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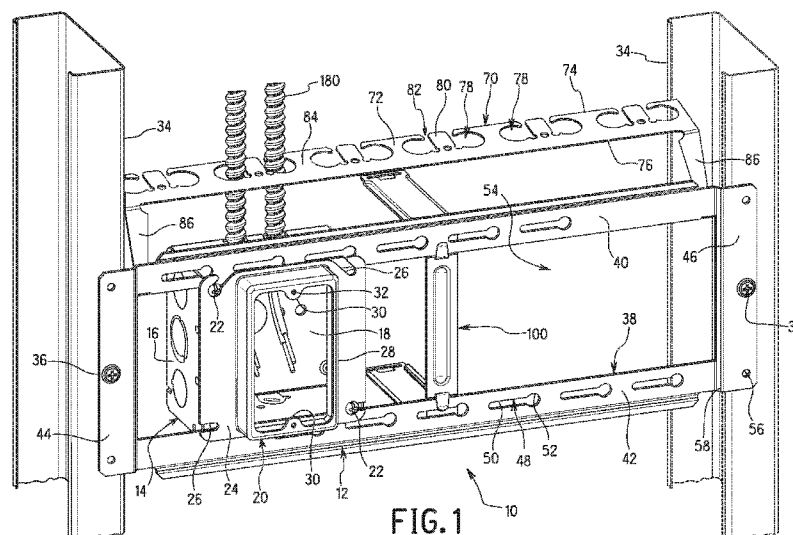


FIG. 1

(57) Abstract: An electrical box mounting bracket includes a mounting frame having a central opening. A removable support member is coupled to an inner edge of the central opening by a frangible tab. A removable extension member is coupled to the support member by a frangible tab that can be removed and attached to an end of the support member. A cable guide is coupled to an inner edge of the central opening by a first fold line and is bendable to a position for supporting a cable. The cable guide has a body or support plate with a plurality of adjacent cable openings with a retaining tab between two adjacent cable openings. The retaining tab is bendable from a first open position for inserting a cable into the cable openings and a second closed position to retain the cable in the cable openings.



MOUNTING BRACKET WITH FAR SIDE SUPPORT

Field of the Invention

[0001] The present invention is directed to a mounting bracket for supporting an electrical box between two studs in a wall. More specifically, the invention is directed to a mounting bracket that is capable of mounting electrical boxes in different positions between the studs and supporting the electrical box in a wall cavity having different depths by providing a far side support that can be attached to the mounting bracket.

Background of the Invention

[0002] Presently, there are many types of mounting brackets available on the market for mounting electrical boxes to wall studs. Many of the mounting brackets are designed to be mounted to a single wall stud for supporting a single electrical box. While these mounting brackets work well, they do not provide a wide range of adjustability between wall studs and only support a single electrical box. Accordingly, mounting brackets for supporting a plurality of electrical boxes have been developed which span between a pair of adjacent wall studs to allow the builder to conveniently position the electrical box or boxes between the wall studs.

[0003] One example of a prior mounting bracket, which is capable of supporting a wide variety of electrical boxes, is disclosed in U.S. Pat. No. 5,330,137 to Oliva. The mounting bracket of the Oliva patent provides infinite adjustability and can be used with boxes of different depths. Moreover, the mounting bracket of the Oliva patent can be used to either a 4 inch square electrical box or a 4 11/16 inch square electrical box or both. However, one disadvantage of the mounting bracket disclosed in this patent is that it allows for too much vertical movement of certain sizes of electrical boxes such that one of the mounting screws of a wiring device can bottom out on the mounting bracket and thus cannot be fully threaded into the cover. More specifically, the central cutout of the mounting bracket of this

patent is too large such that mounting screws coupling the electrical box and cover together can move vertically within the central cutout of the mounting bracket of the patent. This movement of the electrical box can cause the threaded hole in the cover for mounting a wiring device to overlap with the mounting bracket such that the mounting screw of the wiring device cannot be fully threaded into the cover.

[0004] Examples of mounting brackets for electrical boxes are disclosed in U.S. Patent No. 5,927,667 to Swanson and U.S. Patent No. 6,209,836 to Swanson. These devices have a bracket that can be mounted to wall studs and support an electrical box between the studs.

[0005] While the prior devices are generally suitable for the intended purpose, there is a continuing need in the industry for an improved mounting assembly for mounting electrical boxes and other electrical devices.

Summary of the Invention

[0006] The present invention in one embodiment is directed to a mounting bracket for attaching to a support, such as wall studs, and supporting an electrical box to the support or between the studs. The mounting bracket is manufactured as a one-piece, integrally formed unit that can be bent to the desired position by the end user.

[0007] One feature of the invention is to provide a mounting bracket that can accommodate electrical boxes of different sizes and depths. The mounting bracket is attached to the support to position the electrical box at different locations between the studs.

[0008] Another aspect of the invention is to provide an electrical box mounting bracket having a far side support member that is able to support the mounting bracket by contacting an opposing wall and resist movement of the mounting bracket and the electrical box toward the opposing wall.

[0009] The invention is also directed to an electrical box mounting bracket having far side support member integrally formed with a mounting frame and support member coupled to the mounting frame by a frangible member where the support member can be separated from the mounting frame by

the end user during installation. The support member has a plurality of fold lines to define a body to be attached to the mounting frame. A first leg and a second leg are coupled to the ends of the body. The first and second legs are folded by the end user to extend from the plane of the body. The body can be attached to the top and bottom rails of the mounting frame by tabs or other fastening members.

[0010] The invention further is directed to a mounting bracket having a cable guide integrally formed with the mounting frame and configured for orienting at an angle with respect to the plane of the frame of the mounting bracket. The cable guide provides a support for cables extending from the electrical box supported by the frame.

[0011] The cable guide is coupled to the mounting frame and is bendable about fold lines outward with respect to the plane of the mounting frame to a position for receiving and guiding cables from the electrical box. The cable guide includes a body forming a support plate having a plurality of cable openings for the cables. In one embodiment, the cable guide has a tab positioned between two adjacent cable openings to close the openings at least partially to retain a cable in the cable the cable openings. The tab is bendable between an open position to allow the cable openings to receive a cable and a closed position to retain the cables in the respective openings.

[0012] The foregoing objects of the invention are basically attained by providing a mounting bracket for mounting an electrical box comprising a one piece mounting plate having a central opening defined by a top support rail, a bottom support rail, a first mounting end, and a second mounting end. A support member is integrally formed with the mounting plate and coupled to the mounting plate by a frangible member. The support member is removable from the mounting plate and is configured for coupling to the mounting plate and extends away from a plane of the mounting plate for contacting an opposing wall and supporting the mounting bracket.

[0013] The various features of the invention are also attained by providing a mounting bracket for supporting an electrical box, the mounting bracket comprising a mounting plate having a top supporting rail, a bottom supporting rail, a first end member and a second end member forming a

central opening for accessing an electrical box coupled to the mounting bracket. A cable guide is coupled to an inner edge of the central opening and is oriented in a plane parallel to a plane of the mounting plate in a first position. The cable guide is bendable about a fold line from the first position to a second extended position for receiving a cable coupled to the electrical box.

[0014] The features of the invention are also attained by providing a mounting bracket for supporting an electrical box. The mounting bracket comprises a mounting plate having a top rail, a bottom rail, a first end portion and a second end portion and having a central opening with a dimension for accessing an electrical box. A support member is coupled to an inner edge of the central opening by a frangible tab and is removable from the support member. A cable guide is coupled to the inner edge of the central opening by a fold line. The cable guide is in a first position substantially parallel to a plane of the mounting plate and is bendable to a second position spaced outwardly from the mounting plate and is configured for receiving a plurality of cables from the electrical box.

[0015] These and other objects, advantages and salient features of the invention will become apparent from the following detailed description of the invention and the annexed drawings which disclose various embodiments of the invention.

Brief Description of the Drawings

[0016] The following is a brief description of the invention, in which:

[0017] Fig. 1 is a perspective view of the mounting bracket in one embodiment showing an electrical box mounted in different orientations and showing the cables coupled to the electrical box and extending through the cable guide;

[0018] Fig. 2 is a perspective view of the mounting bracket having two electrical boxes mounted to the bracket;

[0019] Fig. 3 is top plan view of the mounting bracket as produced showing the mounting frame, cable guide and support member integrally formed as a planar assembly;

- [0020] Fig. 4 is a top perspective view of the mounting bracket of Fig. 3;
- [0021] Fig. 5 is an end view of the mounting bracket of Fig. 3;
- [0022] Fig. 6 is a front view of the mounting bracket with the support member separated and the cable guide bent to the end position for supporting cables;
- [0023] Fig. 7 is an end view of the mounting bracket of Fig. 6 showing the cable guide bending outward from the plane of the mounting bracket;
- [0024] Fig. 8 is a front perspective view of the mounting bracket of Fig. 6;
- [0025] Fig. 9 is a top view of the mounting bracket of Fig. 6;
- [0026] Fig. 10 is a front view of the mounting bracket of Fig. 6 showing the cable guide bent from the front face of the mounting plate;
- [0027] Fig. 11 is rear perspective view of the mounting bracket of Fig. 10;
- [0028] Fig. 12 is a top view of the blank for forming the support bracket;
- [0029] Fig. 13 is a perspective view of the support member showing the legs bent to the extended position;
- [0030] Fig. 14 is a top view of the support member of Fig. 13;
- [0031] Fig. 15 is a side view of the support member of Fig. 13;
- [0032] Fig. 16 is a perspective view of the support member showing the legs extending from the body of the support member and the ends of the legs bent outwardly;
- [0033] Fig. 17 is a side view of the support member in the embodiment of Fig. 16;
- [0034] Fig. 18 is a top view of the support member of the embodiment of Fig. 16;
- [0035] Fig. 19 is a perspective view of the support member bent to an extended position in another embodiment of the invention;
- [0036] Fig. 20 is a top view of the support member in the embodiment of Fig. 19;
- [0037] Fig. 21 is a side view of the support member in the embodiment of Fig. 19;
- [0038] Fig. 22 is a front elevation view of the extension member in one embodiment of the invention;
- [0039] Fig. 23 is a perspective view of the extension member of Fig. 22;

[0040] Fig. 24 is a perspective view of the extension member coupled to the support member in one embodiment;

[0041] Fig. 25 is a perspective view of the extension member coupled to the leg in another embodiment;

[0042] Fig. 26 is an enlarged view of the inner side of leg showing the coupling tab engaging the slot in the leg of Fig. 25;

[0043] Fig. 27 is an enlarged view of the inner side of the leg showing the extension member of Fig. 25 coupled to the leg;

[0044] Fig. 28 is a perspective view of the cable guide showing the tab in the opening position; and

[0045] Fig. 29 is a perspective showing the cable guide bent to the closed position.

Detailed Description of the Invention

[0046] The present invention is directed to a mounting bracket for supporting an electrical box between two studs in a wall. More specifically, the invention is directed to a mounting bracket that is capable of mounting one or more electrical boxes in different positions relative to a support and supporting the electrical box in a wall cavity by providing a far side support that can be attached to the mounting bracket and modifying or adjusting the length to complement the depth of the wall cavity.

[0047] Referring to the drawings, the invention is directed to an electrical box assembly 10 including a mounting bracket 12 and an electrical box 14. The electrical box 14 is a standard electrical box having side walls 16 extending from a bottom wall 18 for receiving an electrical wiring device. The wiring device can be an electrical outlet, switch, GFCI or other device commonly mounted in an electrical box. In the embodiment shown, an extension ring 20 is coupled to the open end of the electrical box by screws 22. The extension ring, also referred to as a mud ring, has a base 24 with screw openings 26 for receiving the screws 22. The screws 22 are threaded into threaded holes in mounting tabs formed with the electrical box. A collar 28 extends outward from the base 24 and is provided with inwardly extending tabs 30 having screw holes 32 for receiving coupling screws of the

electrical wiring device. The electrical device is not shown for clarity but is a standard device as known in the art.

[0048] The mounting bracket 12 is configured for mounting to opposing wall studs 34 or other support structure. In the embodiment shown, the mounting bracket 12 extends between the two studs 34 and attached by screws 36.

[0049] The mounting bracket 12 is made of steel or other metal that can be bent and formed to the desired shape and dimension. As shown in Figs. 1 and 2, the mounting bracket 12 in one embodiment has a substantially rectangular configuration having a mounting plate 38 defining a mounting frame with central opening 56. The mounting plate 38 has a first rail referred to as a top rail 40, a second rail referred to as a bottom rail 42, a first mounting end 44, and a second mounting end 46 forming the central opening 54. The top rail 40 and bottom rail 42 include a plurality of spaced apart key-hole shaped slots 48 configured for receiving a mounting screw for mounting an electrical box or other electrical device to the mounting plate 38. As show, the key hole shaped slots 48 have a main longitudinal portion 50 extending longitudinally relative the longitudinal dimension of the top rail 40 and bottom rail 42. An enlarged opening 52 is formed at one end of the slot to enable the head of a mounting screw to pass through.

[0050] In the embodiment shown, the openings 54 of the mounting plate 38 have a dimension to accommodate one or more of the electrical boxes. As shown in Figs. 1 and 2, the central opening 54 has a dimension less than the outer dimension of the electrical box and less than the outer dimension of the base 24 of the extension ring 20. In the embodiment shown, the top rail 40 and the bottom rail 42 are captured between the end of the electrical box 14 and the inner face of the extension ring 20. Depending on the location and orientation of the screw holes in the electrical box, the mounting screws 22 can pass through the central opening 54 as shown in Fig. 1 and the left side of Fig. 2. Alternatively, the electrical box 12 can be oriented so that the screw holes in the electrical box align with the key hole slots 46. The mounting screws 22 can then pass through the screw holes in

the base of the extension ring and the key hole shaped slots 46 and threaded into the screw holes in the electrical box as shown in Fig. 2.

[0051] The mounting ends 44 and 46 extend outwardly from the top rail 40 and the bottom rail 42 for attaching the support and defining a mounting frame. The mounting ends 44 and 46 are provided with one or more screw holes 56 to receive screws 36 for coupling the mounting bracket 12 to the support. In the embodiment shown, the ends 44 and 46 are coupled to the top rail 40 and bottom rail 42 by legs 58 so that the mounting ends are parallel to the plane of the top rail and bottom rail and spaced outwardly from the plane of the top rail and bottom rail. The mounting ends 44 and 46 are oriented so that the top rail and bottom rail are recessed a slight distance from the outer face of the mounting ends and the outer face of the studs 34.

[0052] Referring to Figs. 3-11, the mounting bracket 12 is formed as a one-piece unitary member from a single sheet of steel that is stamped, cut and bent to the shape shown. In one embodiment, the mounting bracket is formed as a blank 60 as shown in Figs. 3 and 4 and is then bent by the end user to the desired finished shape of the mounting bracket 12 as shown in Figs. 1, 2 and 6-11. The blank 60 has a substantially flat, compact configuration before bending by the end user to the desired shape.

[0053] Referring to Figs. 3 and 4, the blank 60 is formed with the mounting plate 38 formed in the shape for mounting to the supports. The top rail 40 and the bottom rail 42 are formed with strengthening ribs 62 and 64, respectively for increasing the strength of the rails and reducing flexing of the mounting plate during use. As shown in Figs. 3 and 4, the central opening 54 has an inner edge 66 formed with the top rail 40 and an inner edge 67 formed with the bottom rail 42.

[0054] A cable guide 70 is integrally formed with the inner edge 66 of the central opening 54 in the mounting plate 38. The cable guide is formed by stamping and cutting the sheet steel and to form the central opening 54 as shown. The cable guide 70 is formed in substantially the same plane with the mounting plate 38 and can be bent by the end user to the extended position shown in Figs. 1 and 2.

[0055] The cable guide 70 has an outer dimension corresponding substantially to the inner dimension of the central opening 54 and is cut from the sheet material to form the central opening 54. The cable guide 70 includes a body forming a support plate 72 having an outer edge 74 and an inner edge 76. As shown in Figs. 3 and 4, the cable guide 70 and the support plate 72 have a longitudinal length corresponding substantially to the longitudinal length of the central opening 54. The support plate 72 is formed with a plurality of cable openings 78. In the embodiment shown, the cable openings 78 have a substantially circular shape where the adjacent cable openings 78 have an open side facing each other and separated by a tab 80. The cable openings 78 are open to the outer edge 74 and are spaced apart a distance to define an access opening 82 so that the cable 180 can be positioned within each of the cable openings 78 shown in Fig. 28. In the embodiment shown, the support plate 72 has a longitudinally extending reinforcing rib 84 that is stamped from the sheet material to strengthen the support plate. In one embodiment, the reinforcing rib 84 is formed at the inner edge 78 and extends substantially the longitudinal length of the support plate 72.

[0056] The support plate 72 of the cable guide 70 includes legs 86 having a first end coupled to the inner edge 66 of the central opening 54 by a fold line 90. The legs 86 have a second end 92 coupled to the inner edge 76 of the support plate 72 by a fold line 94. In the embodiment shown, the legs 86 have a substantially triangular shape where the fold line 90 has a length less than the fold line 94.

[0057] A support member 100 is also integrally formed with the blank 60 and is coupled to the inner edge 66 of the central opening 54 by a frangible tab 102 at a first edge 104 to enable the support member 100 to be separated from the mounting plate 38 by the end user. In the embodiment shown, the support member 100 is cut and stamped from the sheet material and is formed within the area defined by the legs 86, the top rail 40 and the support plate 72. As shown in Fig. 3, the blank 60 for the mounting bracket is formed as a single, one-piece unitary unit including the mounting plate

38, the cable guide 70, the support member 100 and the extension members 106.

[0058] The extension member 106 is integrally formed with a second edge 108 of the support member 100 by a frangible tab 110. In the embodiment shown, two extension members are formed with the blank 60. Each extension member 106 is formed with a longitudinal dimension extending substantially parallel to the longitudinal dimension of the support member 100.

[0059] During use and installation of the bracket 12, the support member 100 is separated from the top rail 40 by bending the frangible tab 102. The extension members 106 are separated from the support member 100 by bending the extension members 106 about the frangible tab 110 with respect to the support member 100. The cable guide 70 is bent outwardly from the plane of the back face mounting plate 38 by bending the legs 86 about the fold line 90 in the direction of arrow 112 in Fig. 7 to form the central opening 54. The support plate 72 is then bent about the fold line 94 relative to the legs 86 to the position shown in Fig. 7. The support plate 72 can be bent to a position at an incline with respect to the plane of the mounting plate 38 or substantially perpendicular to the plane of the mounting plate 38. The legs 86 can be bent to an inclined angle with respect to the plane of the mounting plate 38 to orient the cable openings 78 relative to the cables coupled to the electrical box as shown in Figs. 28 and 29. In embodiments where the cable guide 70 is not needed or desired, the legs 86 can be folded upwardly relative to the top rail 40 to a position substantially parallel to the plane of the mounting plate 38. The support plate 72 can also be bent in any desired position relative to the mounting plate 38. As shown in Figs. 10 and 11, the legs 86 and support plate 70 can be folded about the respective fold lines from the front face of the mounting plate 38. The legs 86 can be folded over the front face of the mounting plate 38 and the cable support plate 70 can be folded over the support plate to extend away from the rear side of the support plate.

[0060] The support member 100 forms a support for the top rail 40 and bottom rail 42. The support member 100 defines a far side support for

contacting an opposing wall surface to support the electrical box and the mounting bracket 12 thereby inhibiting bending and flexing of the mounting plate 38, the top rail 40 and the bottom rail 42. As shown in Fig. 12, the support member 100 is separated from the blank 60 and bent to the shape shown in Figs. 13, 14 and 15. The support member 100 has a main central body 114 with a longitudinal dimension corresponding substantially the dimension of the width of the mounting plate. The central body 114 also has a length to extend between the top rail 40 and the bottom rail 42. Coupling members in the form of coupling tabs 116 are punched from the central body 114 and extend outwardly away from each other toward the longitudinal ends of the central body. The coupling tabs 116 as shown in Fig. 13 include a leg 118 extending substantially parallel to the plane of the central body 114 and spaced apart a distance corresponding substantially to the thickness of the top rail 40 and bottom rail 42. An angled end portion 120 extends from the end of the legs to assist in positioning on the top rail 40 and bottom rail 42 by sliding the respective coupling tabs 116 over the rails. The coupling tabs 116 are spaced apart a distance corresponding substantially to the inner dimension of the central opening and the spacing between the inner edges of the top rail 40 and the bottom rail 42. During use, the support member 100 is coupled to the top rail 40 and bottom rail 42 by the coupling tabs 160 as shown in Fig. 1 and Fig. 2. The support member 100 can be positioned at different locations along the longitudinal length of the central opening 54 depending on the location of the electrical box and the spacing between the support. In the embodiment shown, the support member 100 is positioned on the inner face of the top rail 40 and the bottom rail 42 to support the mounting plate.

[0061] The support member 100 includes legs 122 extending from the opposite ends of the central body 114. The legs are bent to the position shown in Fig. 13 by folding about the inner fold lines 124 or to the position shown Fig. 16 by bending about the outer fold lines 126. The fold lines 124 and 126 are defined by a slot 128 and 130, respectively, to allow the legs 122 to be bent by the end-user to the desired position. As shown in Figs. 13-15 and 16-18, the fold lines determine the length of the legs. The legs

122 include side edges with reinforcing flanges 132 to strengthen the legs. As shown, the flanges 132 are stamped and bent to form a substantially L shape flange extending parallel to the plane of the legs.

[0062] The legs 122 have a first end 134 coupled to the central body 114 and a second distal end 136. The second end 136 is provided with a slot 138 having an enlarged portion 142 to define the slot with a substantially T shape. As shown in Figs. 12-15, the legs 122 can be bent about the first inner fold line 124 to a position substantially perpendicular to the plane of the central body 114. Alternatively, the legs 122 can be bent about the second outer fold lines 126 as shown in Figs. 16-18 and Figs. 19-21 depending on the depth of the wall cavity. As shown in Figs. 16-18, the end portion 142 can be bent about the slot 138 to shorten the longitudinal length of the legs as needed and form a flat contact surface for the legs.

[0063] The extension members 106 are separated from the support member 100 during use. As shown in Figs. 22 and 23, the extension members 106 have a substantially planar configuration formed by a body 146 having longitudinal side edges 148, a first longitudinal end 150 and a second longitudinal end 152. A first coupling tab 154 is formed at the first end 150 and a second coupling tab 156 is formed at the second longitudinal end 152. A longitudinal flange 158 extends along a side edge 148 to strengthen the extension member 106.

[0064] The first coupling tab 154 is cut and punched from the body 146 and has a leg 160 extending substantially parallel to the plane of the body 146 with a free end 162 extending toward the first longitudinal end 150. An outwardly extending flange 164 is bent outwardly from the plane of the leg 160. A tab 166 is cut and punched from the leg 160 and bent inwardly toward the body 146 about the fold line 168. In the embodiment shown, the tab 166 extends at an incline with respect to the plane of the leg 160 and away from the free end 162 and toward the longitudinal end 152.

[0065] The second coupling tab 156 is formed in a similar manner by cutting and punching from the body 146. The second coupling tab 156 includes a leg 170 extending substantially parallel to the plane of the body 146 with the free end 172. The free end 172 extends toward the second end

152 of the body 146. An outwardly extending flange 174 is bent outwardly from the plane of the leg 170. A tab 176 is cut and punched from the leg 70 and bent inwardly toward the body 146 about a fold line 178. The tab 176 extends away from the free end 172 and toward the first longitudinal end 150. The coupling tabs 154 and 156 are spaced apart from the plane of the body 146 a distance corresponding to the thickness of the legs 126 of the support member 100.

[0066] As shown in Figs. 22 and 23, the first coupling tab 154 is spaced from the first end 150 a first distance less than the distance between the second coupling tab 156 and the second end 152. The coupling tabs 154 and 156 are spaced differently depending on the desired length of the support member and the dimensions of the cavity in the wall.

[0067] Referring to Figs. 24-27, the extension members 106 can be coupled to the ends of the legs 122 of the support member 100 to extend the length of the legs as needed. As shown in Fig. 24, the extension members 106 are coupled to the ends of the legs 122 by the second coupling tab 156 by sliding the end of the legs 122 between the leg 170 of the coupling tab 156 and the body 146 of the extension member. The tab 176 is deflected and snaps into the slot 138 at the end of the leg 122 for coupling the extension member to the ends of the legs and resisting movement between the extension members 106 and the respective leg 126. As shown in Figs. 24 and 25, the extension member fits between the reinforcing flanges 132 to resist lateral and twisting movement of the extension member with respect to the legs 122.

[0068] As shown in Fig. 25, the extension members 106 can be coupled to the ends of the legs 122 by the first coupling tabs 154 to increase the length of the legs. In a similar manner, the ends of the legs 122 slide between the leg 160 of the coupling tab 154 to engage the tab 166 with the slot 138. As shown in Figs. 26 and 27, the coupling tab 166 slides over the end of the leg 122 and engages the inner edge of the slot 138 for coupling the extension members 106 to the ends of the leg.

[0069] During use, the end-user attaches the support member 100 to the top rail 40 and the bottom rail 42 as shown in Fig. 1 and Fig. 2. The legs

122 are bent along the appropriate fold line and the extension members 106 are attached to the ends of the legs as needed depending on the depth of the wall cavity. In the embodiment shown in Figs. 1 and 2, the extension members are not used since the dimensions of the legs 122 are sufficient to contact the opposing wall defining the wall cavity to support the electrical box and the top rail 40 and the bottom rail 42 to stabilize the electrical box.

[0070] As shown in Figs. 28 and 29, the cable guide 170 is bent by the end-user to a position to accommodate the electrical cables 180 extending from the electrical box 14. The tab 80 is initially bent away from the plane of the support plate 72 as shown Fig. 28 to provide the access opening 82 between the adjacent cable openings 78 sufficient to allow the cables 182 to be positioned within the respective cable opening 78. After the cables 180 are positioned in the respective cable openings 78, the tab 80 is bent to the original position shown in Fig. 29 to close the opening between the adjacent cable openings and retain and secure cables 180 within the cable openings.

[0071] While various embodiments have been illustrated and described, it will be understood that various changes and modifications can be made without departing from the spirit and scope of the invention as defined in the appended claims.

WHAT IS CLAIMED IS:

1. A mounting bracket for mounting an electrical box comprising:
a one piece mounting plate having central opening configured for accommodating the electrical box; and
a support member integrally formed with said mounting plate and coupled to said mounting plate by a frangible line, said support member being removable from said mounting plate and being configured for coupling to said mounting plate to extend away from a plane of said mounting plate for contacting an opposing wall and supporting said mounting bracket.
2. The mounting bracket of claim 1, wherein
said support member is bendable about fold lines to define a body, a first leg bendable from a first position substantially parallel to a plane of said body to a second position extending away from said body, and a second leg bendable from a first position parallel to the plane of said body to a second position extending away from said body, where said body is configured for coupling to said mounting plate.
3. The mounting bracket of claim 2, further comprising
a first and a second extension member coupled to a side edge of said the support member by a frangible line, said first and second extension members being separable from said support member.
4. The mounting bracket of claim 2, wherein
said first leg has a distal end with a coupling member configured for receiving said first extension member to extend the length of said first leg, and said second leg has a distal end with a coupling member configured for receiving said second extension member for extending the length of said second leg.
5. The mounting bracket of claim 1, further comprising
a cable guide coupled to said mounting plate and being in a plane substantially parallel to a plane of said mounting plate in a first position,

said cable guide being bendable about a fold line from said first position to a second position extending out of the plane of the mounting plate to a position for receiving electrical cables.

6. The mounting bracket of claim 5, wherein
said cable guide include a first leg and a second leg, each said legs having a first end coupled to said mounting plate by a first fold line, and each said legs having a second end coupled to said cable guide by second fold line.

7. The mounting bracket of claim 6, wherein
said cable guide has a plurality of cable openings with a dimension for receiving and supporting a cable.

8. The mounting bracket of claim 7, wherein
said cable guide has a bendable tab between two adjacent cable openings, said bendable tab being bendable between an open position to enable a cable to be received in said adjacent cable openings and a closed position to capture said cables in said cable openings.

9. A mounting bracket for supporting an electrical box, said mounting bracket comprising:

a mounting plate having a central opening for accessing an electrical box coupled to said mounting bracket;

a cable guide coupled to an inner edge of said central opening and being oriented in a plane parallel to a plane of said mounting plate in a first position, said cable guide being bendable about a fold line from said first position to a second extended position for receiving a cable coupled to said electrical box.

10. The mounting bracket of claim 9, wherein
said cable guide has a support plate, first leg and a second leg, each said legs having a first end coupled to said inner edge of said mounting plate

by a first fold line, and a second end coupled to said support plate of said cable guide by a second fold line.

11. The mounting bracket of claim 9, wherein
said support plate of said cable guide has a plurality of cable openings for receiving a cable, and includes a bendable retaining tab between two of said cable openings, said bendable retaining tab being bendable from a first position to enable said cable openings to receive a cable and a second position to retain the cable in the respective cable opening.

12. The mounting bracket of claim 9, further comprising:
a support member coupled to said inner edge of said opening in said mounting plate by a frangible line and being in a plane substantially parallel to said mounting plate, wherein said support member being removable from said mounting plate by said frangible line.

13. The mounting bracket of claim 12, wherein
said support member includes a plurality of fold lines to bend said support member to define a main body, a first leg and a second leg, said first leg and second leg being bendable to a second position substantially perpendicular to a plane of said main body.

14. The mounting bracket of claim 12, wherein
said main body of said support member has a coupling tab for coupling said main body to a first inner edge of said mounting plate, and where said first leg and second leg are bendable to extend substantially perpendicular from said main body.

15. The mounting bracket of claim 14, further comprising
a first extension member and a second extension member coupled to said support member by a frangible tab and being removable from said support member, said first extension member being configured for coupling

to a distal end of said first leg, and said second extension member configured for being coupled to a distal end of said second leg.

16. A mounting bracket for supporting an electrical box, said mounting bracket comprising:

a mounting plate having a top rail, a bottom rail, a first end portion and a second end portion and having a central opening with a dimension for accessing an electrical box;

a support member coupled to an inner edge of said central opening by a frangible tab and being removable from said support member;

a cable guide coupled to said inner edge of said central opening by a fold line, said cable guide being in a first position substantially parallel to a plane of said mounting plate and being bendable to a second position spaced outwardly from said mounting plate and being configured for receiving a plurality of cables from the electrical box.

17. The mounting bracket of claim 16, wherein

said support member includes a plurality of fold lines defining a body, a first leg and a second leg, said first leg and second leg being bendable to a position extending substantially perpendicular to a plane of said body.

18. The mounting bracket of claim 16, further comprising

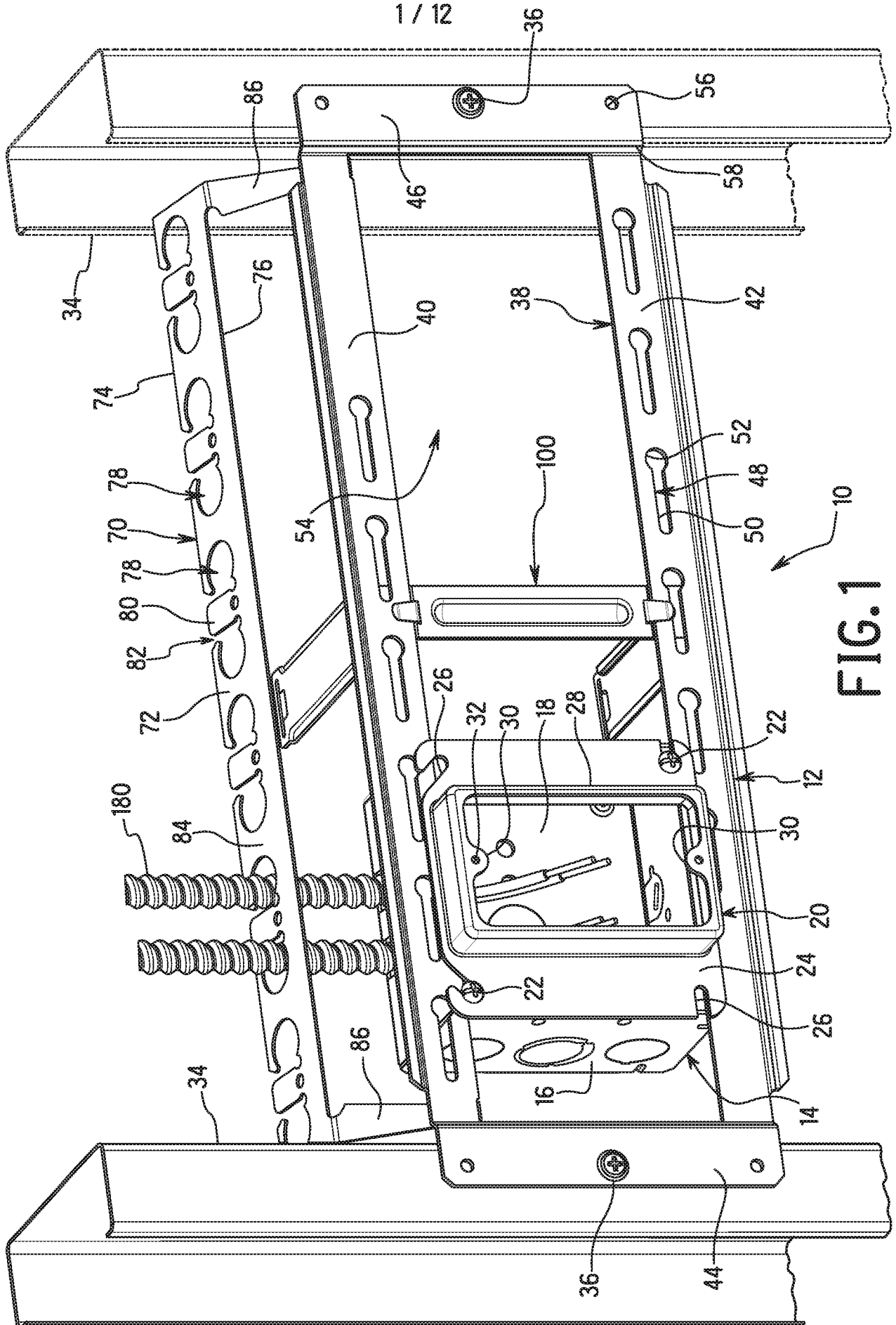
a first extension member and a second extension member coupled to said support member by a frangible tab, said extension members being configured for coupling to an end of said first leg and second leg, respectively.

19. The mounting bracket of claim 16, wherein

said cable guide includes a support plate, a first leg having a first end coupled to said inner edge of said central opening by a first fold line and a second end coupled to said support plate by a second fold line, and a second leg having a first end coupled to the inner edge of the central opening by a

first fold line and a second end coupled to said support plate by a second fold line.

20. The mounting bracket of claim 19, wherein
said support plate of said cable guide has a plurality of cable openings having a dimension for receiving a cable from the electrical box, said support plate having a bendable tab between two adjacent cable openings, said bendable tab being bendable from a first open position to allow said cable opening to receive a cable, and second closed position to retain the cable in the cable opening.



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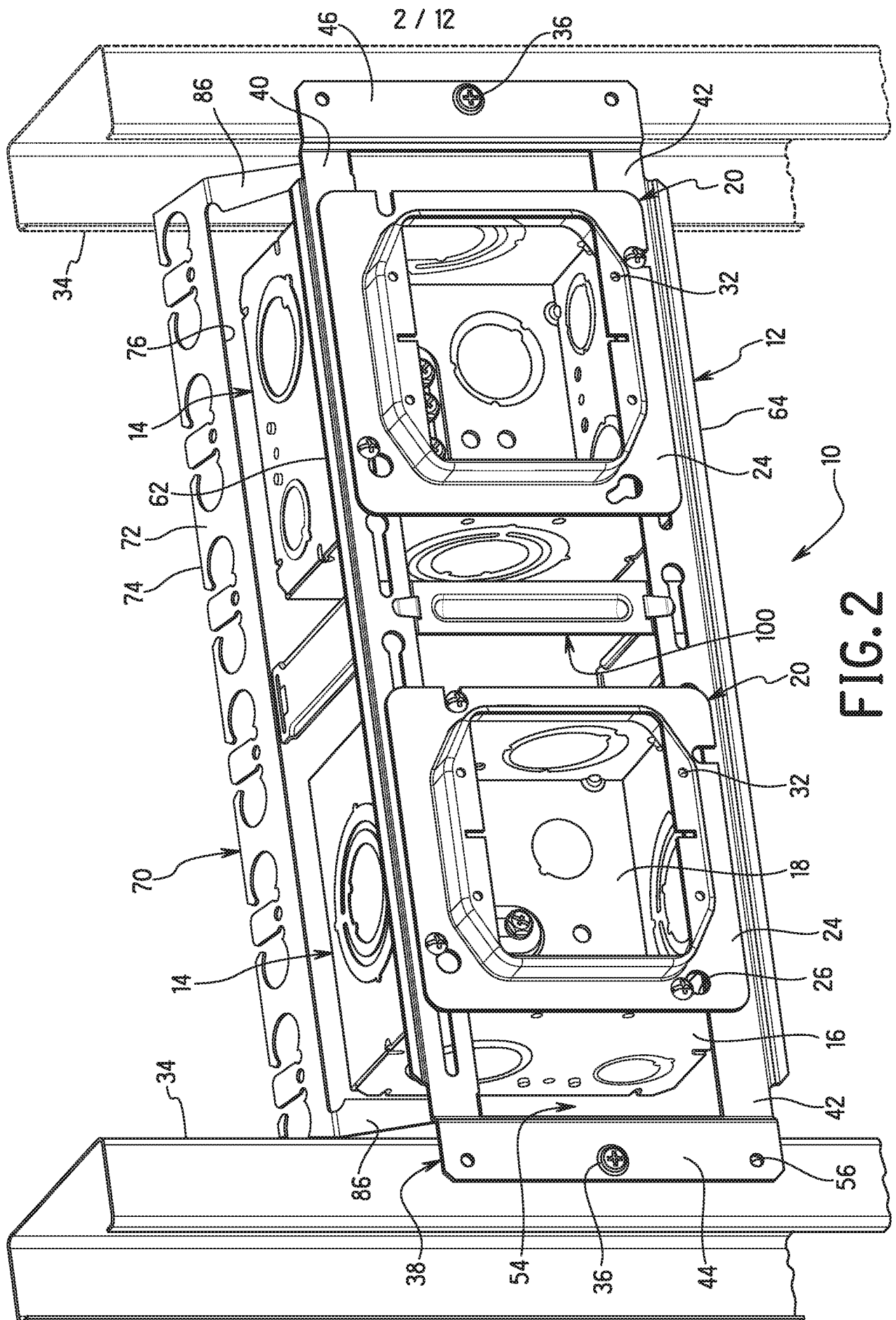
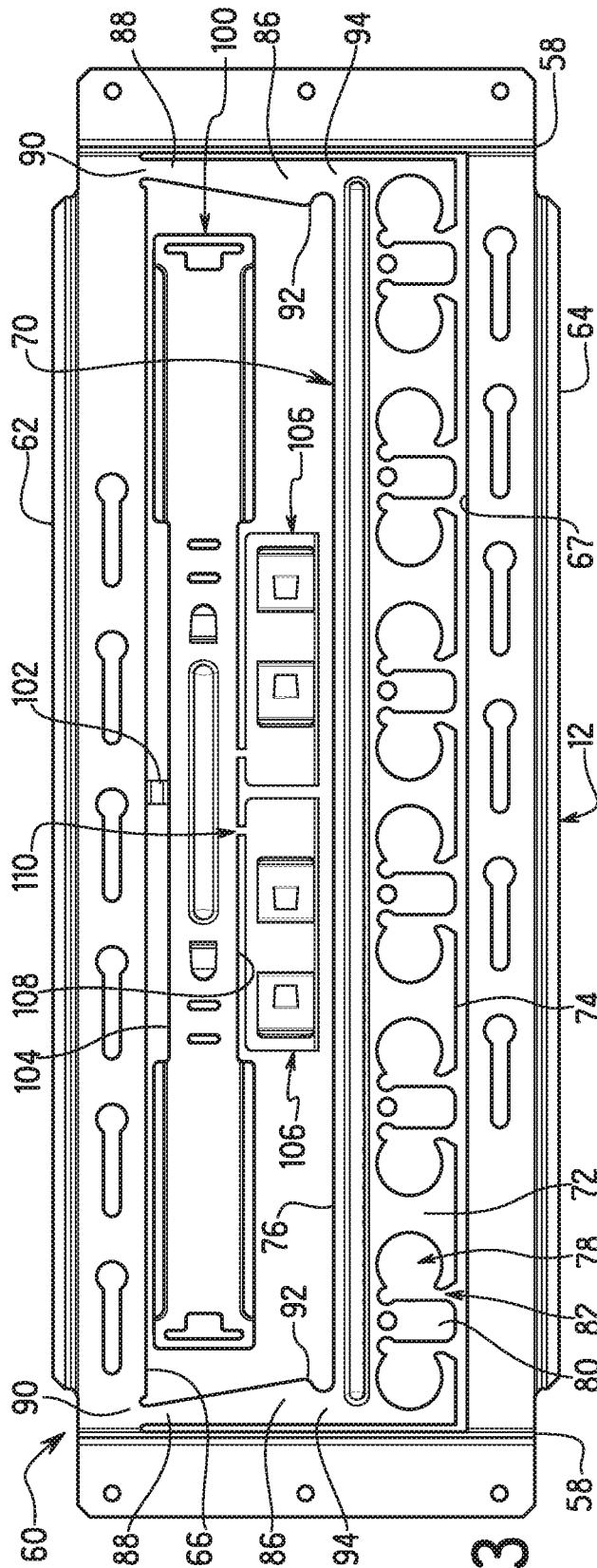
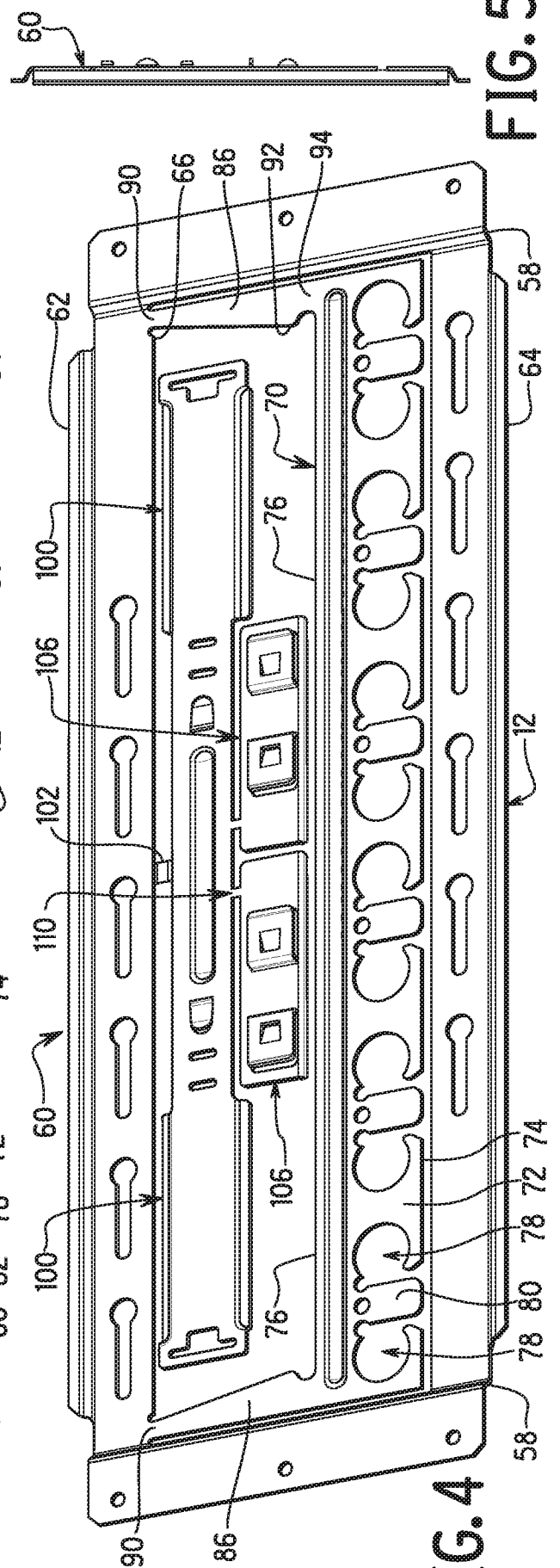


Fig. 2



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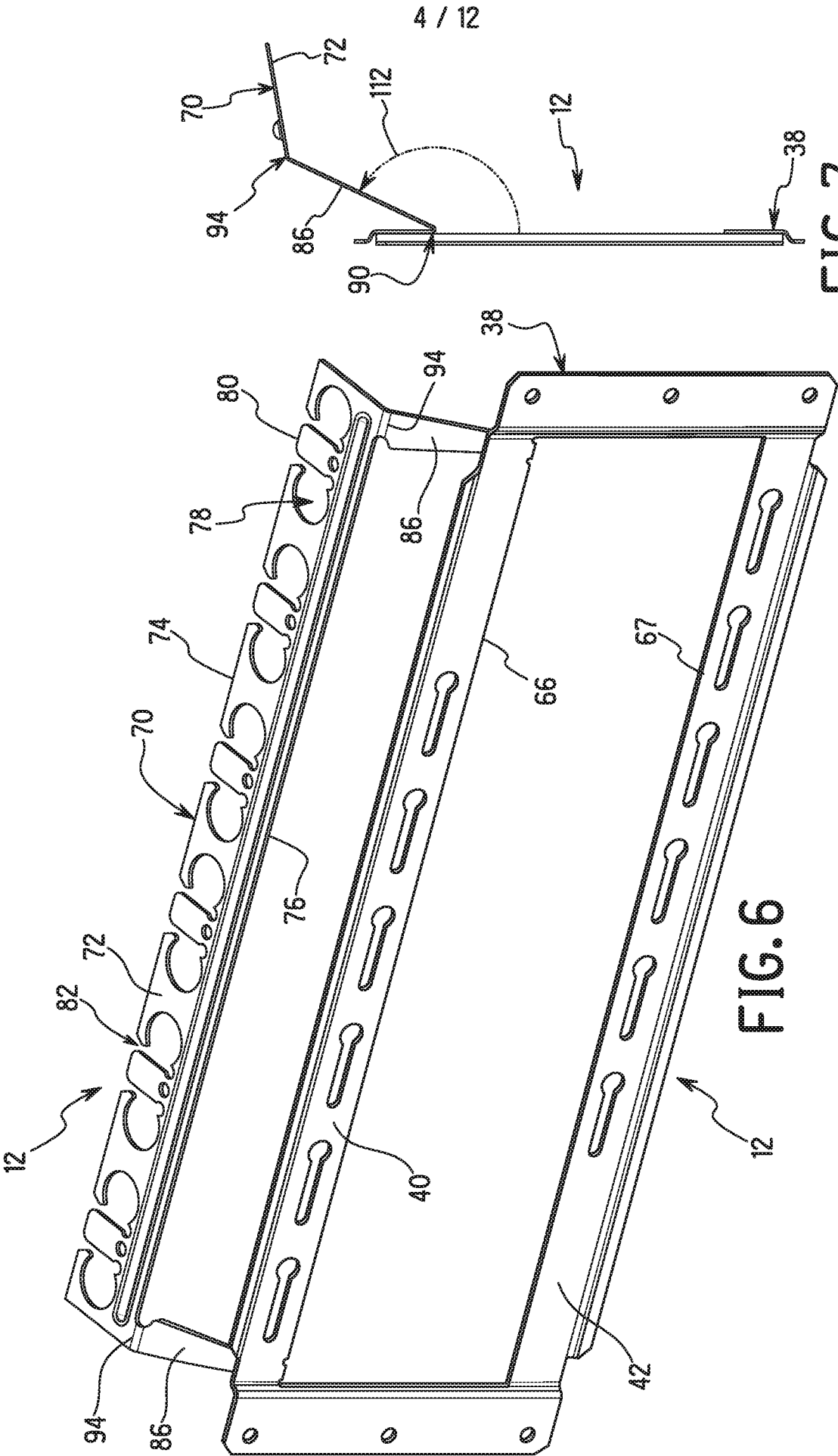


FIG. 7

FIG. 6

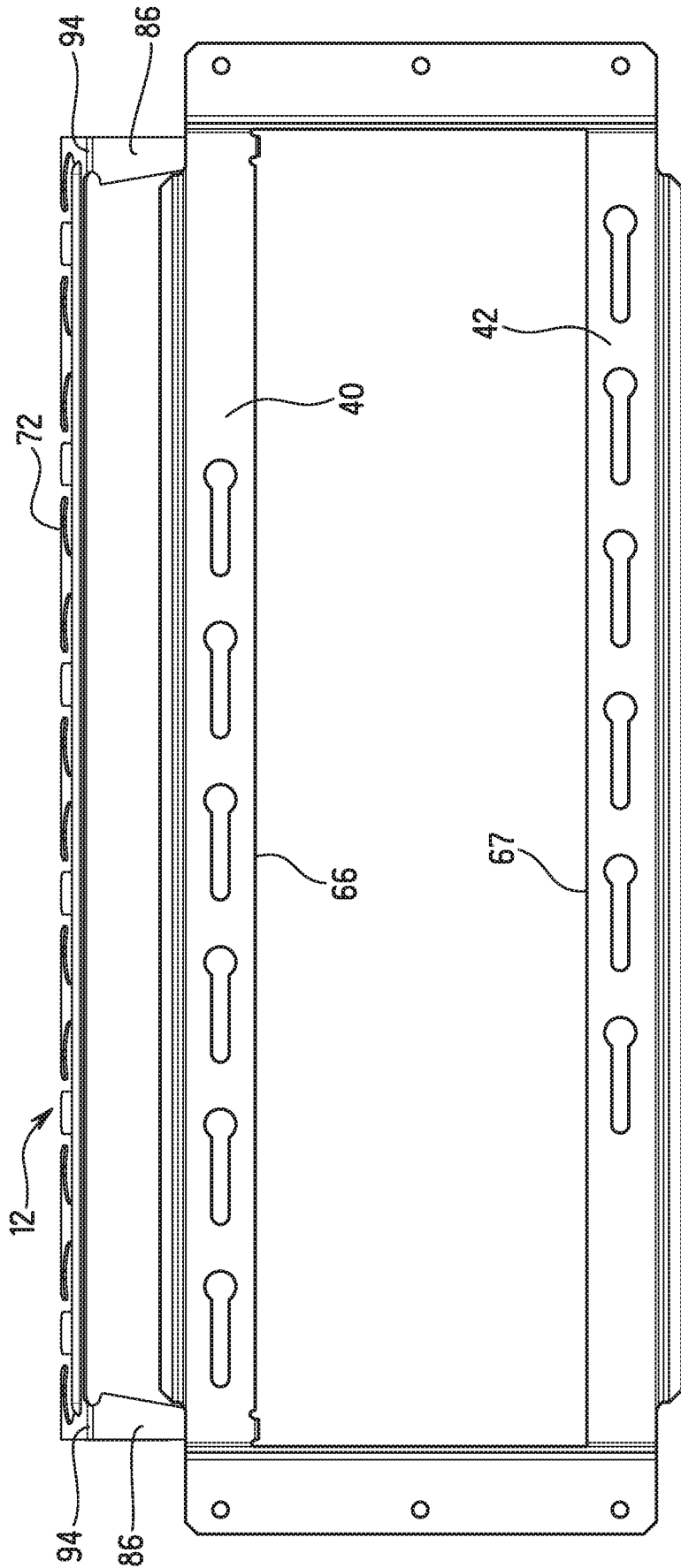


FIG. 8

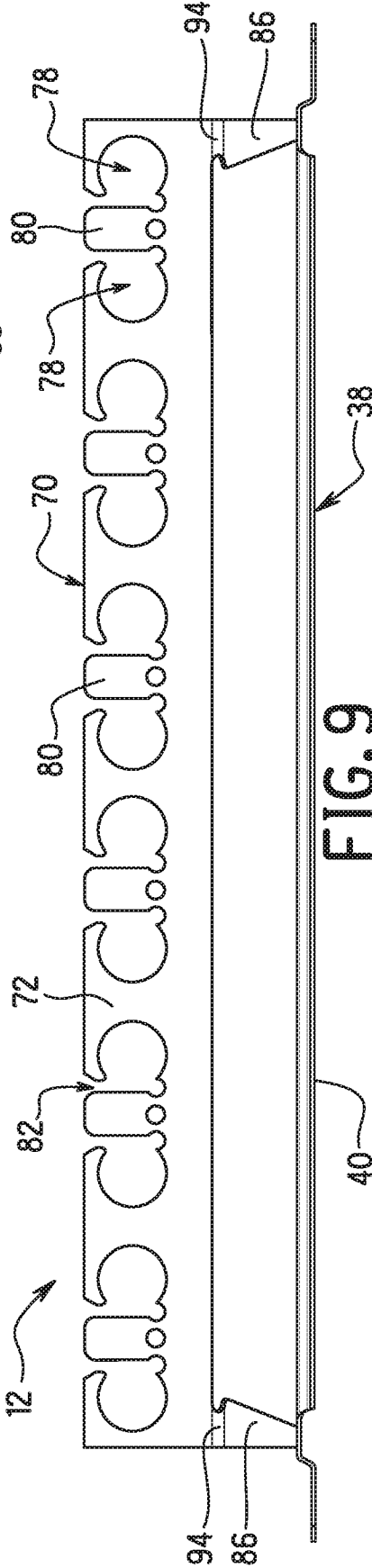
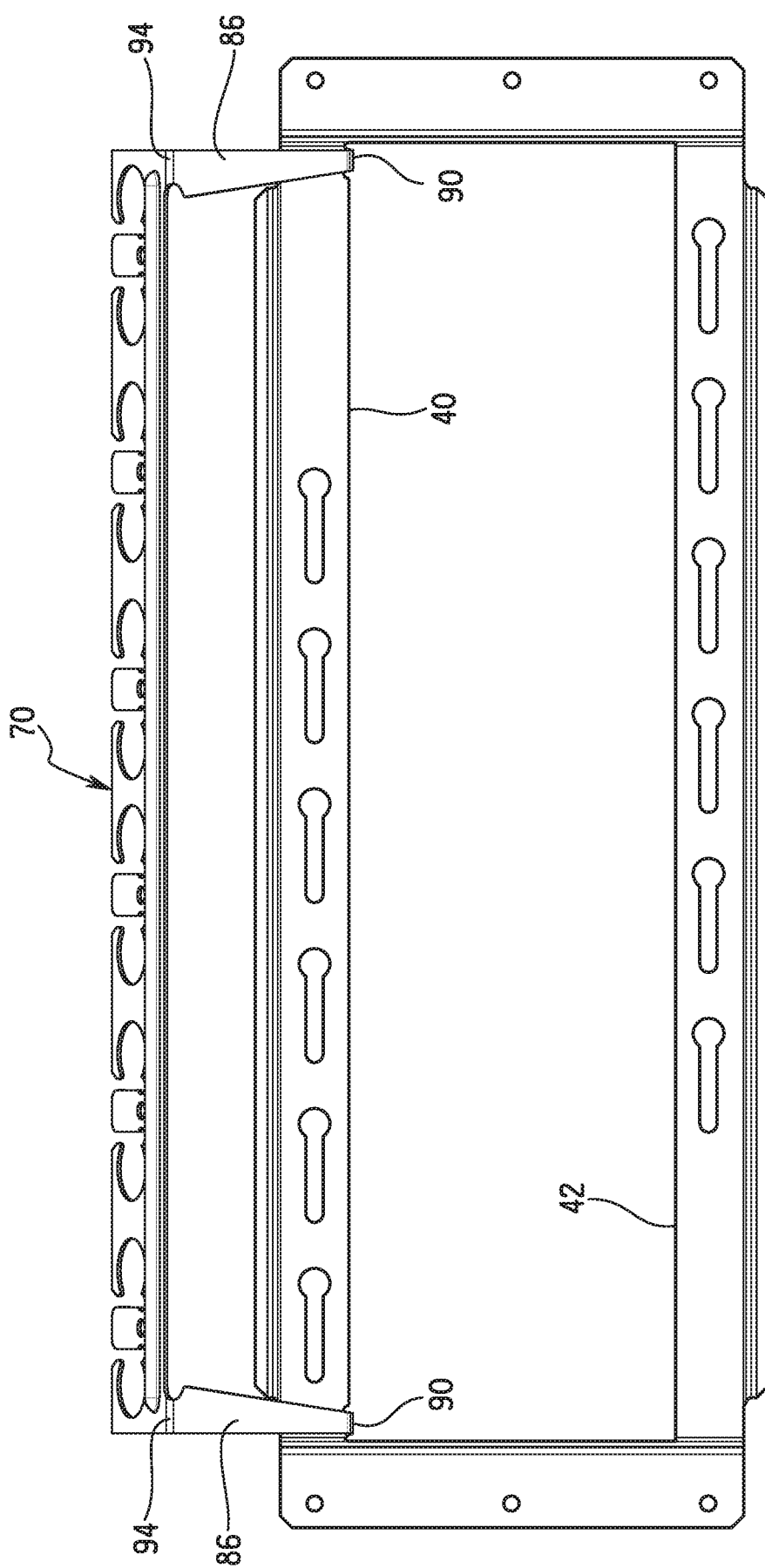


FIG. 9



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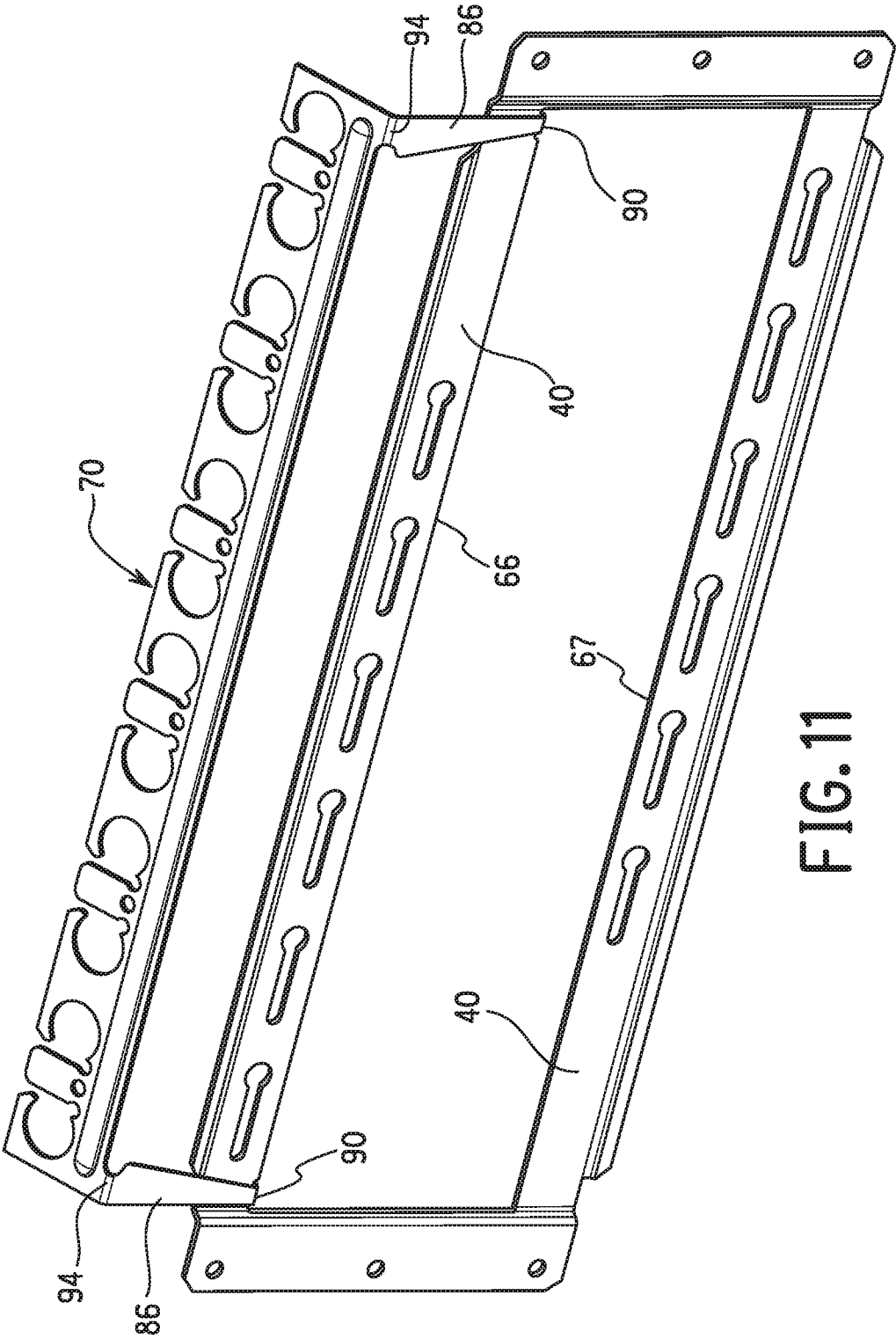
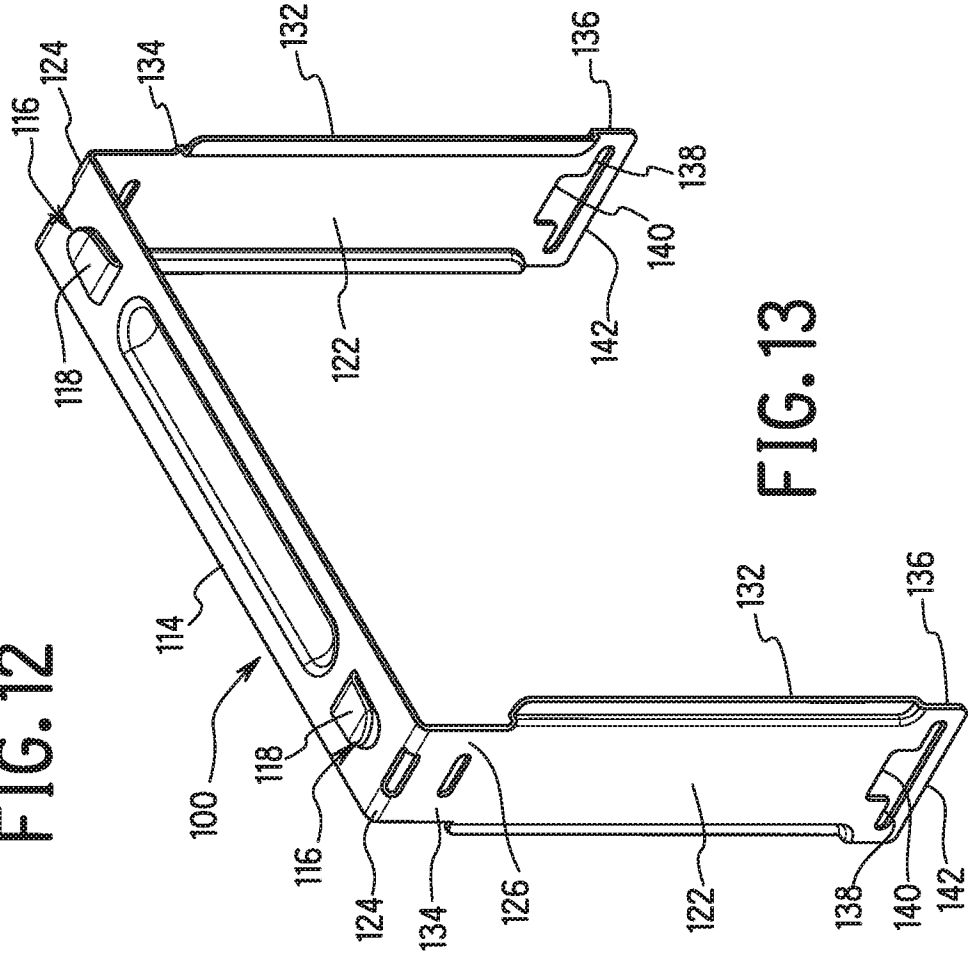
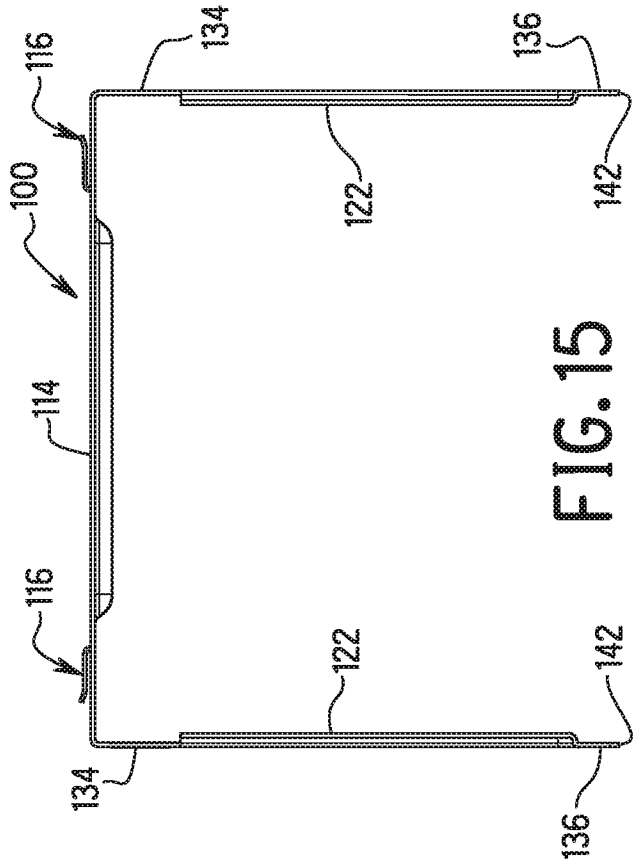
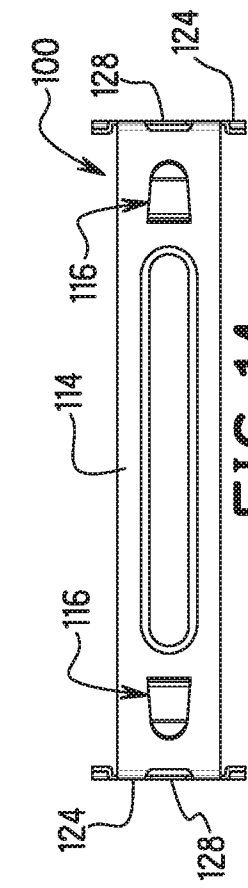
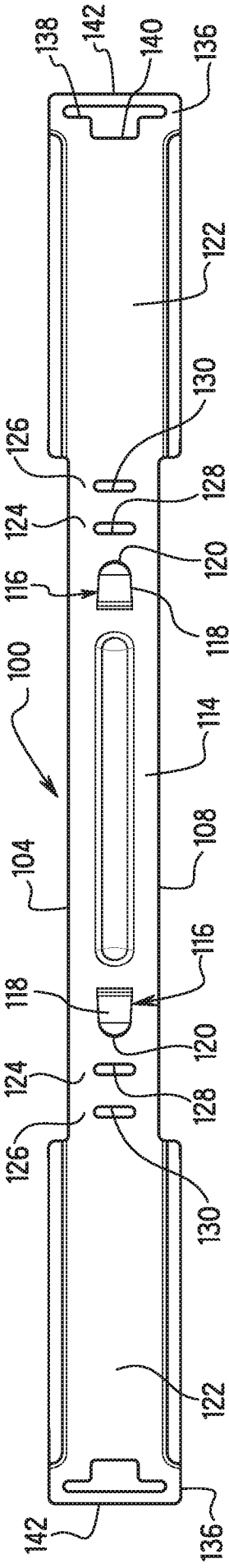
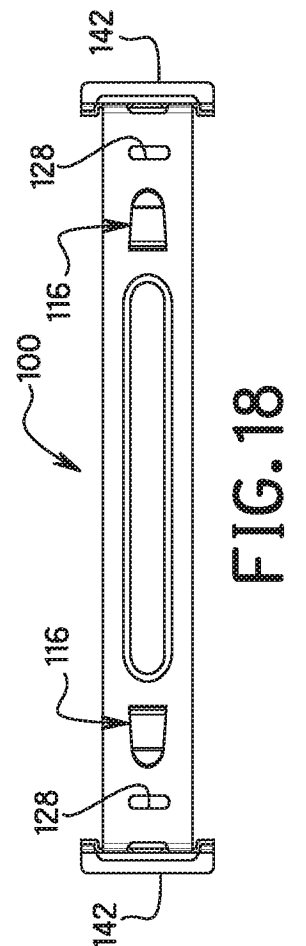
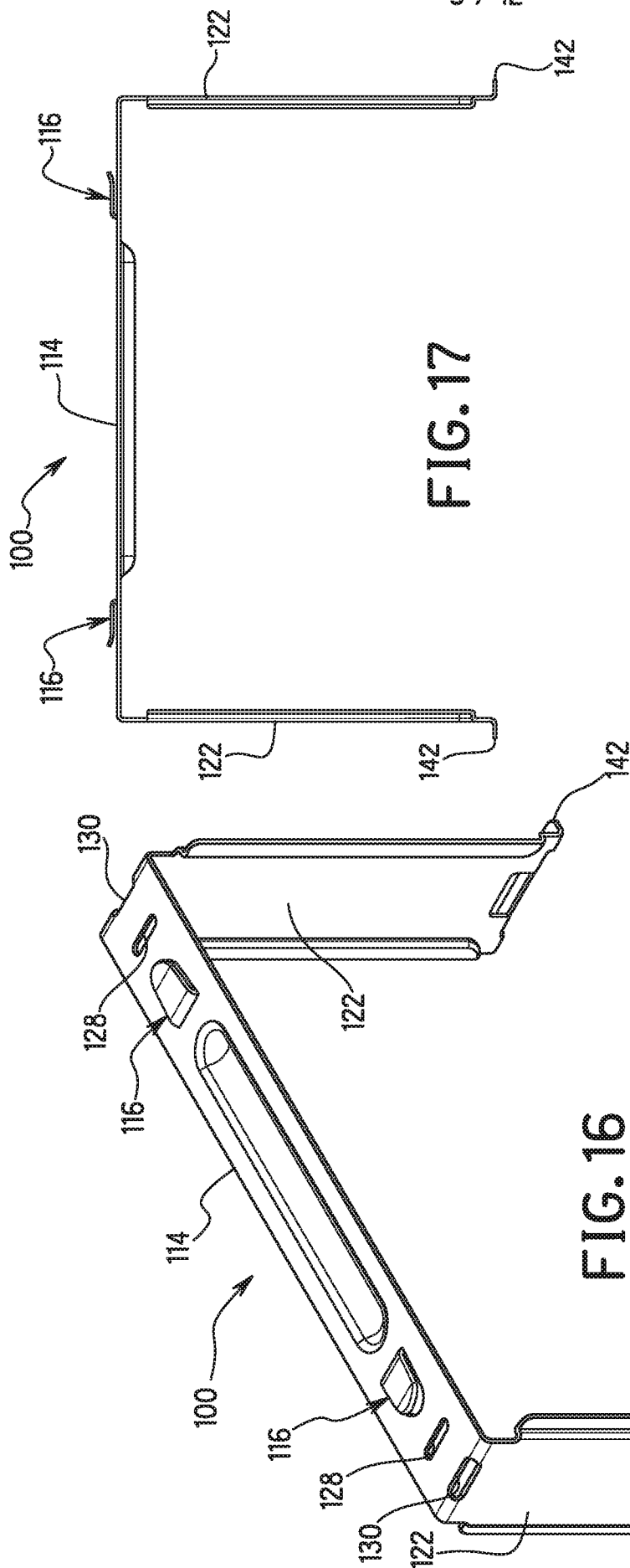
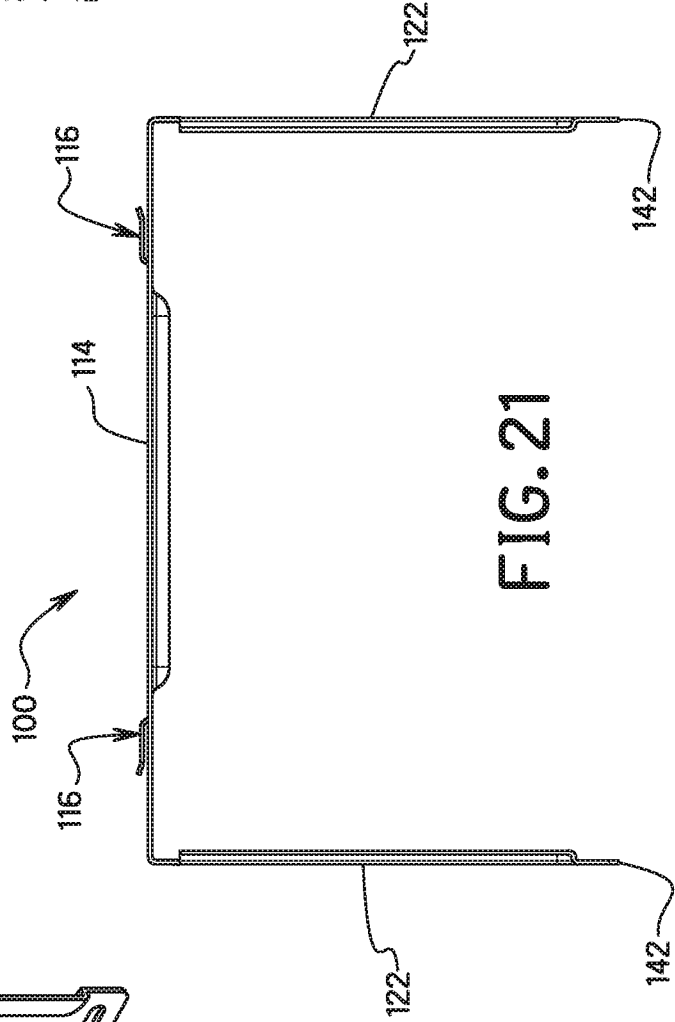
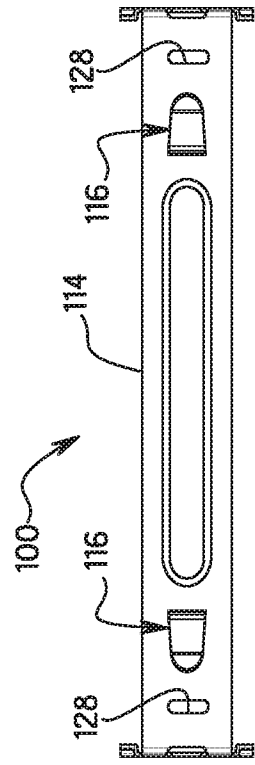
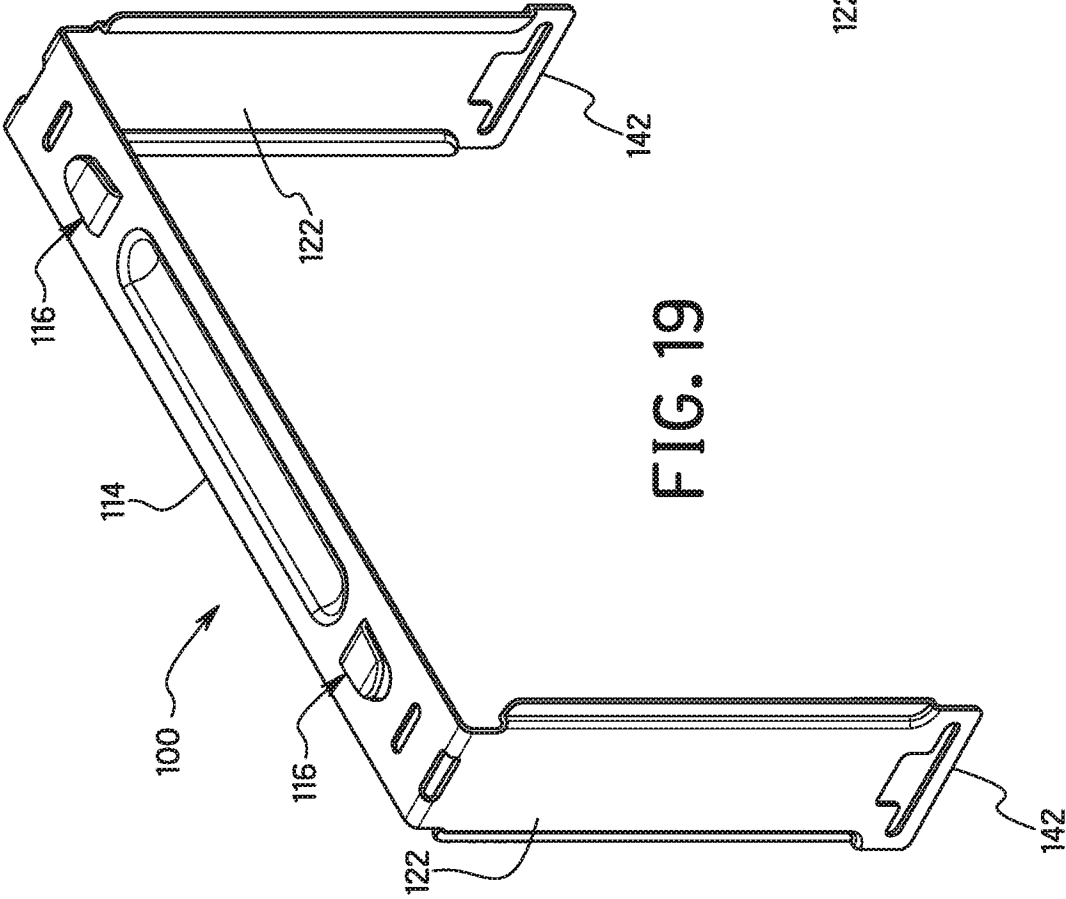


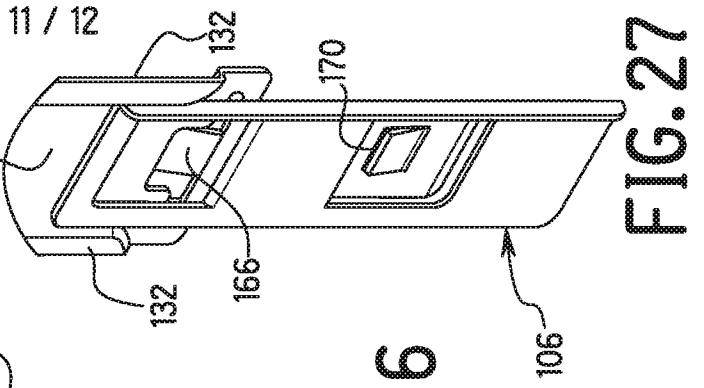
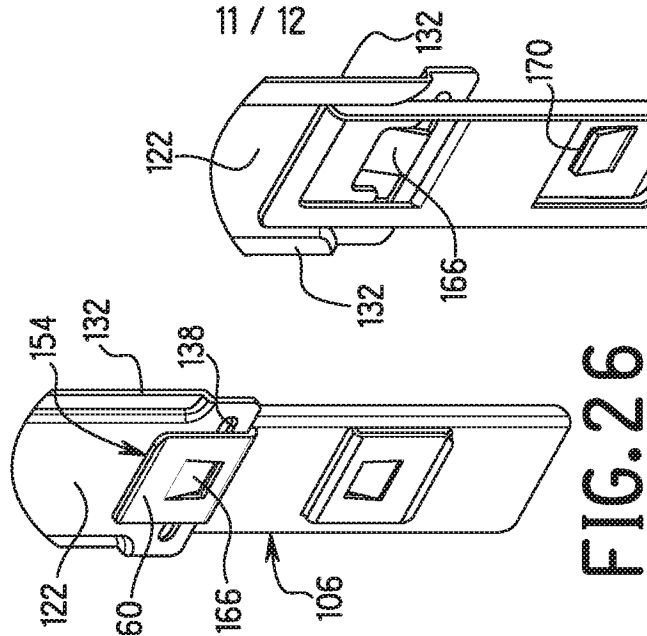
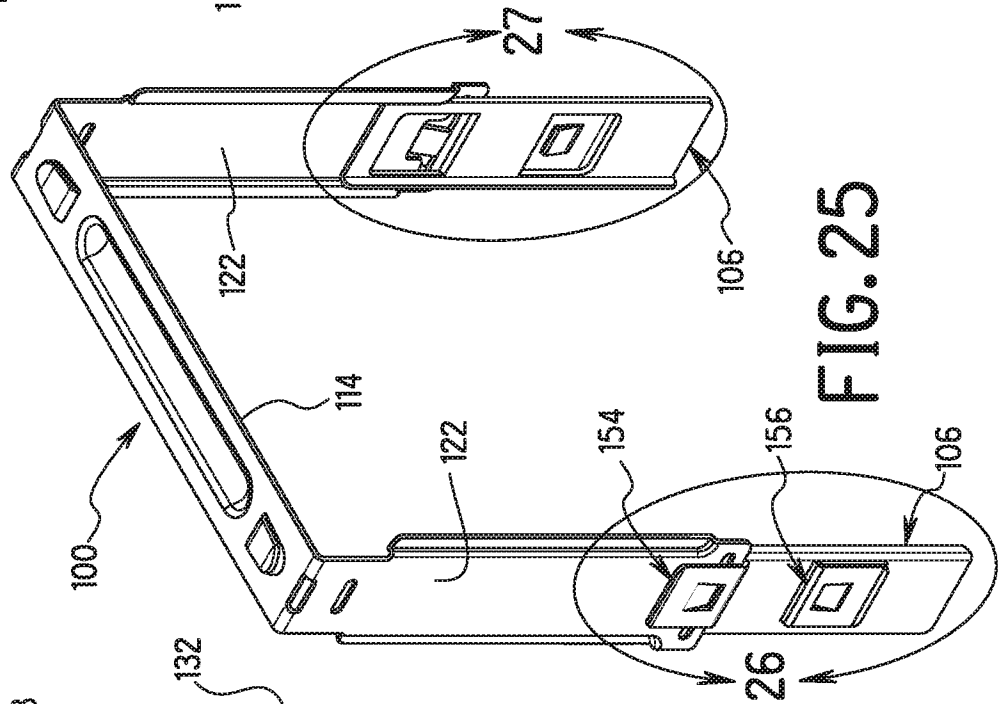
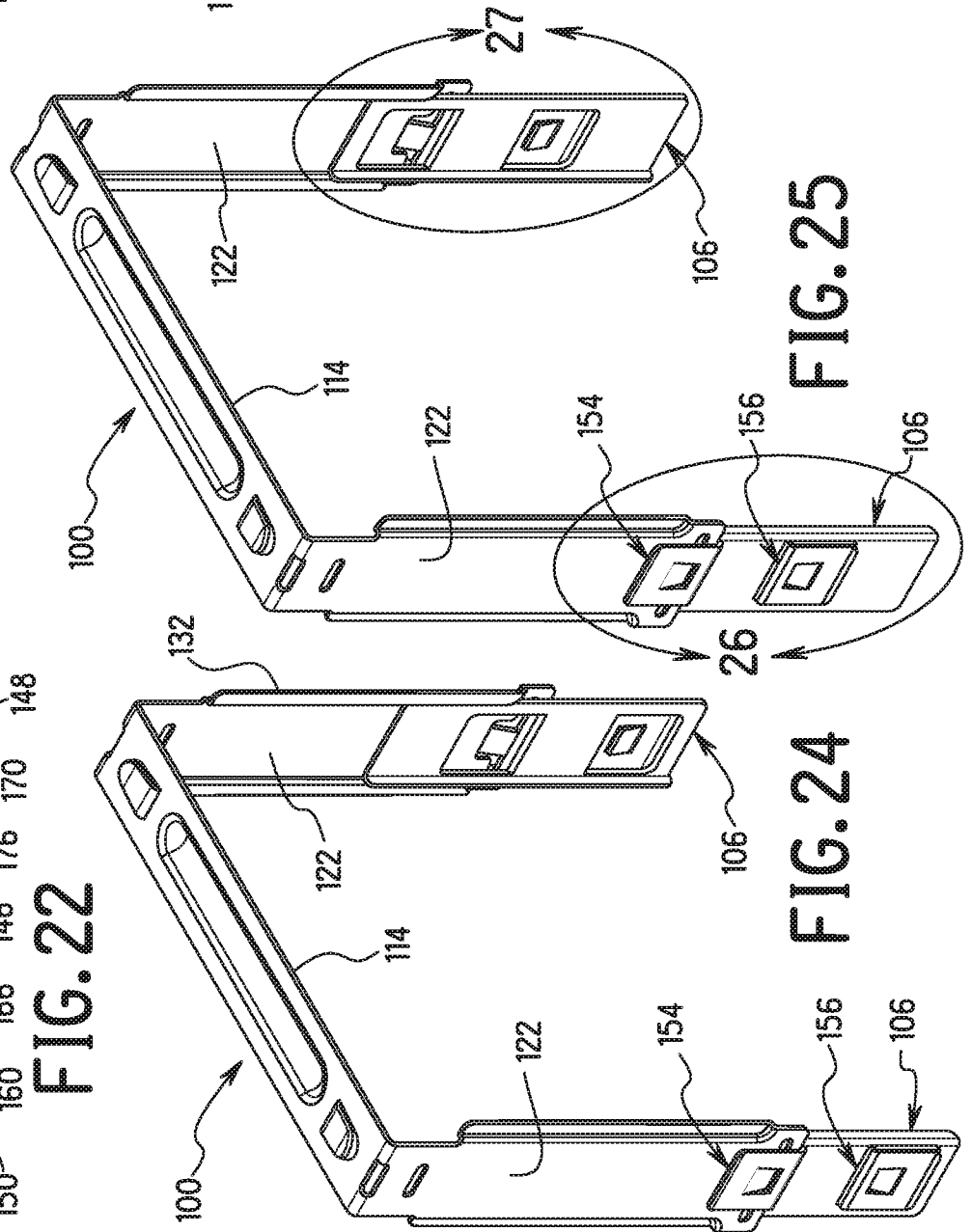
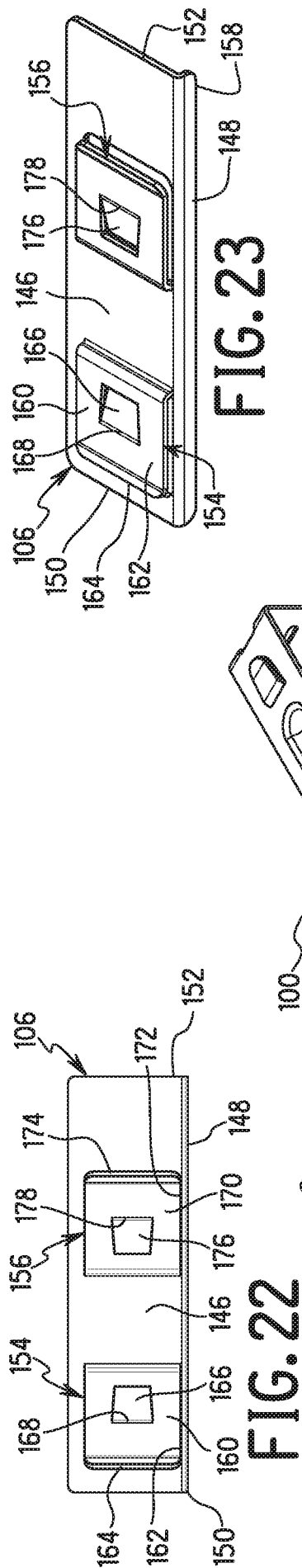
FIG. 11



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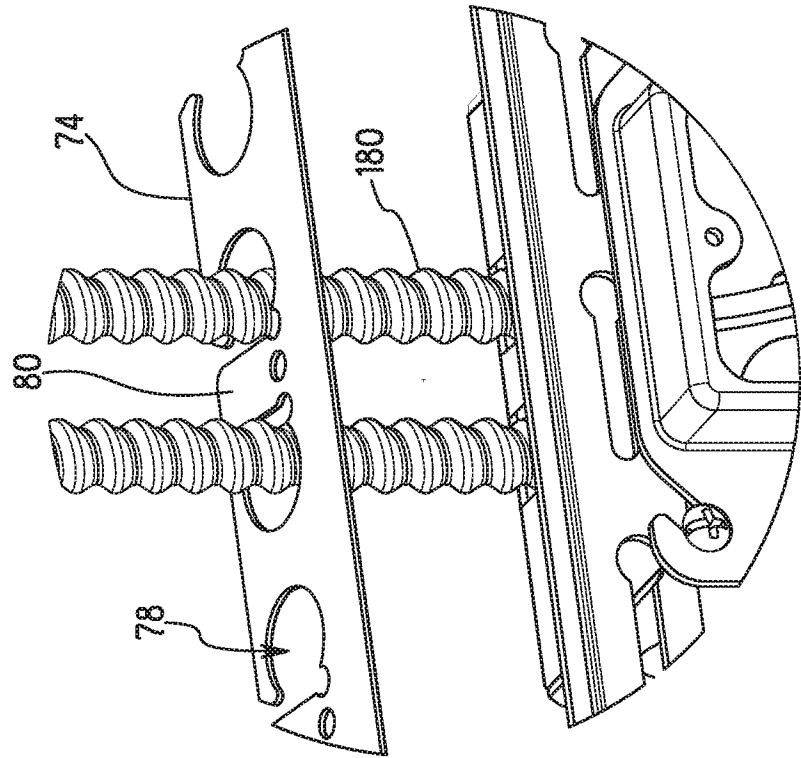


FIG. 29

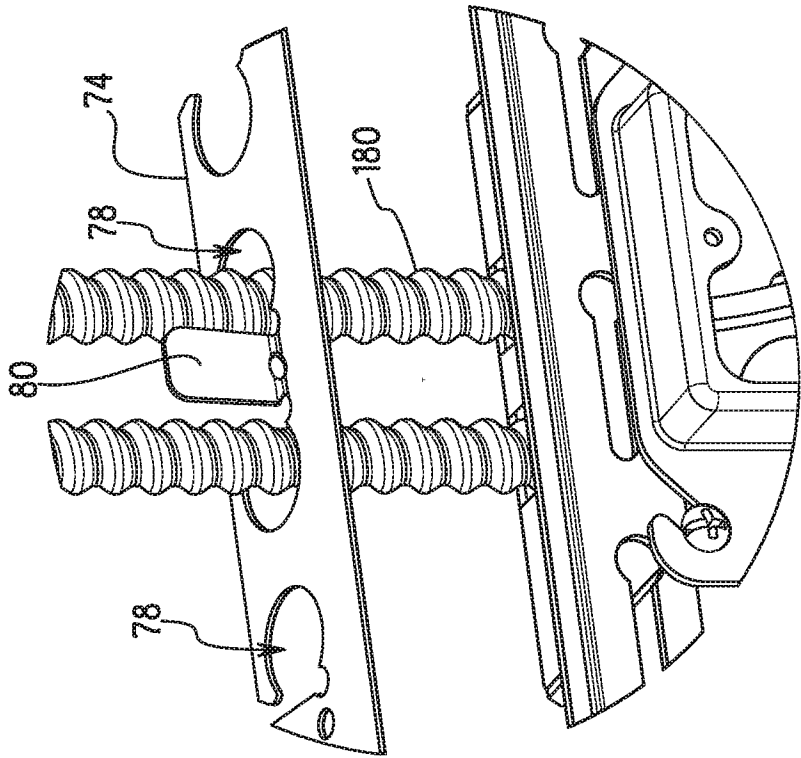


FIG. 28

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US16/17549

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - H02G 3/22, 3/12, 3/08 (2016.01)

CPC - H02G 3/263, 3/125, 3/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC(8) Classification(s): H02G 3/08, 3/12, 3/22 (2016.01)

CPC Classification(s): H02G 3/12, 3/123, 3/125, 3/263, 3/08; Y10S 248/906

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PatSeer (US, EP, WO, JP, DE, GB, CN, FR, KR, ES, AU, IN, CA, Other Countries (INPADOC), RU, AT, CH, TH, BR, PH); Google Patent, Google Scholar, Total Patent, EBSCO; Keywords: mount, electrical box, support, fold line, bendable, mounting plate, bracket, unitary

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y --- A	US 2010/0000783 A1 (TALLY, B. et al.) January 7, 2010; figures 1, 5a, 7, 8, 10-5, paragraphs [0027], [0029], [0030], [0032], [0047]-[0049], [0051]	1 --- 5-8 --- 3 & 4
X --- Y	US 2005/0067180 A1 (DINH, C.) March 31, 2005; figures 1 & 2, paragraphs [0028], [0030]-[0034]	1 --- 2
Y	US 5,386,959 A (LAUGHLIN, R. et al.) February 7, 1995; abstract, figures 1, 4, & 7, column 3, lines 23-47	2
Y --- A	US 2010/0108347 A1 (KOREZ, K. et al.) May 6, 2010; figures 10-13, paragraphs [0045], [0052], [0054]-[0056]	5-8 --- 3 & 4
A	US 2006/0005987 A1 (DENIER, D. et al.) January 12, 2006; figures 3 & 5, paragraph [0021]	3 & 4

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

18 April 2016 (18.04.2016)

Date of mailing of the international search report

12 JUL 2016

Name and mailing address of the ISA/

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450

Facsimile No. 571-273-8300

Authorized officer

Shane Thomas

PCT Helpdesk: 571-272-4300
PCT OSP: 571-272-7774

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US16/17549

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

See extra sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-8

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US16/17549

-Continued from Box III: Observations where unity of invention is lacking-

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fee must be paid.

Group I: Claims 1-8 are directed towards a mounting bracket comprising a one piece mounting plate.

Group II: Claims 9-20 are directed toward a mounting bracket comprising a cable guide.

The inventions listed as Groups I-II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

The special technical features of Group I include at least a support member integrally formed with said mounting plate and coupled to said mounting plate by a frangible line, said support member being removable from said mounting plate and being configured for coupling to said mounting plate to extend away from a plane of said mounting plate for contacting an opposing wall and supporting said mounting bracket, which are not present in Group II.

The special technical features of Group II include at least a cable guide coupled to an inner edge of said central opening and being oriented in a plane parallel to a plane of said mounting plate in a first position said cable guide being bendable about a fold line from said first position to a second extended position for receiving a cable coupled to said electrical box, which are not present in Group I.

The common technical features shared by Groups I-II are a mounting bracket for mounting an electrical box comprising: a mounting plate having a central opening configured for accommodating the electrical box; and a support member being removable.

However, these common features are previously disclosed by US 2010/0000783 A1 to TALLY et al. (hereinafter "Tally"). Tally discloses a mounting bracket for mounting an electrical box (floor stand 1 (mounting bracket) for mounting an electrical box 17; paragraphs [0027], [0030]) comprising: a mounting plate having a central opening configured for accommodating the electrical box (body 3 (mounting plate) having a box mounting section 13 which comprises a central opening 71 for securing the electrical box 17; Figure 4, paragraph [0029]); and a support member being removable (mounting arm 91 is removable; Figure 5A and paragraph [0032]).

Since the common technical features are previously disclosed by the Tally reference, these common features are not special and so Groups I-II lack unity.