementations, the sliding adapter modules 461 are configured to slide generally horizontally in a forward-rearward direction relative to the enclosure housing 110. In certain implementations, the sliding adapter modules  
15 461 slide at an angle (e.g., at least partially in an upward-downward direction). In the example shown, the adapter modules 461 are oriented so that ports of the adapter modules 461 face towards the upper and lower walls 111, 112 of the enclosure housing 110. In other implementations, the adapter modules 461 may be oriented to face the side walls 113, 114 of the enclosure housing 110.

20 As noted above, additional details pertaining to example sliding adapter modules are provided in commonly owned U.S. Pat. Nos. 5,497,444; 5,717,810; 6,591,051; and 7,416,349, the disclosures of which are incorporated above.

The example sliding adapter mounting assembly 450 also includes a  
25 fanout arrangement 462 including one or more fanouts. Each fanout separates optical fibers from a multi-fiber cable. In the example shown, the fanout arrangement 462 is disposed between the two groups of adapter modules 461. In other implementations, the fanout arrangement 462 may be disposed elsewhere on the mounting panel 401. In certain implementations, two or more fanouts are  
30 stacked together so that a bottom of the stack abuts the mounting panel 401 and a top of the stack faces the open front 116 of the enclosure housing 110.

The example sliding adapter mounting assembly 450 also includes fiber management structures to facilitate routing optical fibers or cables from the sliding adapter modules 461 to other components within the enclosure housing 110.

In certain implementations, the sliding adapter mounting assembly 450 may include one or more bend radius limiters 463 (FIG. 11). In the example shown, each group of adapter modules 461 has two corresponding bend radius limiters 463 at a bottom of the mounting panel 401 and at least one bend radius limiter 463 at a top of the mounting panel 401.

In certain implementations, the mounting panel 401 also may include guide flanges 464 (FIG. 11) that facilitates retaining optical fibers or cables within the area of the mounting panel 401. In some implementations, the mounting panel 401 defines a guide flange 464 on each side of the mounting panel 401. In the example shown in FIG. 11, each guide flange 464 is bent forwardly from the mounting panel 401. In other implementations, each guide flange 464 may be a separately attached piece. In the example shown, each guide flange 464 extends vertically to inhibit the fibers from spilling into the rest of the enclosure interior.

In the example shown in FIG. 13, the mounting panel 401 includes retaining flanges 465 defining a guide channel through which one or more fibers or cables may be routed. The retaining flanges 465 include a first portion extending forwardly of the mounting plate and a second portion that extends across the fibers disposed in the channel. For example, each retaining flange 465 may have an L-shaped cross-section. The mounting panel 401 of FIG. 13 also includes another type of guide flange 466 is T-shaped. The guide flange 466 is disposed between the two groups of sliding adapter modules 461.

In some implementations, the sliding adapter mounting assembly 450 may be precabled at the factory or manufacturing center with one or more intermediate fibers 467. Some example intermediate fibers 467 each include a single optical fiber. First ends of the intermediate fibers 467 are connectorized and plugged into first ports of the sliding adapter modules 461. Second ends of the intermediate fibers 467 are joined at a fanout arrangement 462 to form one or more multi-fiber cables 417. In certain implementations, the second ends of the multi-fiber cables 417 are connectorized (e.g., see optical connectors 418 of FIG. 13). In other implementations, the second ends of the multi-fiber cables 417 are unconnectorized.

The separate intermediate fibers 467 are routed around from the sliding adapter modules 461 and around the fiber management structures (e.g., bend radius limiters 463 and/or any of flanges 464-466). In certain implementations,

sufficient slack length of the separated fibers 467 is left between the fanout arrangement 462 and the adapter modules 461 to accommodate the sliding movement of the sliding adapter modules 461. In other implementations, however, the sliding adapter mounting assembly 450 may be cabled after the enclosure housing 110 is deployed. As shown in FIG. 13, the connectors 418 terminating the multi-fiber cables 417 may be plugged into the first ports of the adapters 418 of the drop-in plate assembly 400 when both the drop-in plate assembly 400 and the sliding adapter mounting assembly 450 are disposed within the enclosure housing 110.

10 A first set of additional optical fiber cables (e.g., distribution cables 180) may be routed into the enclosure housing 110 (e.g., through one or more ports 101). Connectorized ends of the first set of optical fiber cables 180 may be plugged into the second ports of the adapters 413 at the drop-in plate assembly 400. A second set of additional optical fiber cables (e.g., subscriber cables 190) may be routed into the enclosure housing 110 (e.g., through the same or other port modules 101). Connectorized ends of the second set of optical fiber cables 190 may be secured to second ports of the sliding adapter modules 461. Accordingly, optical signals carried by the first group of optical fibers 182 may be passed to the multi-fiber cables 417 via the drop-in adapters 413 and then to the second group of optical fibers 192 via the sliding adapter modules 461.

FIG. 14 illustrates a sixth example modular plate assemblies 120 implemented as an example splice tray mounting assembly 500. In the example shown, the splice tray mounting assembly 500 extends over only a portion of the rear wall 115. For example, the splice tray mounting assembly 500 includes a mounting plate 501 that has a height that extends substantially over a height of the rear wall 115 and a width that extends over less than half of the rear wall 115. In some implementations, the mounting plate 501 is rectangular. In other implementations, the mounting plate 501 is generally rectangular with notched corners. In still other implementations, the mounting plate 501 has notched sides. The mounting plate 501 defines one or more apertures 502 through which fasteners extend to secure the mount plate 501 to the enclosure housing 110.

In certain implementations, one or more splice trays 511 are disposed on the mounting plate 501. Each splice tray 511 is configured to optically couple together two or more optical fibers. For example, each splice tray 511 may optically

couple together at least one optical fiber of a service cable and at least one optical fiber of a subscriber cable or an intermediate fiber. Certain types of splice trays 511 may be pivoted between open and closed positions to provide access to the splices contained therein. In certain implementations, the splice trays 511 are stacked upon  
5 each other so that a bottom of the stack extends over the mounting plate 501 and a top of the stack faces the open front 116 of the enclosure housing 110.

One or more support members 503 may aid in securing the splice tray 511 to the mounting plate 501. In FIG. 14, a support member 503 is illustrated as at least one flange bent forwardly from the mounting plate 501 at one side of the splice  
10 tray 511. One or more fiber management structures may be disposed on the mounting plate 501 about the splice tray arrangement 511. For example, in certain implementations, one or more bend radius limiters 512 are disposed on a front of the mounting plate 501. In the example shown, four bend radius limiters 512 are disposed at four corners of the splice tray arrangement 511. In other  
15 implementations, greater or fewer bend radius limiters 512 may be disposed in other configurations.

When the splice tray mounting assembly 500 is installed within the interior of the enclosure housing 110, two or more optical fibers may be spliced at the splice trays 511. In some implementations, one or more optical fiber cables  
20 (e.g., service cables) may be routed into the enclosure housing 110 through one or more modular cable ports 101. One or more additional optical fiber cables (e.g., subscriber cables) also may be routed into the enclosure housing 110 through the same or other modular cable ports 101. In some implementations, unconnectorized ends of both groups of optical fiber cables are coupled together at the splice trays  
25 511.

In other implementations, the splice tray mounting assembly 500 is disposed within the enclosure housing 110 with the sliding adapter mounting assembly 450. In such implementations, the splice trays 511 are configured to optically couple together unconnectorized ends of a first group of optical fibers (e.g.,  
30 from one or more service cables) to unconnectorized ends of intermediate fibers 467 plugged into the sliding adapter modules 461 of the sliding adapter mounting assembly 450.

As shown in FIG. 15, an example cover 600 may be positioned within the enclosure housing 110 to enclose or otherwise inhibit access to at least a

portion of the optical components location within the enclosure housing 110. In some implementations, the cover 600 extends from one of the side walls 113, 114 to an intermediate portion of the enclosure interior to block access to at least some of the fiber optical connectors disposed within the enclosure interior. In the example  
5 shown, the cover 600 extends from the second side wall 114 to cover the drop-in mounting assembly 400. Accordingly, the cover 600 blocks access to the drop-in adapters 413 and to any fiber optic connectors plugged into the drop-in adapters 413. In other implementations, the cover 600 may extend across both the drop-in mounting assembly 400 and the sliding adapter module assembly 450. In still other  
10 implementations, the cover 600 may extend across the splice tray mounting assembly 500.

In the example shown, the cover 600 includes a front plate 601 and a side plate 602 forming a generally L-shaped flange. The front plate 601 extends from one side of the mounting plate 401 of the drop-in mounting assembly 400 (or  
15 plate 501 of splice tray assembly 500) to the opposite side of the mounting plate 401. The front plate 601 also extends a majority of the distance between the top wall 111 and the bottom wall 112. The side plate 602 extends from the front plate 601 to the rear wall 115 of the enclosure housing 110. In certain implementations, the side plate 602 defines an opening, cutout, or other routing channel 603 through  
20 which optical fibers may be routed between the interior spaced enclosed by the cover 600 and the interior space accessible through the open front 116 of the enclosure housing 110. In other implementations, the cover 600 may include two side plates and be located at a central portion of the enclosure interior. In still other implementations, the cover 600 may include a planar panel that extends across the  
25 open front 116 of the enclosure housing 110.

In some implementations, the cover 600 defines one or more finger holes 604 by which the cover 600 may be installed and/or removed from the enclosure housing 110. For example, in one implementation, the front panel 601 of the cover 600 defines two finger holes 604. In other implementations, the cover 600  
30 may include a handle or other structure to facilitate manipulation of the cover 600. In certain implementations, the cover 600 may be secured in place by a lock arrangement 605.

In some implementations, implementations of the fiber termination enclosure 100 disclosed above may be used in cell site applications. For example,

certain implementations 992 of the fiber termination enclosure 100 may be mounted to a top of a cellular tower or in a hut at a base of a cellular tower. FIG. 16 is a schematic representation of one example telecommunications network 910 utilizing such a cell site application. In the depicted embodiment, the telecommunications network 910 is a cellular network 910. The cellular network 910 includes a cell site 912, a demarcation point 914, a backhaul 916 and a core network 918.

The cell site 912 creates an area of telecommunications coverage (i.e., a cell) in the cellular network 910. In one embodiment, the cell site 912 includes a tower or mast 920 and a hut 922 that is in communication with the tower 920. In another embodiment, the cell site 912 includes a hut 922 that is in communication with an antenna or a plurality of antenna. The tower 920 includes a base portion 924 and an oppositely disposed top portion 926. In the depicted embodiment, the base portion 924 is rigidly fixed at a mounting location. In one embodiment, the top portion 926 of the tower 920 may include an antenna. The remote transceiver 928 may be integrated into the antenna.

The top portion 926 includes a remote transceiver 928 (e.g., a remote radio head). The remote transceiver 928 is adapted to transmit and receive signals to and from devices (e.g., mobile phones, smart-phones, devices with wireless internet connectivity, etc.) of subscribers to the cellular network 910. In certain implementations, the top portion 926 of the tower 920 includes multiple remote transceivers. In certain implementations, some of the remote transceivers are backup remote transceivers. The top portion 926 of the tower 920 further includes a multi-service terminal 930. Terminal that are suitable for use as the multi-service terminal 930 of the present disclosure have been described in U.S. Patent Nos. 7,292,763 and 7,512,304, the disclosures of which are hereby incorporated by reference in their entirety.

The fiber optic cable 952 from the multi-service terminal 930 is routed to an enclosure 992 at the hut 922. The fiber optic cable 952 includes a first end 962 and an oppositely disposed second end 964. The first end 962 includes a plurality of connectors that are engaged to the inner ports of the fiber optic adapters of the multi-service terminal 930. The second end 964 includes a multi-fiber connector that is adapted for engagement to one of the first and second multi-fiber connectors of the enclosure 992.

A jumper cable 966 provides communication between the enclosure 992 and the base transceiver station 990. The jumper cable 966 includes a first end 968 and an oppositely disposed second end 970. The first end 968 is connected to the enclosure 992 while the second end 970 is connected to the base transceiver station 990. In one embodiment, the first end 968 includes a plurality of connectors that are engaged with the second side 924 of the fiber optic adapters 920 of the enclosure 992. In one embodiment, the second end 970 of the jumper cable 966 includes a multi-fiber connector that is engaged to the base transceiver station 990. In another embodiment, the second end 970 includes a plurality of connectors that is engaged to the base transceiver station 990.

The base transceiver station 990 is in communication with a telecommunications equipment rack 980 through a multi-fiber patch cable 982. The telecommunications equipment rack 980 is disposed in the hut 922. In one embodiment, the telecommunications equipment rack 980 includes any one or more of a power distribution unit, a fiber distribution unit, a transport switch, a mobile router, a media converter, an Ethernet panel, a DSX panel, protection and a battery. The telecommunications equipment rack 980 is in communication with the demarcation point 914. The demarcation point 914 is in communication with the backhaul 916, which is in communication with the core network 918.

Further details on such a telecommunications network 910 may be found in U.S. Patent Application No. 13/087,022, filed April 14, 2011, and titled "Fiber to the Antenna," the disclosure of which is hereby incorporated herein by reference.

In other implementations, the fiber termination enclosure disclosed above may be used with other applications. For example, some fiber termination enclosures may be installed at facilities, such as multiple dwelling units, apartments, condominiums, businesses, etc., to provide a subscriber access point to the fiber optic network. Other fiber termination enclosures may be installed on towers located on top of high rise buildings or other tall structures. Various implementations of fiber termination enclosures may be installed at walls, H-frame racks, and poles.

Having described the preferred aspects and implementations of the present disclosure, modifications and equivalents of the disclosed concepts may readily occur to one skilled in the art. For example, one or more pass-through

connections may be provided with any of the above-described types of modular plate assemblies 120. However, it is intended that such modifications and equivalents be included within the scope of the claims which are appended hereto.

**CLAIMS:**

1. A fiber termination enclosure system comprising:
  - an enclosure housing including a top wall, a bottom wall, a first side wall, a second side wall, and a rear wall defining an interior having an open front, the enclosure including a door for selectively covering the open front; and
  - a plurality of modular plate assemblies that are each configured to be selectively mounted within the interior of the enclosure housing, each modular plate assembly including a mounting plate that is configured to be coupled to the rear wall of the enclosure housing; the plurality of modular plate assemblies including:
    - a termination panel plate assembly including a plurality of termination adapters coupled to the respective mounting plate;
    - a splice tray plate assembly including at least one splice tray disposed on the respective mounting plate;
    - a cable spool plate assembly including a cable spool disposed on the respective mounting plate, the cable spool being configured to rotate relative to the enclosure housing; and
    - a drop-in plate assembly including at least one termination adapter disposed on a horizontally extending drop-in plate disposed on the respective mounting plate.
2. The fiber termination enclosure system of claim 1, further comprising a fanout arrangement coupled to a forward side of the cable spool.
3. The fiber termination enclosure system of any of claims 1-2, wherein a stand-off mount element is coupled to the cable spool of the cable spool plate assembly, the stand-off mount element being configured to rotate with the cable spool relative to the enclosure housing, the stand-off mount element including a plurality of termination adapters.
4. The fiber termination enclosure system of claim 3, wherein the stand-off mount element including a mounting surface spaced forwardly of the cable spool arrangement, wherein the termination adapters are located at the mount surface.

5. The fiber termination enclosure system of any of claims 3 and 4, wherein the termination adapters of the stand-off mount element are disposed on sliding adapter modules.
6. The fiber termination enclosure of claim 5, wherein the sliding adapter modules are oriented so that the termination adapters have insertion axes extending parallel with the mounting surface of the stand-off mount element.
7. The fiber termination enclosure of any of claims 1-6, wherein the cable spool defines a locking opening that is configured to align with a flange extending forwardly of the mounting plate when the cable spool is oriented in a first rotational position relative to the mounting plate, wherein insertion of a fastener through both a fastening opening defined in the flange and the locking opening defined in the cable spool releasably fixes the cable spool arrangement in the first rotational position.
8. The fiber termination enclosure of any of claims 1-7, wherein the cable spool arrangement is mounted on a bearing that is mounted to the panel.
9. The fiber termination enclosure system of any of claims 1-3, wherein at least one splice tray is mounted to the cable spool of the cable spool plate assembly, the splice tray being configured to rotate with the cable spool relative to the enclosure housing.
10. The fiber termination enclosure system of claim 9, wherein a plurality of splice trays are stacked on the cable spool, wherein a bottom of the stack faces the cable spool and a top of the stack faces the open front of the enclosure housing.
11. The fiber termination enclosure system of claim 1, wherein the termination plate panel assembly includes a vertically extending termination plate on which the termination adapters are disposed.

12. The fiber termination enclosure system of claim 1, wherein the termination adapters are disposed on at least one sliding adapter module that is disposed on the mounting plate of the termination panel plate assembly.
13. The fiber termination enclosure system of claim 1, wherein the termination adapter disposed on the drop-in plate is configured to receive two multi-fiber connectors.
14. The fiber termination enclosure system of any of claims 1, 12, and 13, wherein the modular plate assembly has a height that extends over a majority of a height of the rear wall and a width that extends over less than half of a width of the rear wall when the modular plate assembly is mounted to the rear wall of the enclosure housing.
15. The fiber termination enclosure system of any of claims 1, and 11-14, further comprising a cover that is configured to mount within the interior of the enclosure housing to cover and inhibit access to at least a portion of the modular plate assembly disposed within the enclosure housing.
16. The fiber termination enclosure of any of claims 1-15, wherein the bottom wall of the enclosure defines at least one opening at which at least one cable port can be mounted.
17. The fiber termination enclosure of claim 16, further comprising a port arrangement including a port panel through which at least one cable port extends, the port panel being coupled to the bottom wall of the enclosure at the opening defined in the bottom wall.
18. The fiber termination enclosure of any of claims 1-17, further comprising a plurality of brackets coupled to the top and bottom walls of the enclosure, the brackets being configured to secure the enclosure to a surface.
19. The fiber termination enclosure of any of claims 1-18, wherein the cable spool has first and second spaced, parallel support walls located at forward and

rearward ends, respectively, of a drum, the cable spool being configured to receive the optical fiber around the drum between the support walls.

20. The fiber termination enclosure of claim 19, further comprising at least one bend radius limiter coupled to a forward side of the first support wall of the cable spool arrangement.

21. The fiber termination enclosure of claim 19, wherein the cable spool has a generally annular circumference.

22. The fiber termination enclosure system of claim 1, wherein at least some of the modular plate assemblies are sized to extend over a majority of an area of the rear wall, wherein the enclosure housing is configured to receive only one of the these modular plate assemblies at any given time.

23. The fiber termination enclosure system of claim 2, wherein the cable spool plate assembly has a height that is sized to extend over a majority of a height of the rear wall and a width that is sized to extend over a majority of a width of the rear wall when the mounting plate of the cable spool plate assembly is coupled to the rear wall of the enclosure housing.

24. The fiber termination enclosure system of claim 1, wherein the termination panel plate assembly has a height that is sized to extend over a majority of a height of the rear wall and a width that is sized to extend over a majority of a width of the rear wall when the mounting plate of the termination panel plate assembly is coupled to the rear wall of the enclosure housing.

25. The fiber termination enclosure system of any of claims 1 and 11, wherein the termination plate is formed from a bent portion of the mounting plate.

26. The fiber termination enclosure system of any of claims 1 and 12, wherein the drop-in plate assembly includes bend radius limiters disposed below the drop-in plate.

27. The fiber termination enclosure system of any of claims 1 and 13, wherein the termination adapter is configured to receive hardened multi-fiber connectors.

28. The fiber termination enclosure system of claim 15, wherein the cover inhibits access to one of the modular plate assemblies disposed within the enclosure housing.

29. A method of assembling a fiber termination enclosure comprising:  
providing an enclosure housing including a top wall, a bottom wall, a first side wall, a second side wall, and a rear wall defining an interior having an open front, the enclosure including a door for selectively covering the open front;  
selecting at least one of a plurality of modular plate assemblies that are each adapted and configured to be mounted within the interior of the enclosure housing, each modular plate assembly including a mounting plate that is configured to be coupled to the rear wall of the enclosure housing; the plurality of modular plate assemblies including:

a termination panel plate assembly including a plurality of termination adapters coupled to the respective mounting plate;

a splice tray plate assembly including at least one splice tray disposed on the respective mounting plate;

a cable spool plate assembly including a cable spool disposed on the respective mounting plate, the cable spool being configured to rotate relative to the enclosure housing; and

a drop-in plate assembly including at least one termination adapter disposed on a horizontally extending drop-in plate disposed on the respective mounting plate; and

disposing the selected modular plate assembly within the interior of the enclosure housing and coupling the mounting plate of the selected modular plate assembly to the rear wall of the enclosure housing.

30. The method of claim 29, further comprising precabbling the selected modular plate assembly before disposing the selected modular plate assembly in the enclosure housing.

31. The method of claim 29, further comprising:
- selecting at least one of a plurality of cable port modules, each cable port module of the plurality of having at least one gasket disposed on a mounting plate;
  - and
  - mounting the selected cable port module to the enclosure housing by coupling the mounting plate of the selected cable port module to the bottom wall of the enclosure housing.

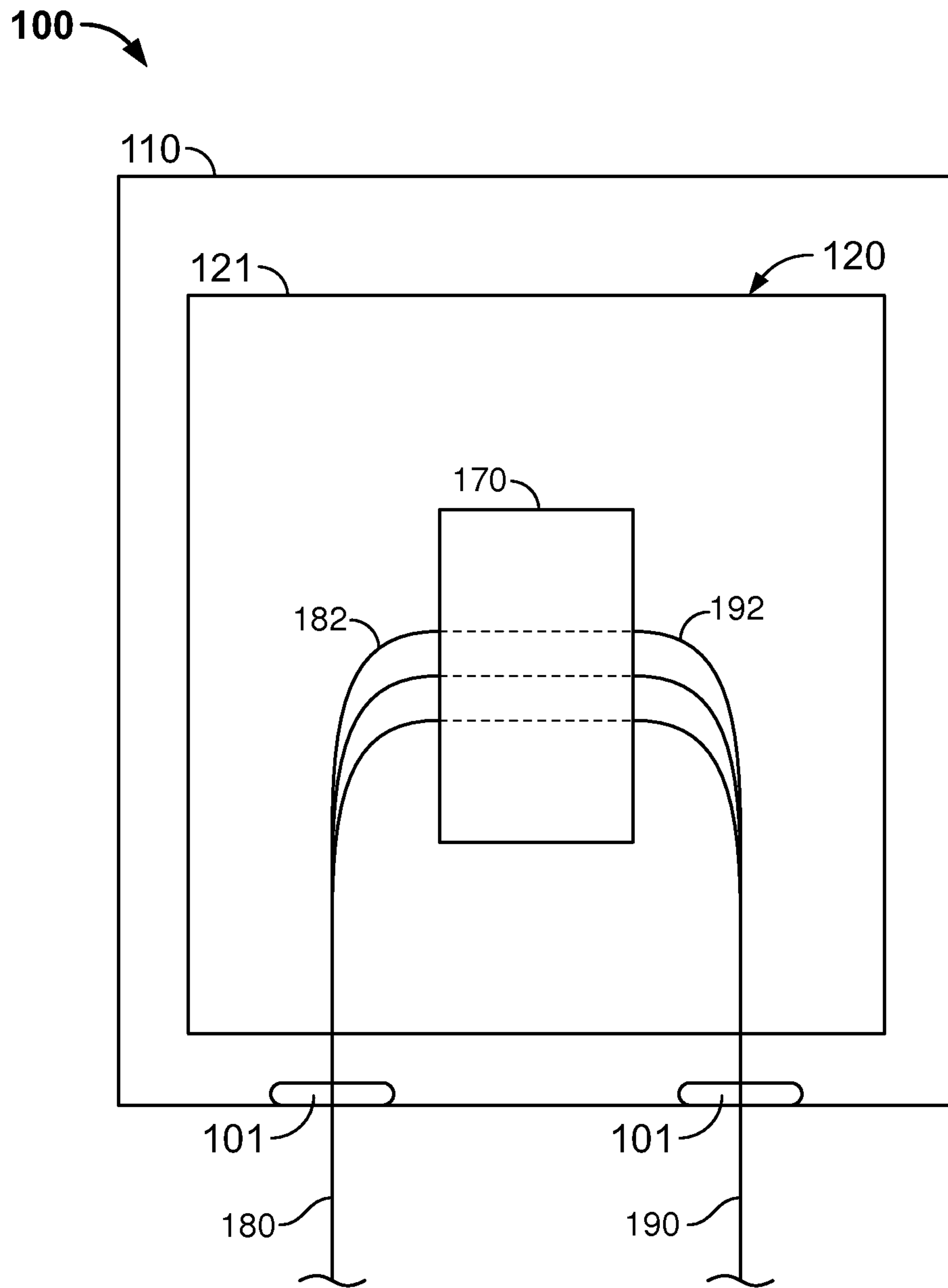


FIG. 1

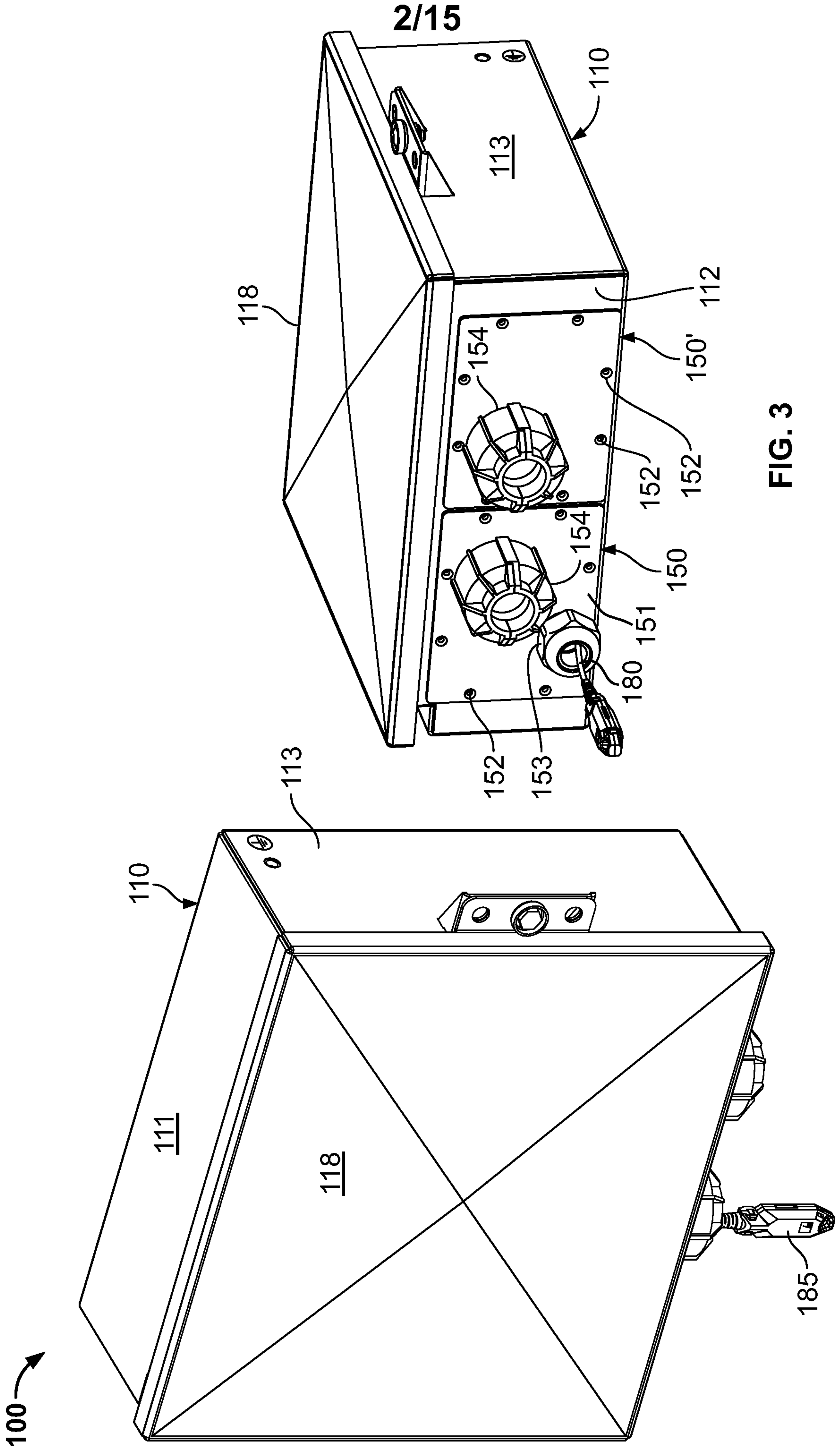


FIG. 2

FIG. 3

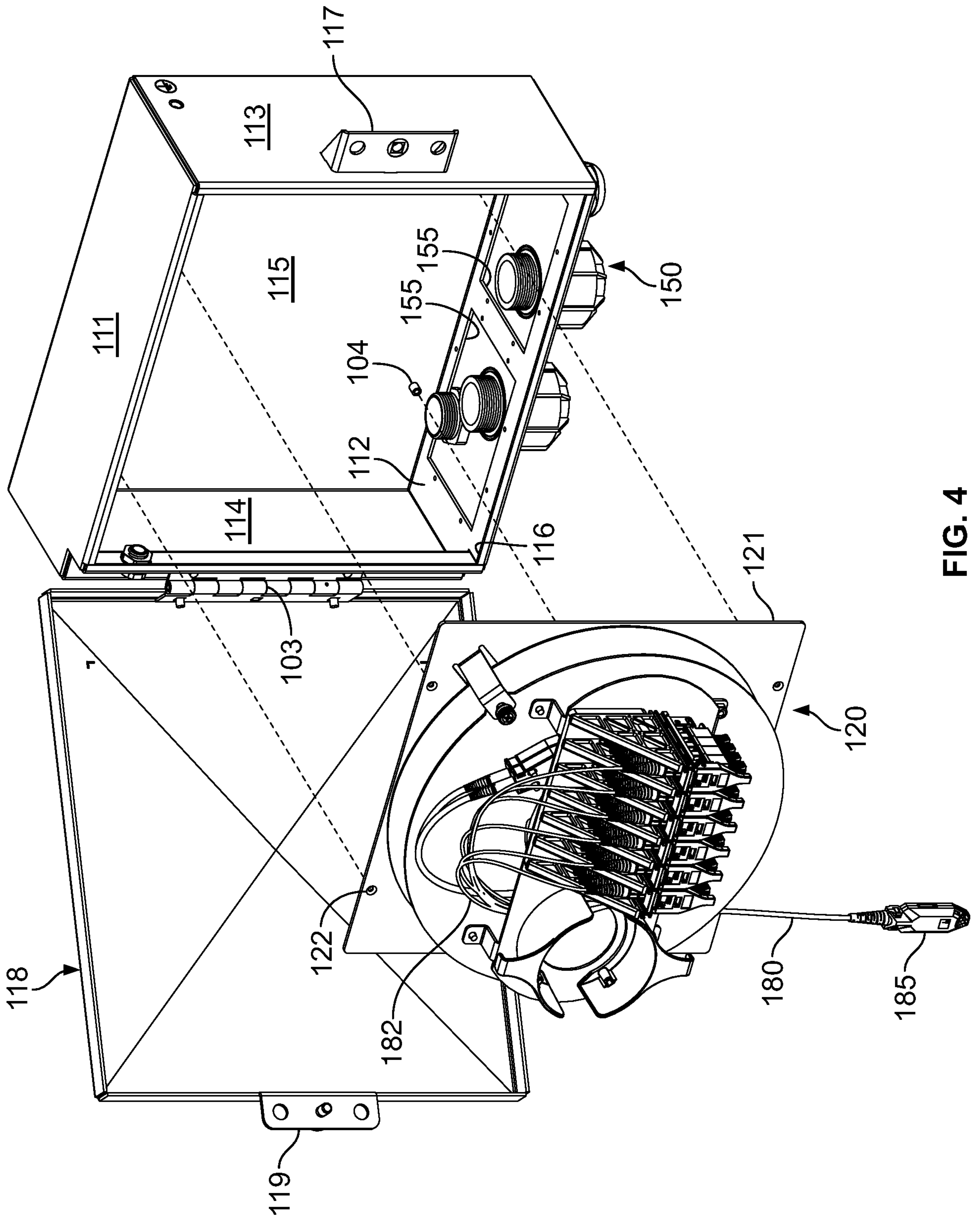


FIG. 4

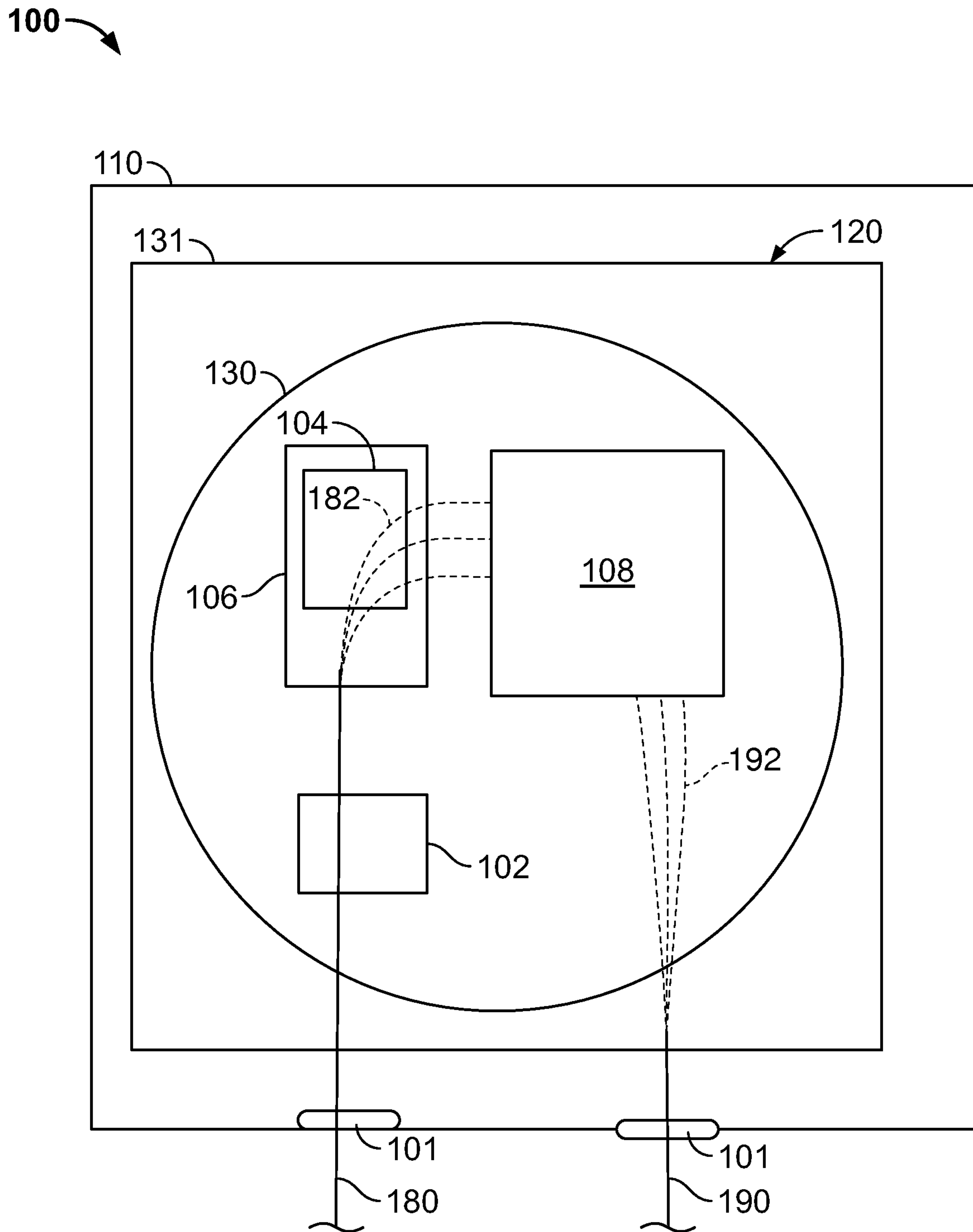


FIG. 5

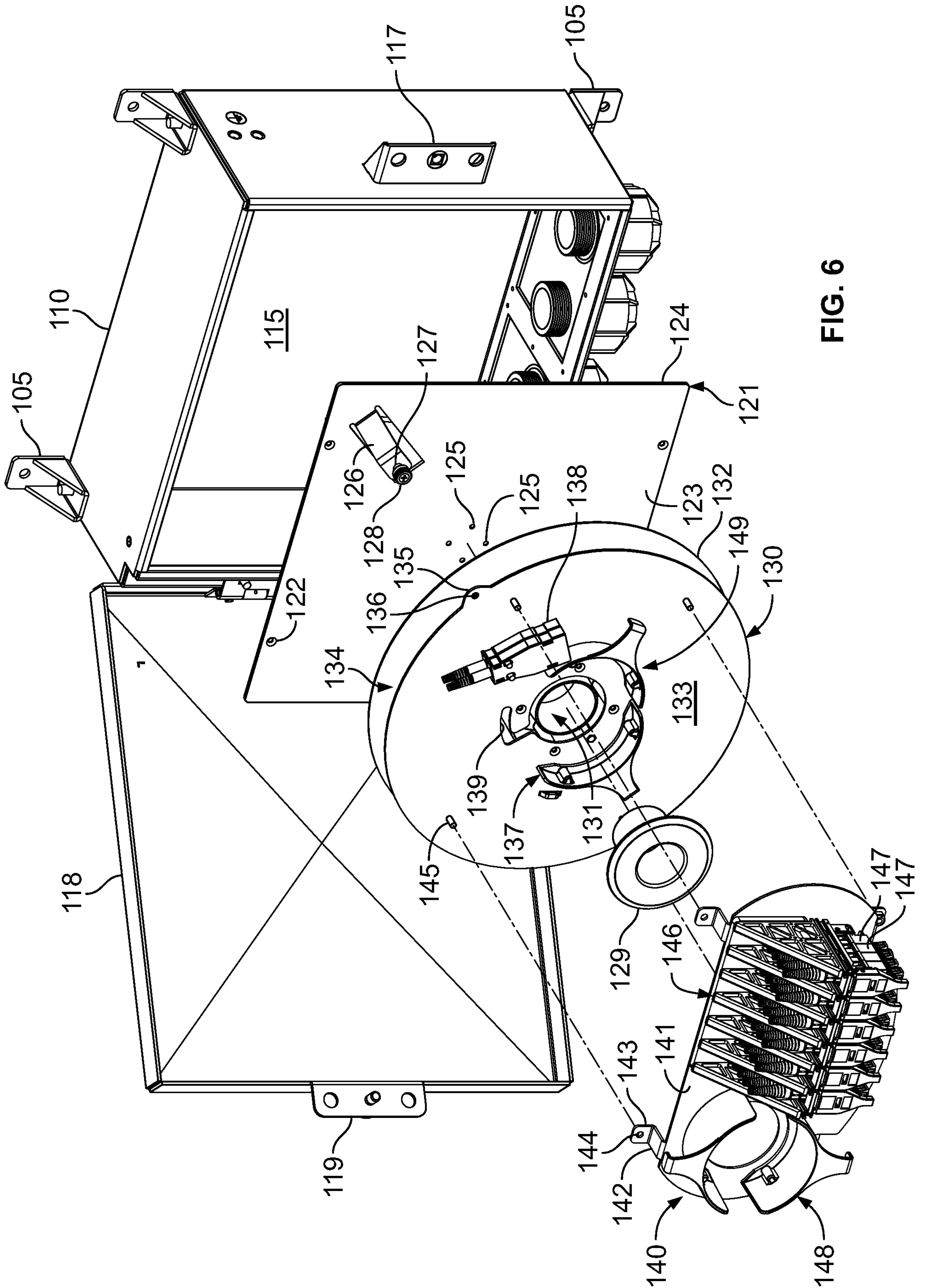


FIG. 6

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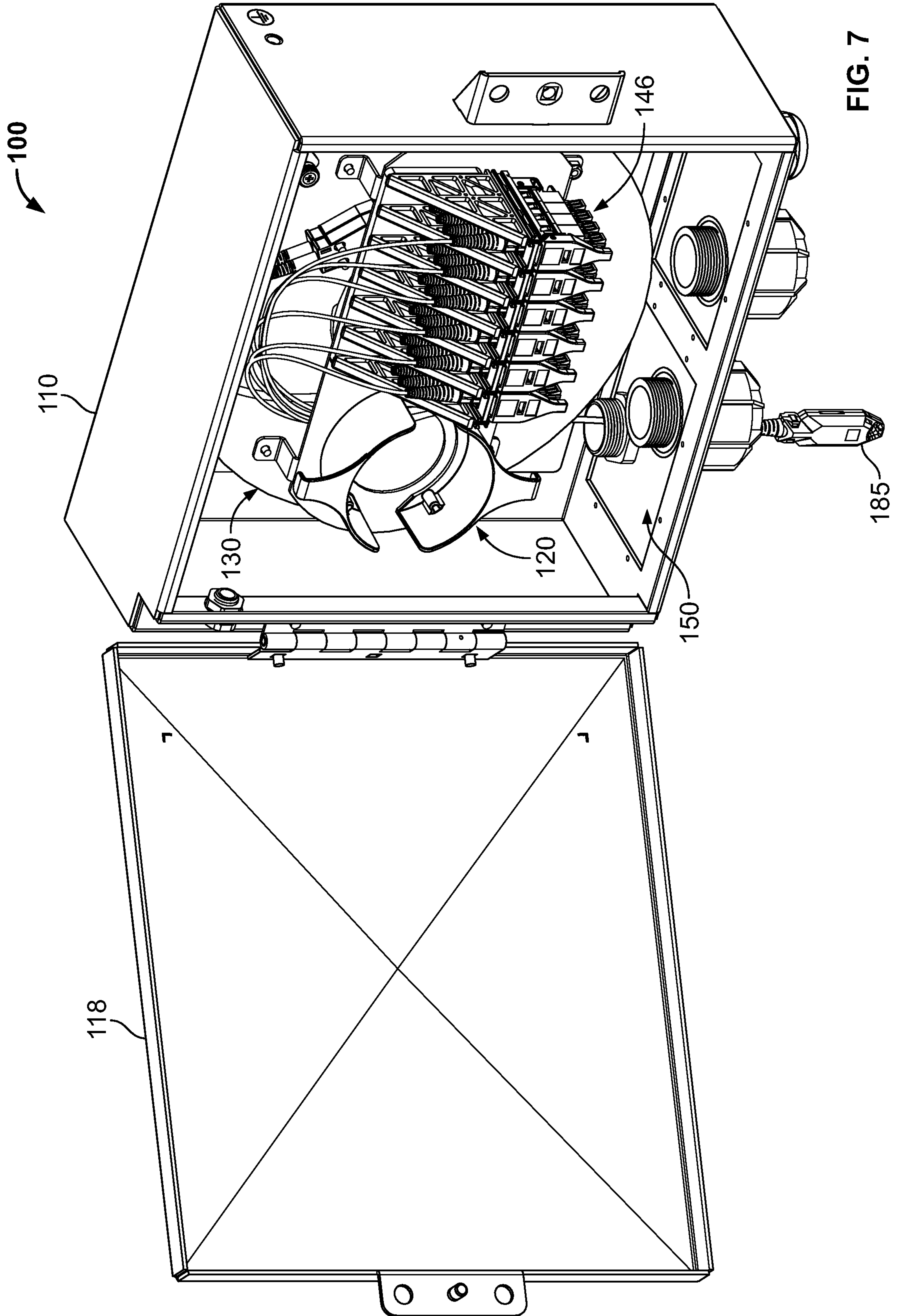


FIG. 7

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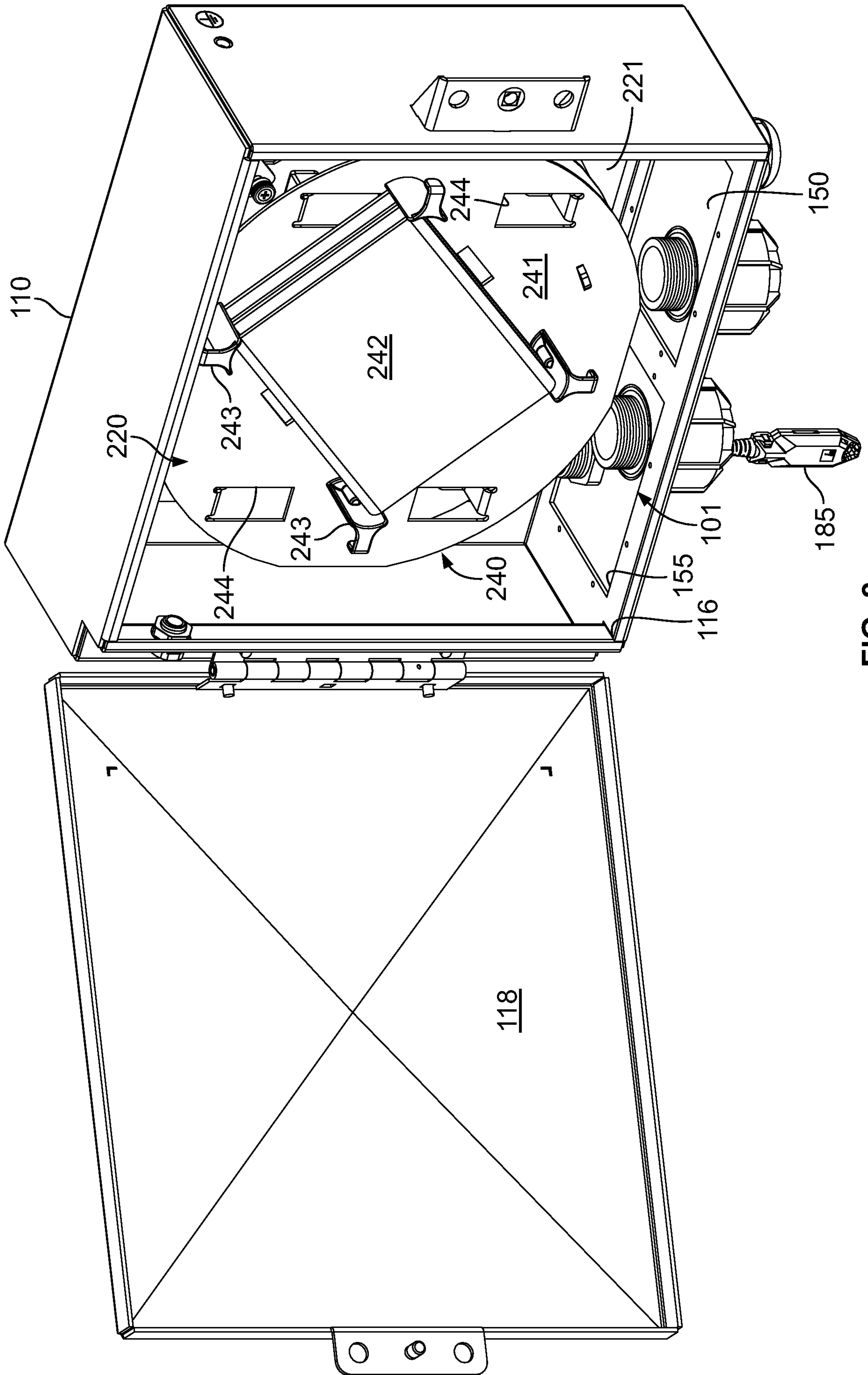


FIG. 8

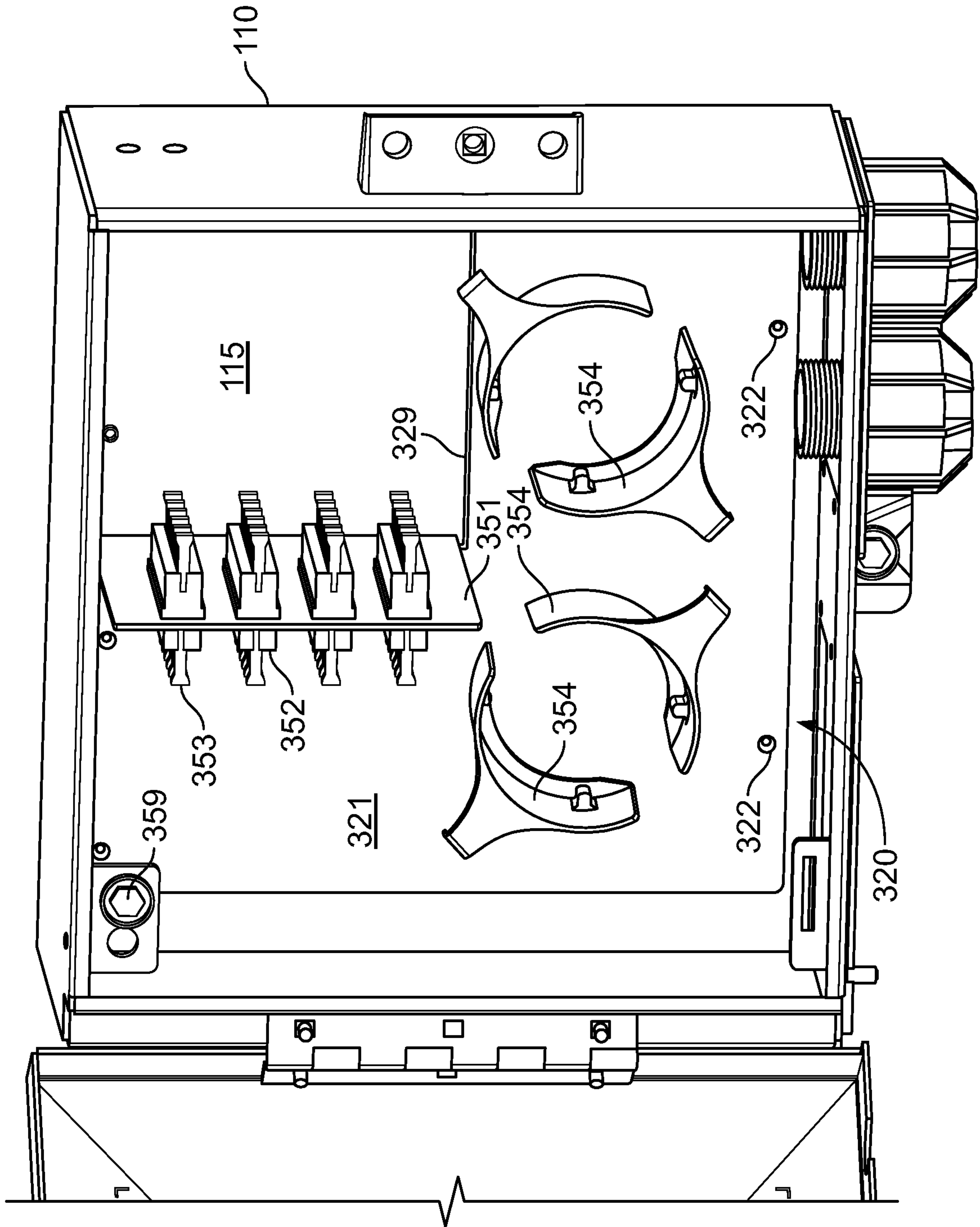


FIG. 9

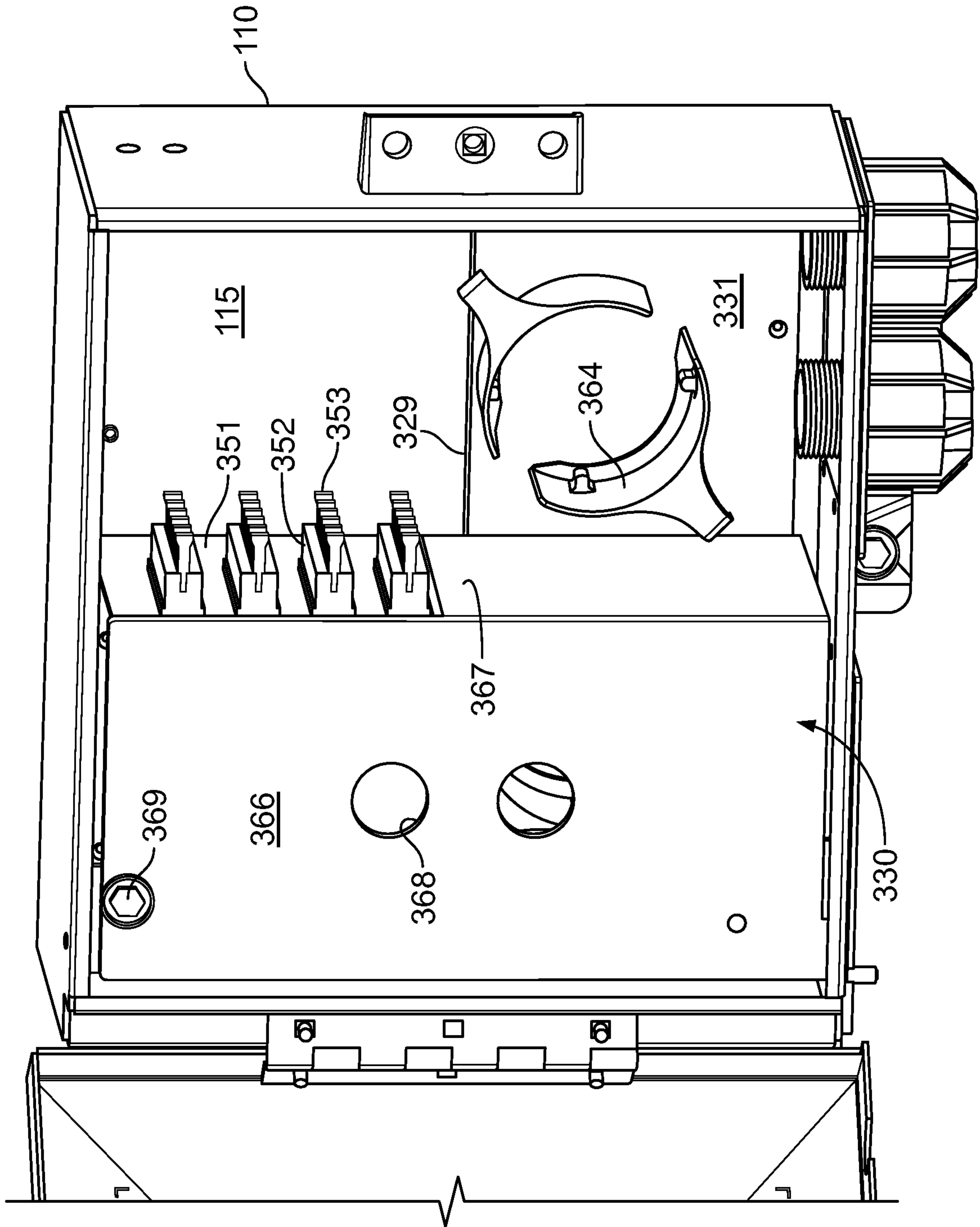


FIG. 10

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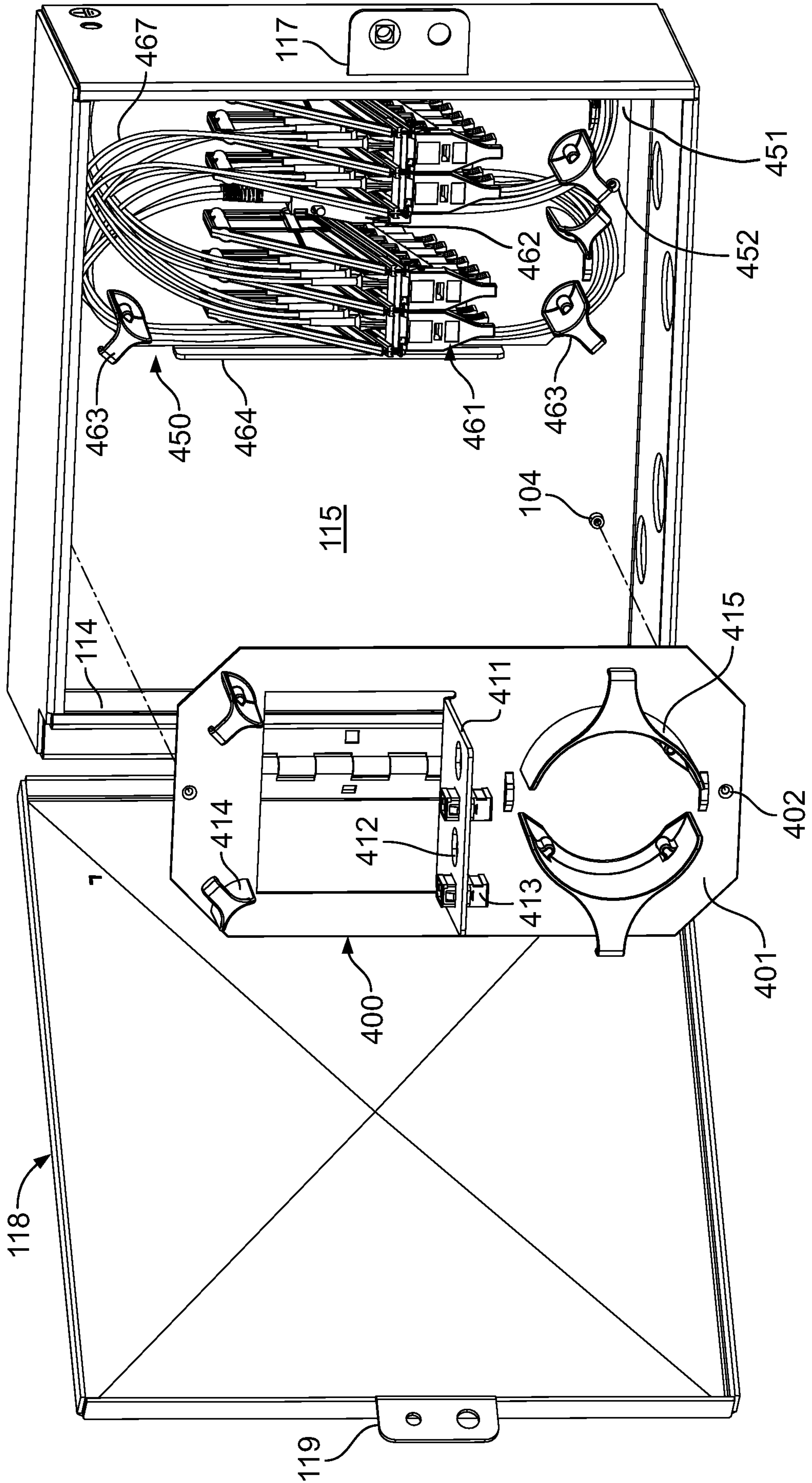


FIG. 11

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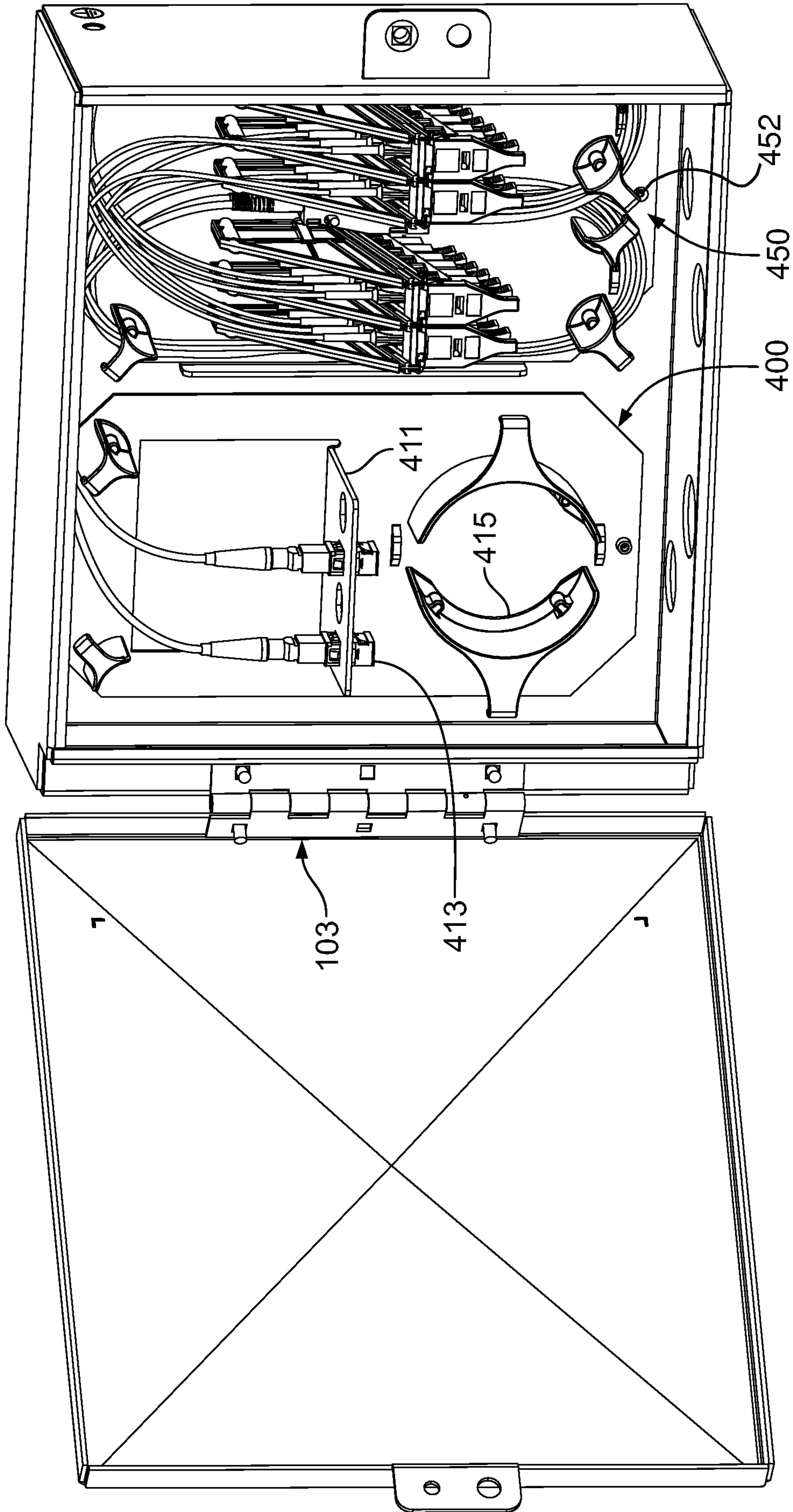


FIG. 12

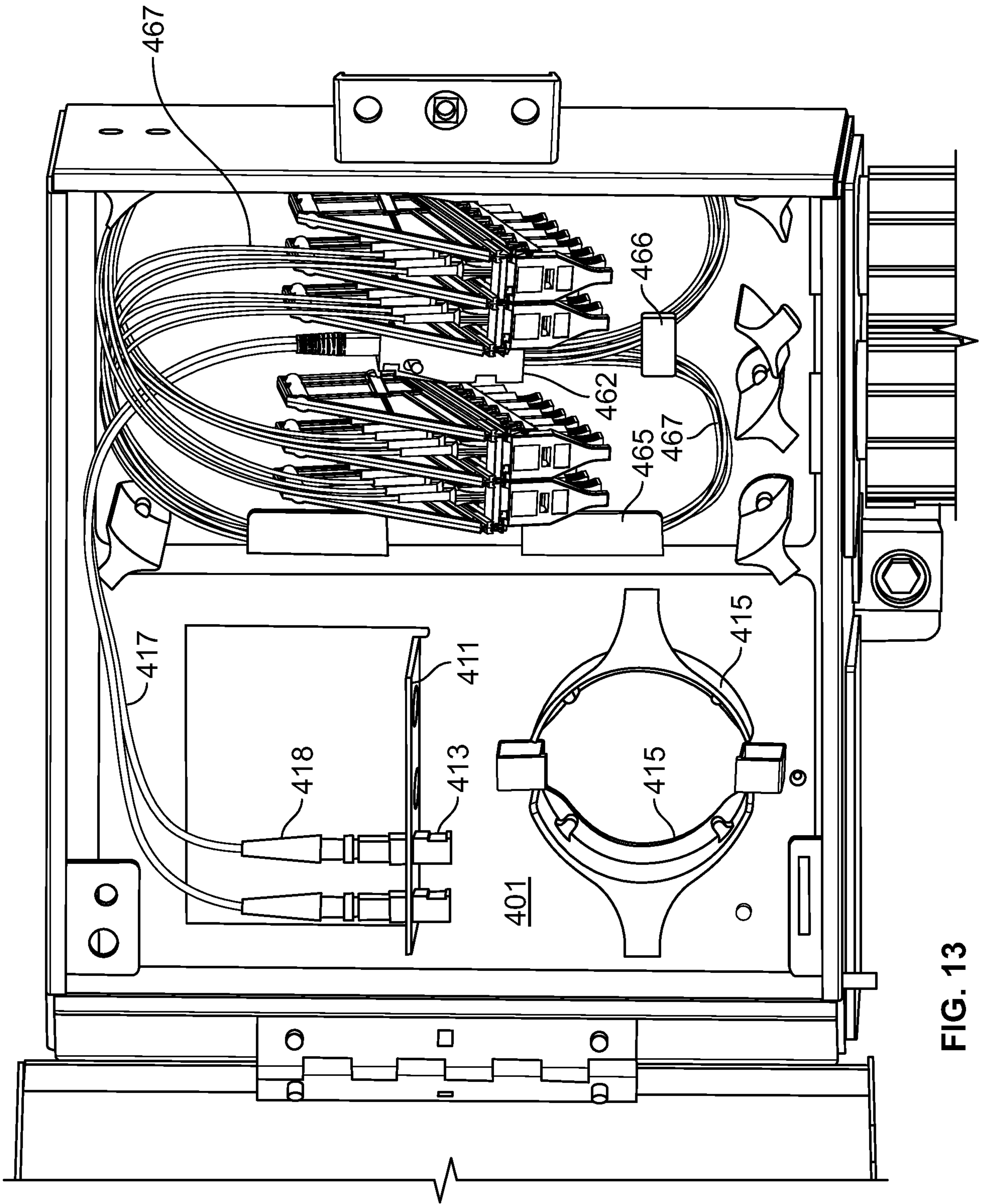
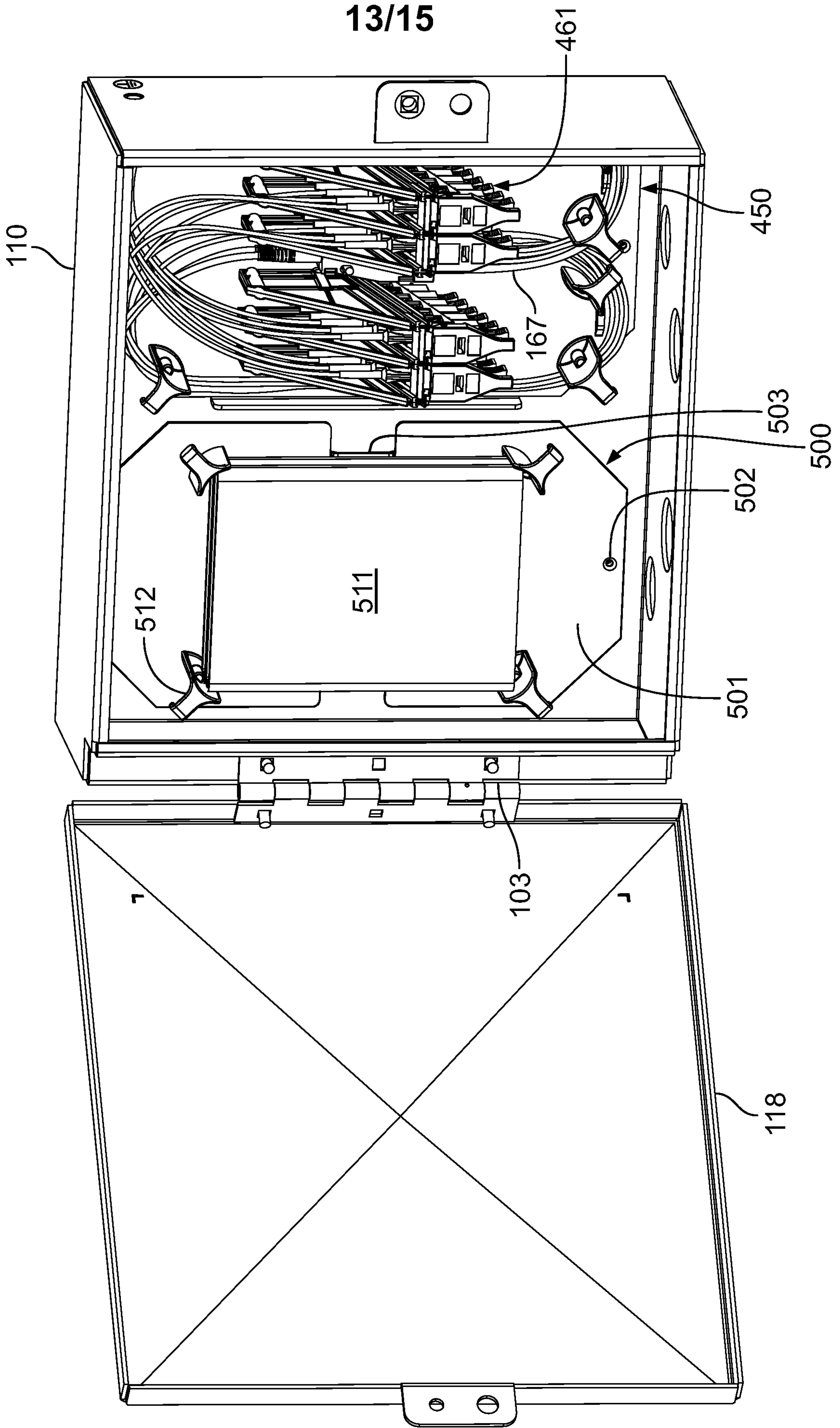


FIG. 13



**FIG. 14**

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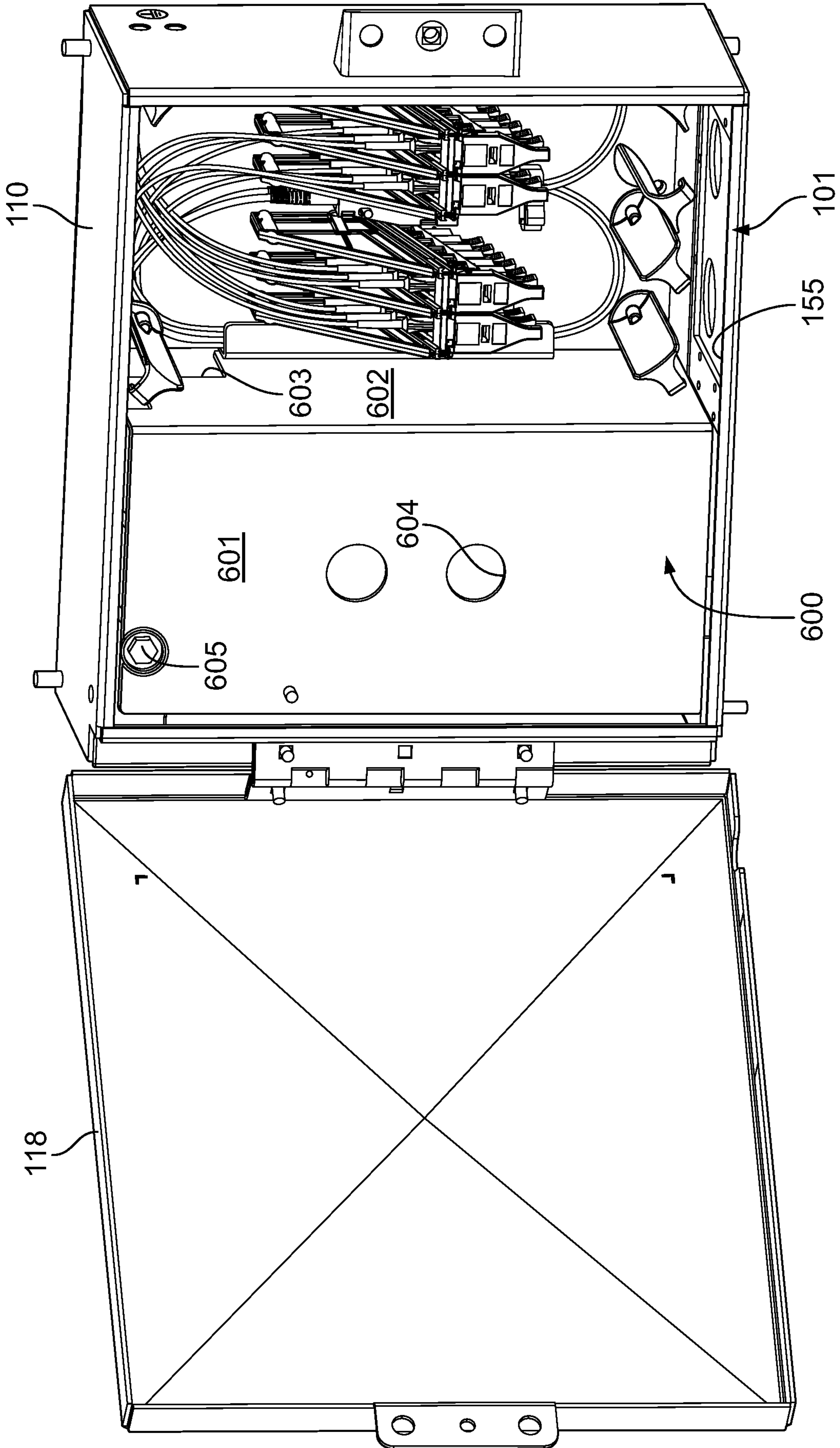


FIG. 15

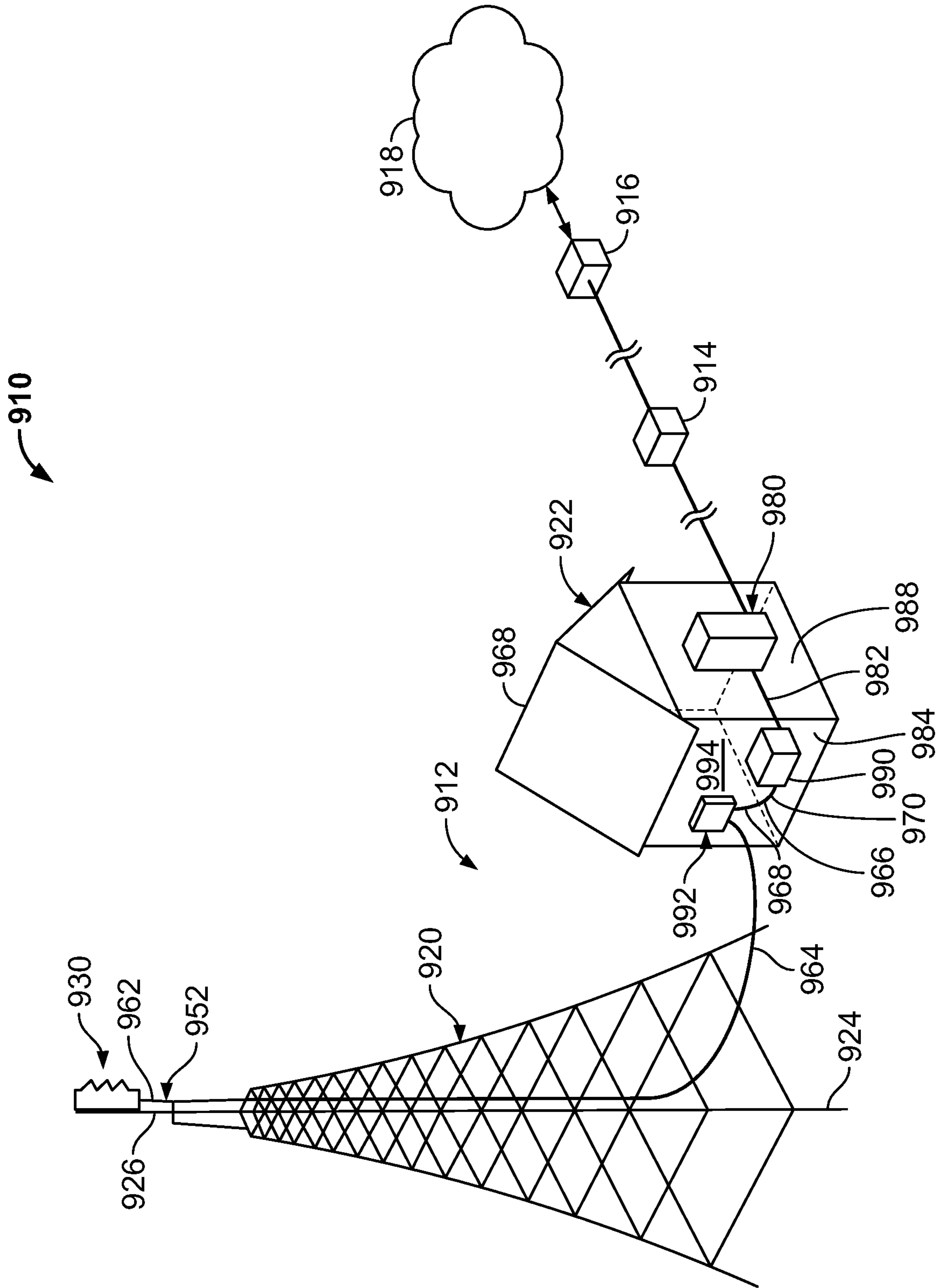
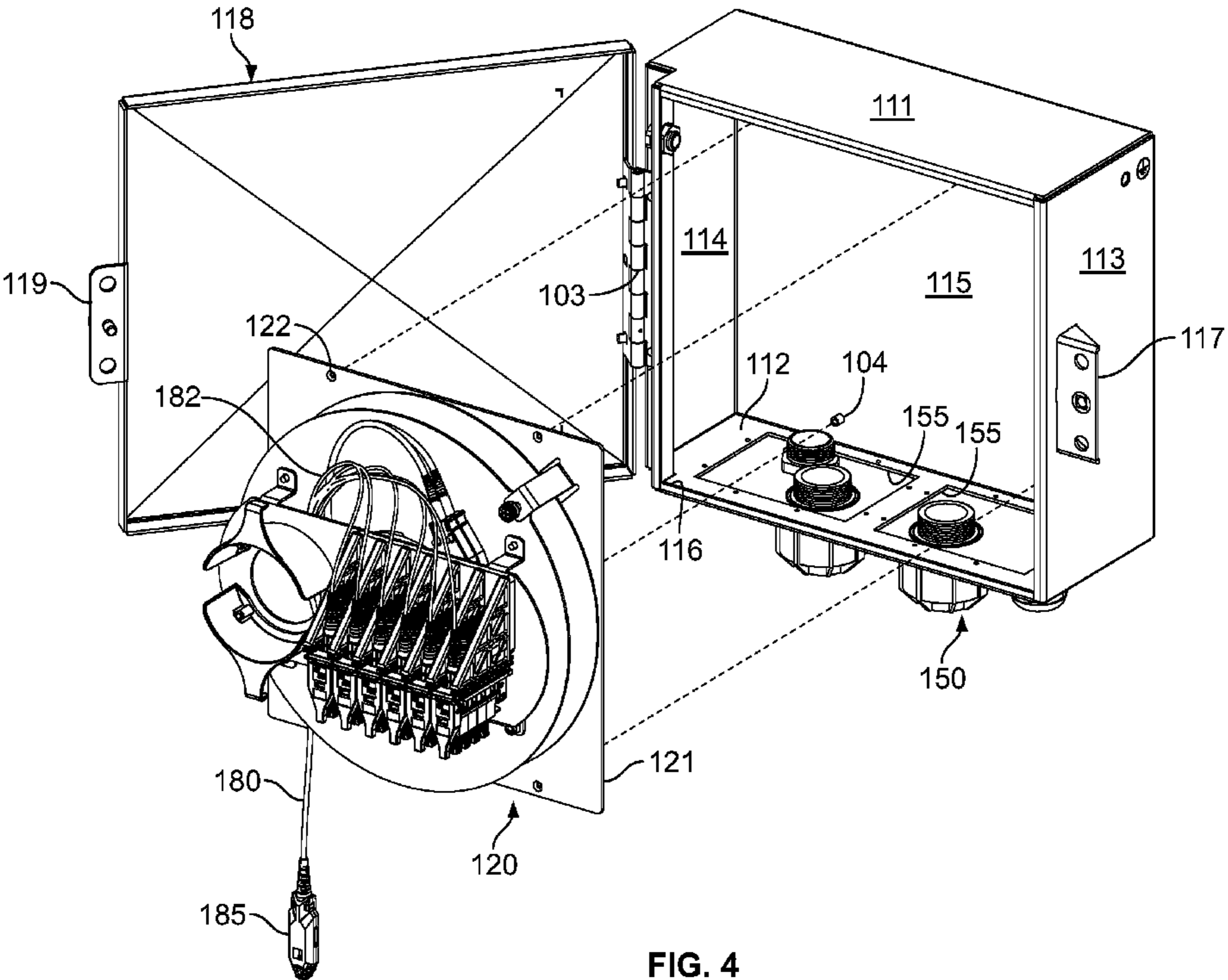


FIG. 16



**FIG. 4**