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(54) **DEVICE AND METHODS FOR INSTALLING ELEVATOR CAB INTERIOR WALL PANELS**

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CPC ***B66B 11/0253*** (2013.01)

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,103,708	A *	9/1963	Pomeroy	B66B 11/0253 410/107
3,236,932	A *	2/1966	Grigas et al.	52/543
3,321,883	A *	5/1967	Pascucci	52/774
3,611,664	A *	10/1971	Barbera	52/481.1
3,621,635	A *	11/1971	Lange	52/235
3,631,942	A *	1/1972	Brounn	B66B 11/0253 187/401
3,903,670	A *	9/1975	Robinson, Jr.	52/478
4,047,349	A *	9/1977	Aguilar, Jr.	52/551
4,288,958	A *	9/1981	Chalmers et al.	52/478
4,363,201	A *	12/1982	Bains	B66B 11/0253 52/584.1
4,462,193	A *	7/1984	Ericson	52/282.4
4,480,360	A	11/1984	Brugman et al.	
4,961,295	A *	10/1990	Kosch et al.	52/36.5

(Continued)

FOREIGN PATENT DOCUMENTS

AU	2010202033	12/2010
EP	0479733	8/1992
EP	2194208	4/2008

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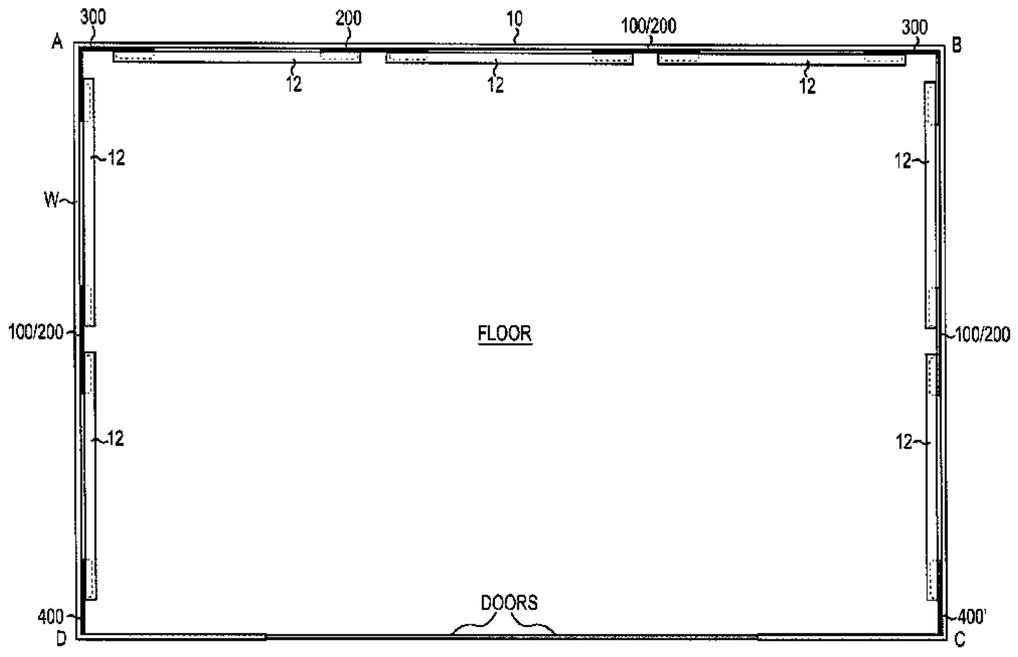
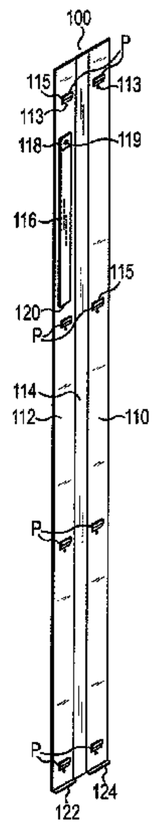
(57) **ABSTRACT**

The present invention is directed to, inter alia, devices and methods for precision installation of elevator wall panels and intervening reveal strips in an elevator cab shell. Various embodiments comprise corner stays and intermediate stays with pre-installed clips thereon and with locating means installed thereon to facilitate accurate locating of adjacent stay(s) in order to greatly reduce the labor and time required to install the wall panels accurately. Further, various embodiments comprise pre-installed reveal strips on the stay(s) and that are interposed between each installed wall panel. Pre-installing the reveal strips further reduces the labor and time required at the installation site.

25 Claims, 8 Drawing Sheets





(56) **References Cited**

U.S. PATENT DOCUMENTS

5,265,396	A	11/1993	Amimoto	
5,720,460	A	2/1998	Watson	
6,044,609	A *	4/2000	Kim	52/551
6,164,029	A	12/2000	Lee	
6,631,589	B1 *	10/2003	Friedman et al.	52/30
6,725,618	B2 *	4/2004	Albracht	52/489.1
7,043,884	B2	5/2006	Moreno	
7,654,058	B2	2/2010	Hatzinikolas	
8,096,091	B2 *	1/2012	Cristina	52/551
8,127,513	B2	3/2012	Gibbs	
8,230,982	B2	7/2012	Friedman et al.	
2007/0261348	A1	11/2007	Surowiecki	
2010/0229484	A1 *	9/2010	Carolan et al.	52/302.1
2012/0192518	A1	8/2012	Delforte	

* cited by examiner

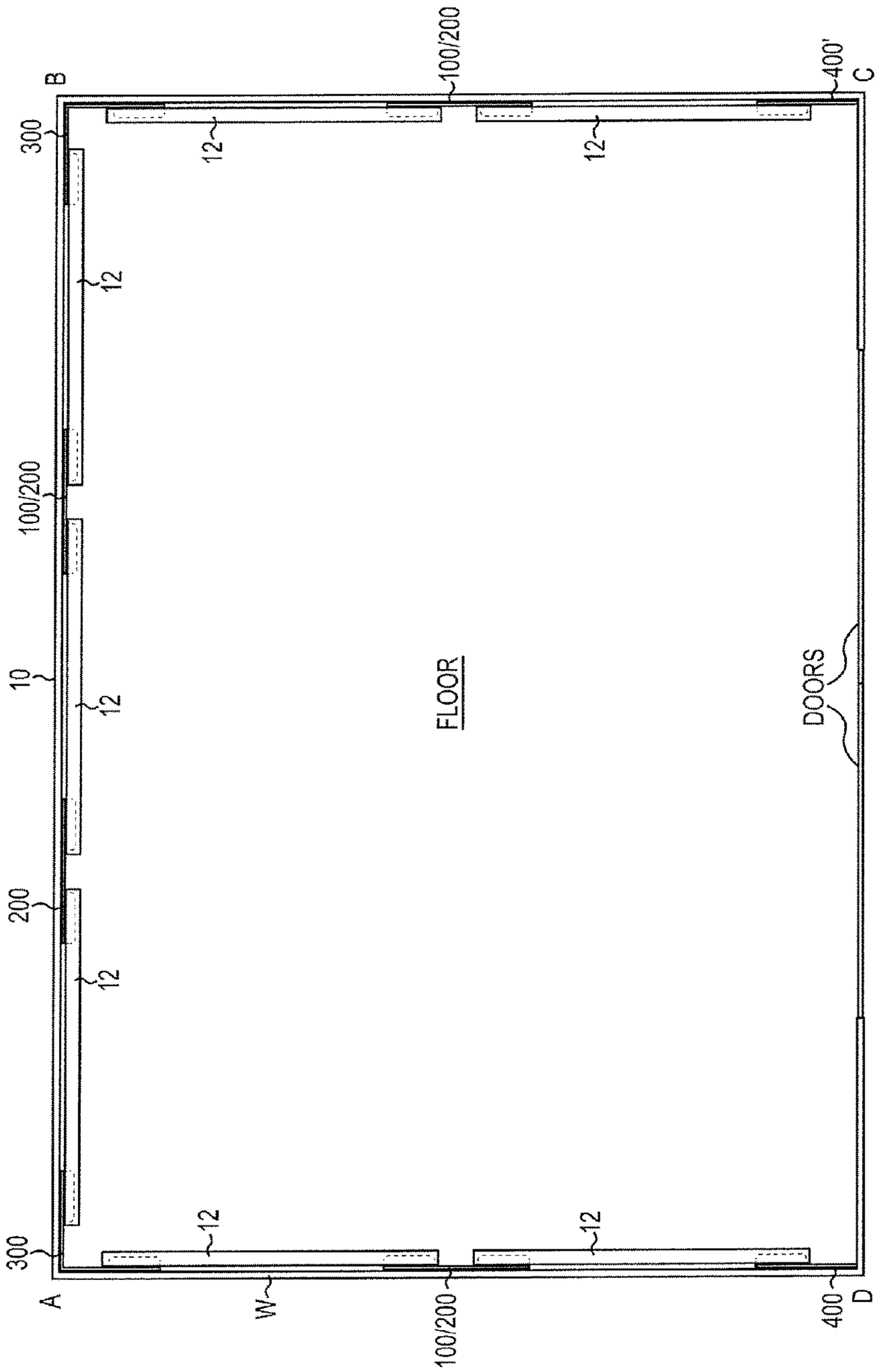

B
100/200
400'
C
300
12
12
12
12
100/200
10
12
200
12
DOORS
FLOOR
300
12
12
A
W
100/200
400
D

Fig. 1

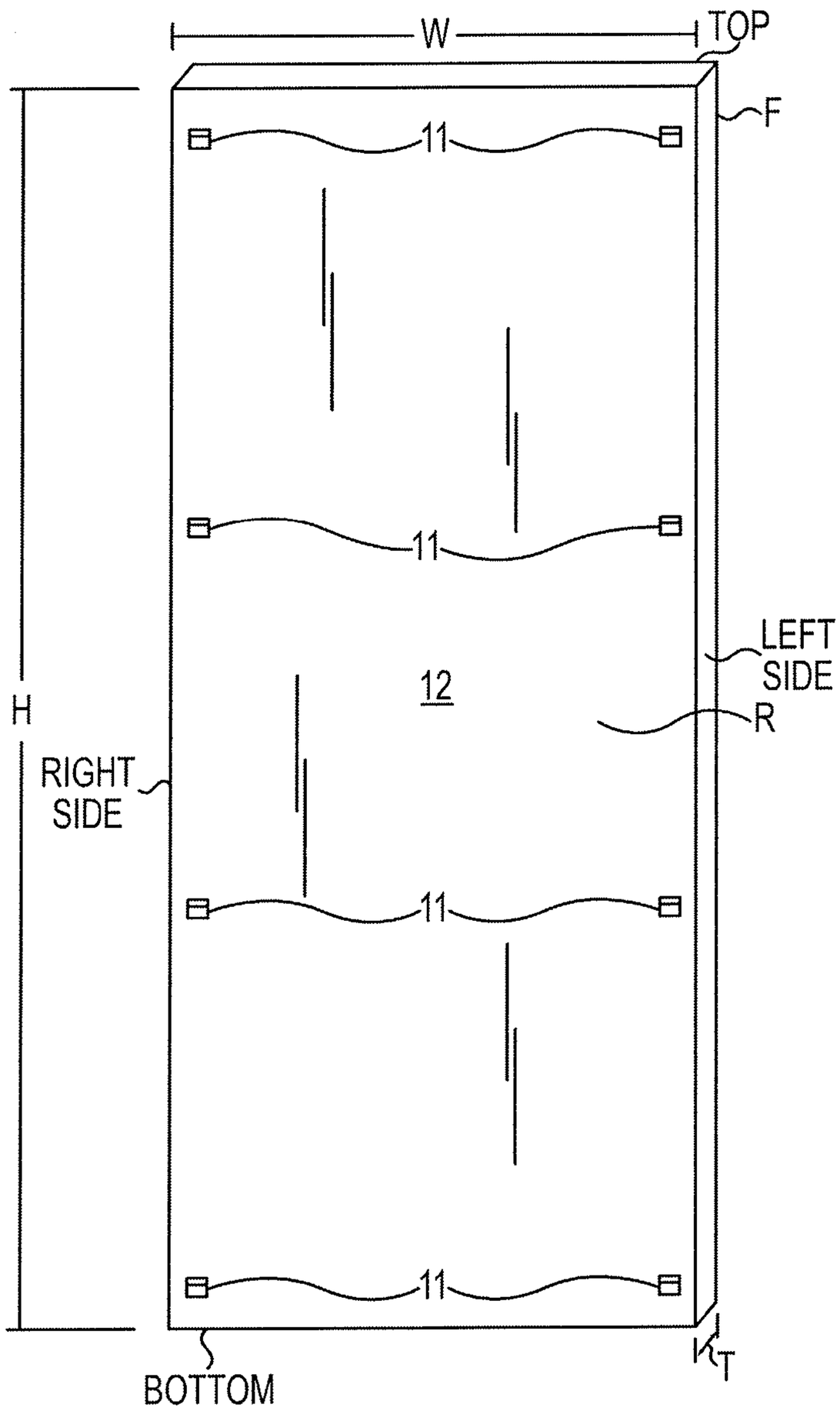


Fig. 2

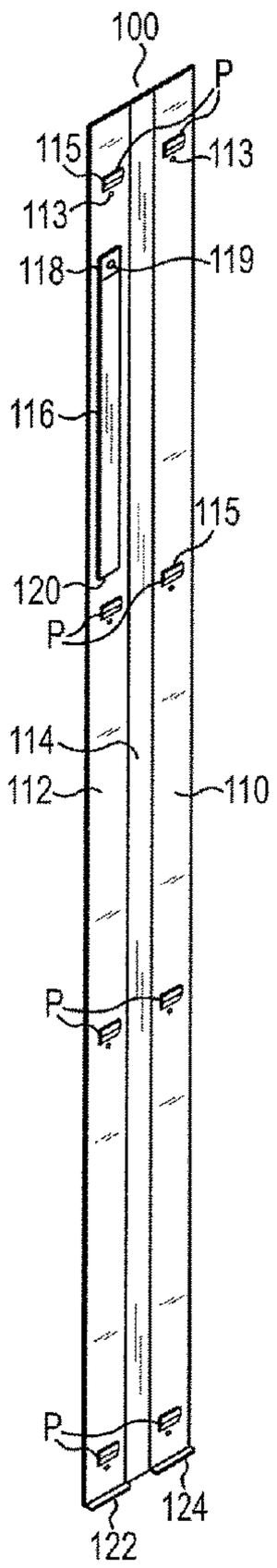


Fig. 3

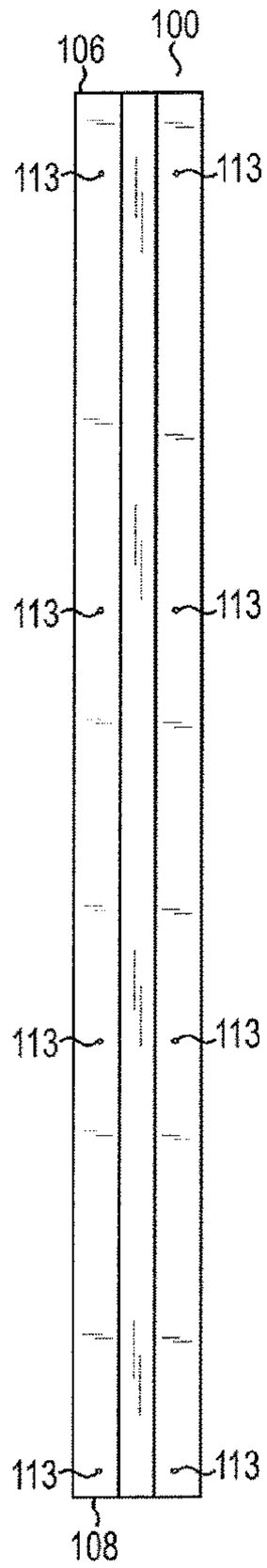


Fig. 4

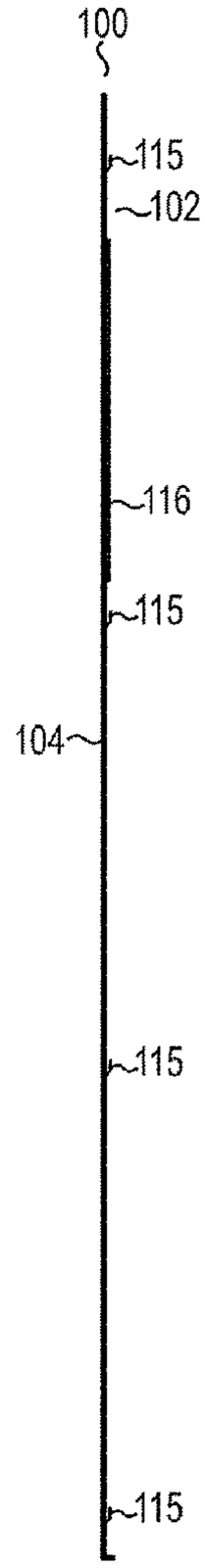


Fig. 5

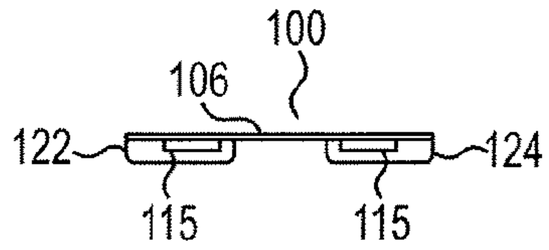

100
106
122
124
115
115

Fig. 6

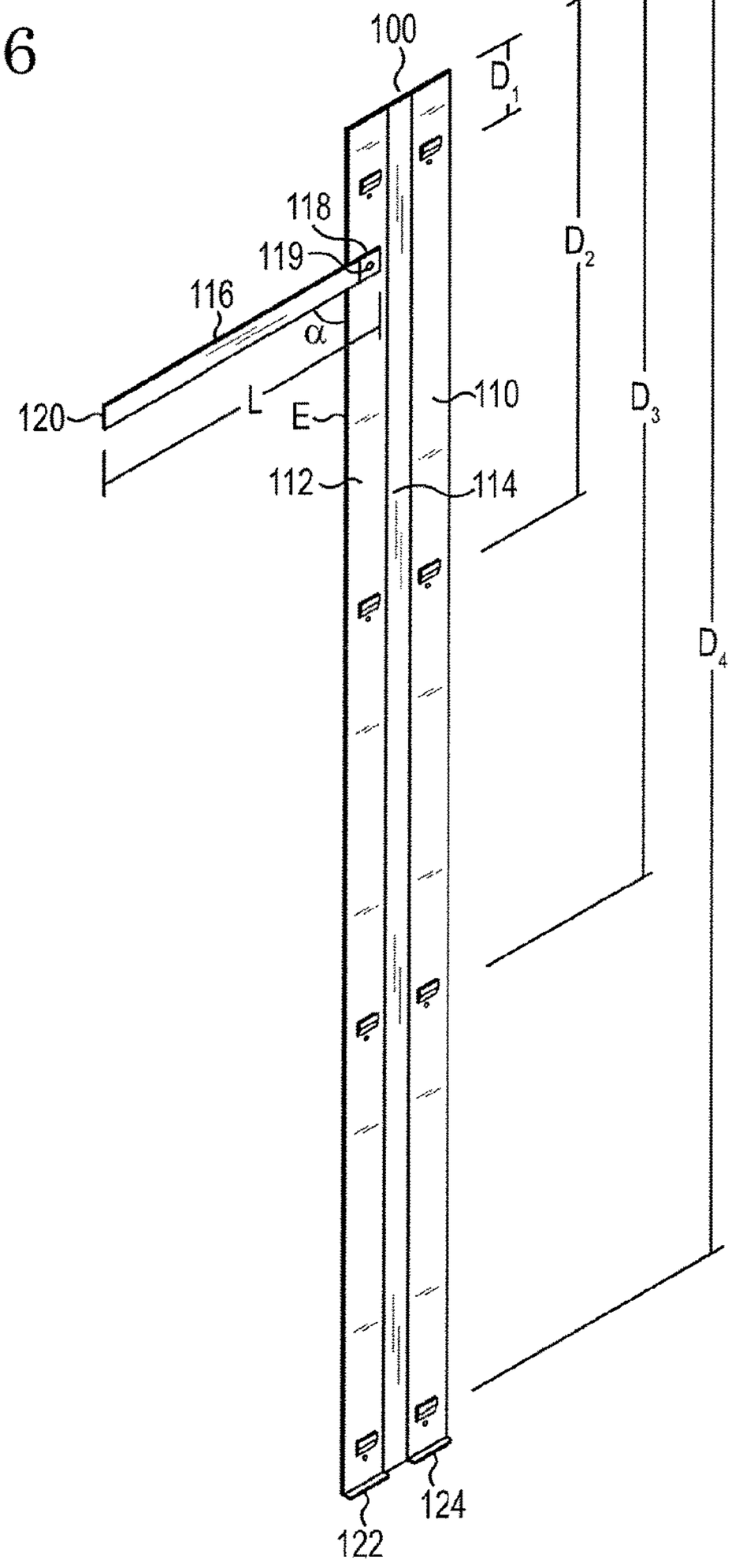

100
D_1
D_2
D_3
D_4
118
119
116
α
120
L
E
110
112
114
122
124

Fig. 7

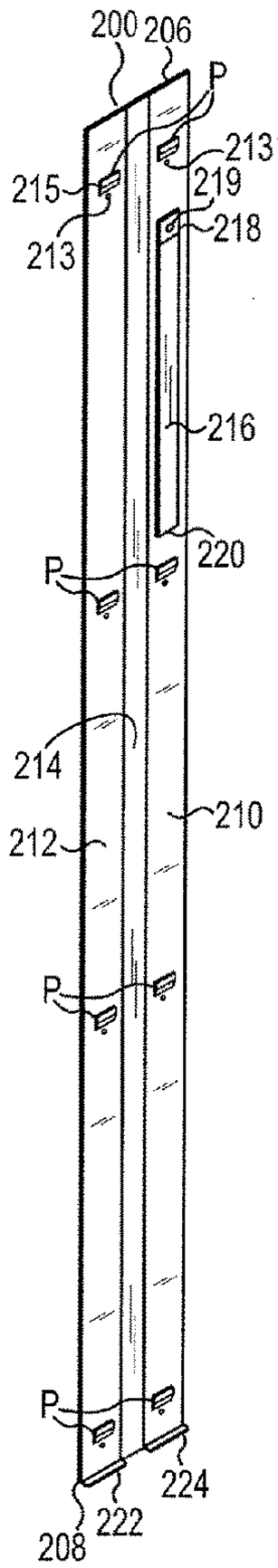

200
206
P
213
215
219
218
213
216
220
P
214
210
212
P
P
224
222
208

Fig. 8

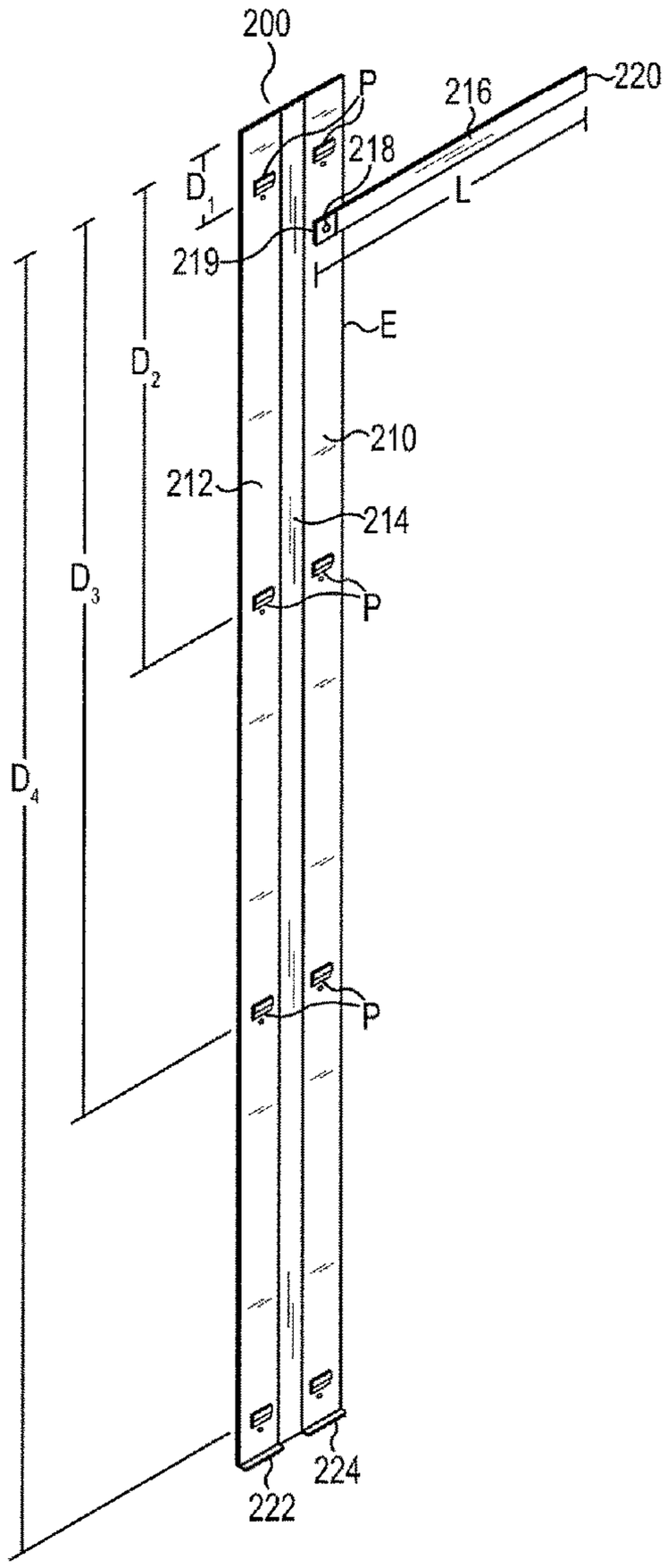

200
P
216
220
218
D_1
L
219
E
D_2
210
212
214
D_3
P
D_4
P
224
222

Fig. 9

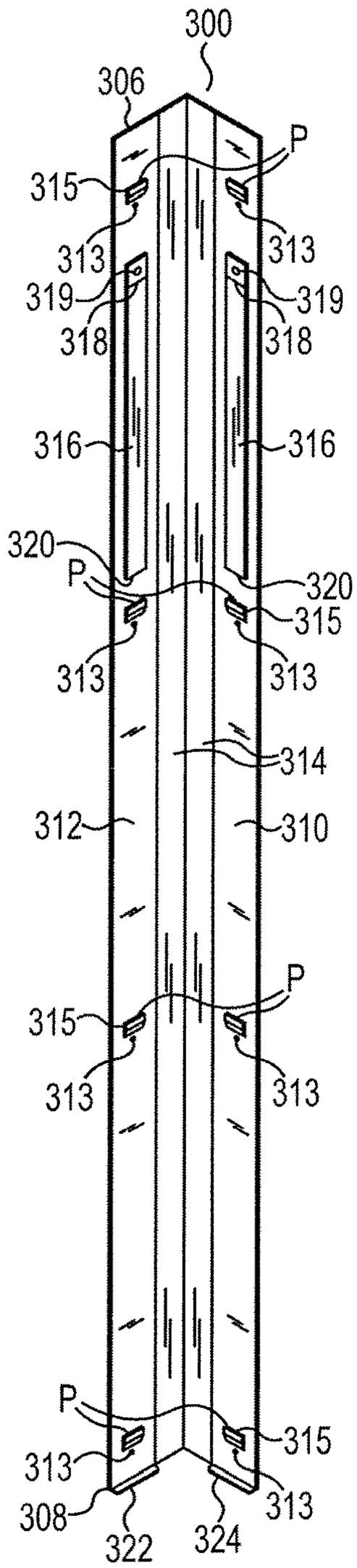

300
306
P
315
313
313
319
319
318
318
316
316
320
P
320
315
313
313
314
312
310
P
315
313
313
P
315
313
308
322
324
313

Fig. 10

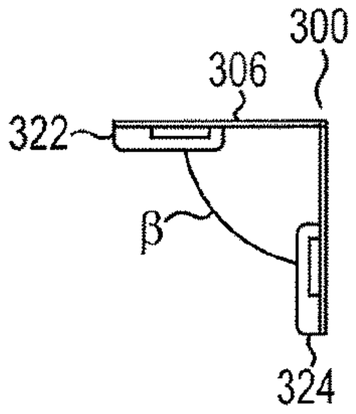

300
306
322
β
324

Fig. 11

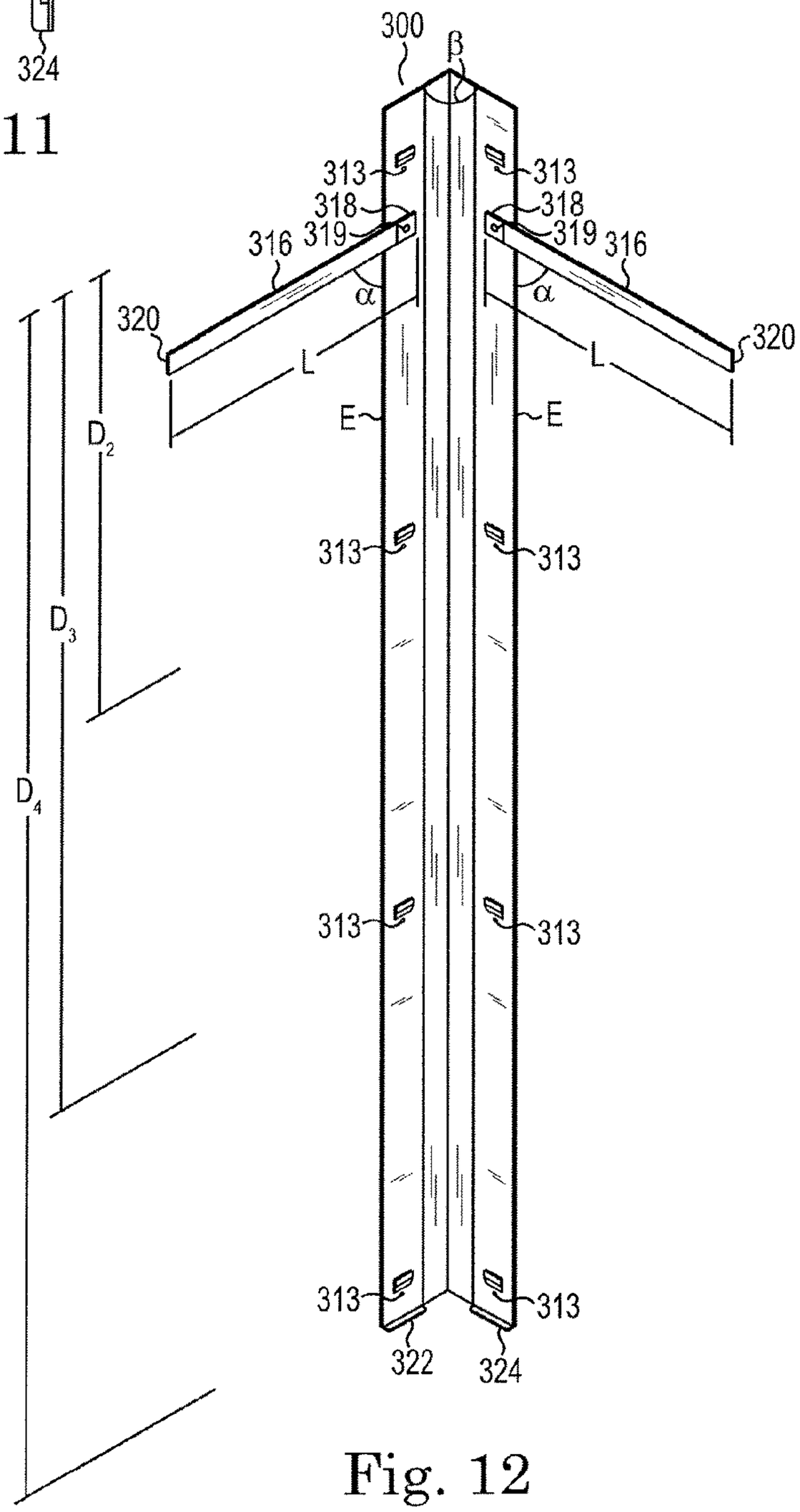

300
β
313
313
318
318
316
319
319
316
α
α
320
320
L
L
E
E
D2
313
313
D3
D4
313
313
313
313
322
324

Fig. 12

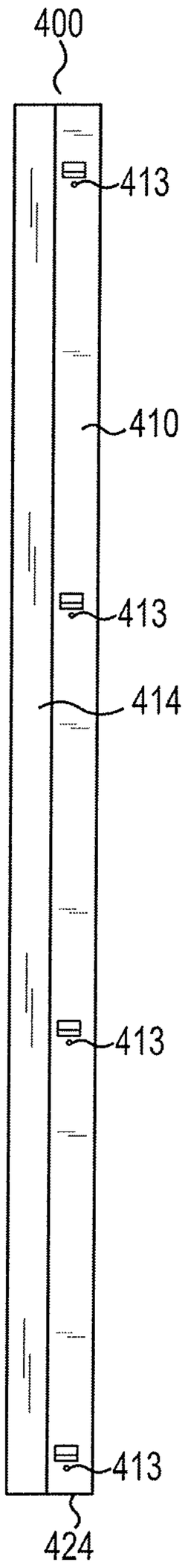


Fig. 13A

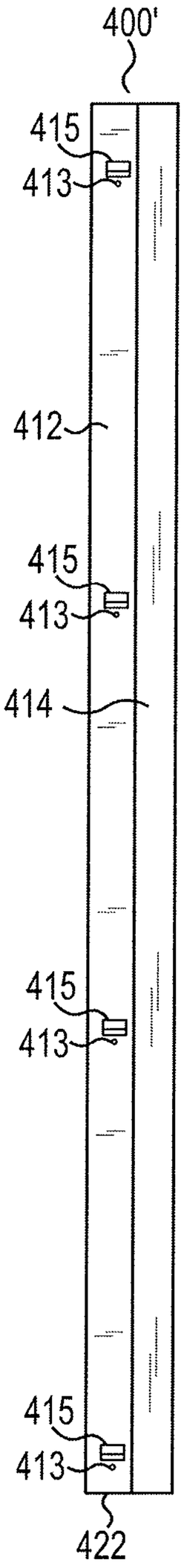


Fig. 13B

DEVICE AND METHODS FOR INSTALLING ELEVATOR CAB INTERIOR WALL PANELS

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue; a claim printed with strikethrough indicates that the claim was canceled, disclaimed, or held invalid by a prior post-patent action or proceeding.

CROSS-REFERENCE TO RELATED APPLICATIONS

[None] *This application is an application for reissue of U.S. Pat. No. 9,156,658, which is incorporated herein by reference in its entirety.*

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention is directed to devices and methods for installing elevator cab interior wall panels. More particularly, an installation template for locating and installing elevator cab interior wall panels is provided.

2. Description of the Related Art

The interior of finished elevator cab shells typically comprise wall panels installed and mounted thereon. Typically, to complete the installation of the wall panels on the elevator cab shell, zee-type clips are pre-installed on rear side of the wall panels. These pre-installed zee clips require, in turn, mating clips to be field installed onto the elevator cab shell. These mating clips require accurately measured locating on the elevator cab shell in order to precisely mate up with the pre-installed zee clip on rear of the wall panel for hanging and securing installation.

There are typically a plurality of wall panels installed according to the above described method within a given elevator cab. Each of the wall panels must align with the other wall panels, both vertically and horizontally, to provide maximum aesthetic benefit. As a result, each individual mating clip requires a significant amount of measurement effort to obtain the proper installation location.

In a typical elevator cab shell, a total of 7, e.g., wall panels may be installed, though the skilled artisan will recognize that more or less wall panels may be installed in certain cab shells. Each wall panel may comprise a series of zee mounting clips, perhaps 6-8 per panel. Each of the zee mounting clips requires a separately located and installed wall mounting clip, to which the zee mounting clips are individually secured when the wall panel is finally hung. Thus, in this example, the installer will need to measure, locate and install very accurately 42 to 56 wall mounting clips. This is a time consuming, laborious process.

Further, vertical strips that are typically stainless steel or the like and known in the industry as "reveals", are typically installed in a vertical gap between successive wall panels to provide additional aesthetic benefit. These reveals also require precise measuring and installation so as to properly align with the adjacent wall panel(s), requiring further labor and time.

Thus, the current situation requires an installer of elevator cab wall panels and intervening reveal strips to be highly accurate in installation. This process is laborious, tedious and time consuming and, as a result, costly.

Various embodiments of the present invention address these, inter alia, problems.

SUMMARY OF THE INVENTION

The present invention is directed to, inter alia, devices and methods for precision installation of elevator wall panels and intervening reveal strips in an elevator cab shell. Various embodiments comprise corner stays and intermediate stays with pre-installed clips thereon and with locating means installed thereon to facilitate accurate locating of adjacent stay(s) in order to greatly reduce the labor and time required to install the wall panels accurately. Further, various embodiments comprise pre-installed reveal strips on the stay(s) and that are interposed between each installed wall panel. Pre-installing the reveal strips further reduces the labor and time required at the installation site.

The figures and the detailed description which follow more particularly exemplify these and other embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention may be more completely understood in consideration of the following detailed description of various embodiments of the invention in connection with the accompanying drawings, which are as follows:

FIG. **1** is a top view of one embodiment of the invention installed within an elevator cab shell;

FIG. **2** is a perspective view of a wall panel for an elevator cab shell;

FIG. **3**. is a perspective view of one embodiment of the present invention;

FIG. **4**. is a rear view of one embodiment of the present invention;

FIG. **5**. is a side view of one embodiment of the present invention;

FIG. **6**. is a top view of one embodiment of the present invention;

FIG. **7**. is a perspective view of one embodiment of the present invention;

FIG. **8**. is a perspective view of one embodiment of the present invention;

FIG. **9**. is a perspective view of one embodiment of the present invention;

FIG. **10**. is a perspective view of one embodiment of the present invention;

FIG. **11**. is a top view of one embodiment of the present invention;

FIG. **12**. is a perspective view of one embodiment of the present invention;

FIG. **13**A. is a front view of one embodiment of the present invention; and

FIG. **13**B is a front view of one embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

While the invention is amenable to various modifications and alternative forms, specifics thereof are shown by way of example in the drawings and described in detail herein. It should be understood, however, that the intention is not to limit the invention to the particular embodiments described. On the contrary, the intention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the invention.

FIG. **1** illustrates a top view of an elevator cab shell **10** with one embodiment of the present invention installed on walls W within the elevator cab shell **10**. Thus, wall panels **12** are installed on various stays of the present invention that are mounted on the walls W of the elevator cab shell **10**, the walls W having a height, a floor and a ceiling as commonly understood by a person skilled in the art, the height being equal to the difference in distance or length between the ceiling and the floor as readily understood by the skilled artisan.

FIG. **2** illustrates one embodiment of a wall panel **12** that may be used with the embodiments of the stays of the present invention. Wall panel **12** comprises generally a top, a bottom, a height H which is the distance or length between top and bottom, right and left sides, a width W which is the distance or length between the right and left sides, a front side F, rear side R and a thickness T which is the distance or length between front side F and rear side R. A plurality of pairs of mounting clips **11** are shown mounted on the rear side R of wall panel **12**. In the illustrated embodiment, four pairs of mounting clips **11** are shown as pre-installed on the rear side R of wall panel **12**. The skilled artisan will recognize that the pre-installed plurality of pairs of mounting clips **11** may comprise a number of functional configurations. A particularly preferred but non-limiting pre-installed mounting clip comprising the plurality of pairs of mounting clips **11** comprises a zee-type clip which is well-known to the skilled artisan. Mounting clip **11** may comprise a pre-installed or pre-punched clip **11** or a clip **11** that is otherwise adhered to the wall panel **12** as the skilled artisan will readily recognize.

Generally, each of the pre-installed mounting clips in one of the pairs of the plurality of pairs of mounting clips **11** are precisely located in relation to the top, bottom, right and left sides of the wall panel **12**. This allows very precise installation using the present invention.

Generally, various embodiments of a stay **100**, **200**, **300** for mounting a wall panel **12** on a wall W within an elevator cab shell **12** are illustrated in FIGS. **3-12**.

FIGS. **3-7** illustrate stay **100** comprising a front side **102**, a rear side **104**, a top **106**, a bottom **108**, a right side **110**, a left side **112**, and a center portion **114** that is vertically integrated and disposed between the right side **110** and the left side **112**. Stay **100** may comprise right side **110**, left side **112** and center portion **114** being substantially parallel with each other.

In addition, a plurality of through holes **113**, disposed on the right side **110**, and left side **112**, of the stay **100** are provided, as illustrated in pairs but may be in any configuration as understood by the skilled artisan. One half of through holes **113** pairs may be disposed on the right side **110** of stay **100** and the other half of the through holes **113** may be disposed on the left side **112** of the stay **100**. Through holes **113** are provided for securing the stay to the wall W of the elevator cab shell **10** with a fastener (not shown as this is known to the skilled artisan, e.g., screw and the like).

A plurality of pairs P of pre-installed mounting clips **115** are also provided, each pair P of pre-installed mounting clips comprising a first mounting clip and a second mounting clip mounted on the front side **102**, of the stay **100**, wherein the first mounting clip of each pair P is pre-installed on the right side **110**, of the stay at a distance D1, D2, D3, D4, from the top **106** of the stay **100**, wherein D1 represents the distance from the top-most pair P to the top **106** of the stay **100**, D2 represents the distance from the top **106** of the stay **100** to the pair P immediately below the topmost pair P, D3 represents the distance from the top **106** of stay **100** to the third pair P from the top **106** of stay **100** and D4 represents the distance from the top **106** of stay **100** to the lower-most pair P. Thus, a second mounting clip **115** of each pair P is pre-installed on the left side **112** of the stay **100** at the same distances, i.e., D1, D2, D3 and D4 from the top **106** of the stay **100** as the first mounting clip **115** of pair P. Pre-installed mounting clips **115** may comprise clips that are pre-punched in to the stays of the present invention or otherwise adhered to the stays of the present invention as will be readily understood by the skilled artisan.

In addition, stay **100** comprises at least one pre-installed locator **116** operatively connected to the stay **100**, the at least one pre-installed locator **116** comprising a connected end **118** whereby the pre-installed locator **116** is connected to the front side **102** of the stay **100**, a distal end **120** and a length L, whereby the pre-installed locator **116**, precisely locates the position for the installation of an adjacent stay on the elevator cab shell wall W. In this embodiment, pre-installed locator **116** is operatively connected to the left side **110** of the front **102** of stay **100**.

Pre-installed locator **116** may comprise a fixed deployed position as illustrated in FIG. **7**, where the pre-installed locator **116** is fixed at angle α with respect to the edge E of stay **100**. Preferably, this angle α is fixed at 90 degrees. Alternatively, and most preferably, pre-installed locator **116** may comprise at least two positions, a stored position and a deployed position, wherein the pre-installed locator **116** is rotatable or otherwise moveable between the stored position and the deployed position. In this preferred embodiment, pre-installed locator **116** comprises a connector **119** that allows the locator **116** to rotate around connector **119** from the stored position as illustrated in, e.g., FIG. **3** to the deployed position illustrated in FIG. **7**. As with the fixed position configuration for pre-installed locator **116** described above, the preferred angle α for the rotatably achieved deployed position is 90 degrees, though other angles are of course possible as will be appreciated by the skilled artisan. In practice, the pre-installed locator **116** when in the deployed position, either as a consequence of rotation away from the stored position or in the fixed position embodiment, is used to precisely mark the position, i.e., the precise horizontal distance, of an adjacent stay on the elevator cab shell wall W from the installed stay **100** during installation of wall panels **12**.

Various embodiments of the stay **100** further comprise a first lip **122** disposed at the bottom **108** of the right side **110** of the stay **100**, and a second lip **124** disposed at the bottom **108** of the left side **112** of the stay **100**, each of the first **122** and second **124** lips extending outwardly from the front side **102** of the stay **100** a distance that is equal to or less than the thickness T of the wall panel **12** as discussed supra in connection with FIG. **2**. In certain embodiments, wall panels **12** may be supported by lips **122**, **124** as will be described further infra during installation.

FIGS. **8-9** illustrate another stay embodiment **200** which is essentially a mirror image of stay **100** described above. Thus, stay **200** may comprise a front side **202**, a rear side **204**, a top **206**, a bottom **208**, a right side **210**, a left side **212**, and a center portion **214** that is vertically integrated and disposed between the right side **210** and the left side **212**. Stay **200** may comprise right side **210**, left side **212** and center portion **214** being substantially parallel with each other.

In addition, a plurality of through holes **213**, disposed on the right side **210**, and left side **212**, of the stay **200** are provided, as illustrated in pairs but may be in any configu-

ration as understood by the skilled artisan. One half of through holes **213** pairs may be disposed on the right side **210** of stay **200** and the other half of the through holes **213** may be disposed on the left side **212** of the stay **200**. Through holes **213** are provided for securing the stay to the wall W of the elevator cab shell **10** with a fastener (not shown as this is known to the skilled artisan, e.g., screw and the like).

A plurality of pairs P of pre-installed mounting clips **215** are also provided, each pair P of pre-installed mounting clips comprising a first mounting clip and a second mounting clip mounted on the front side **202**, of the stay **200**, wherein the first mounting clip of each pair P is pre-installed on the right side **210**, of the stay at a distance D1, D2, D3, D4, from the top **206** of the stay **200**, wherein D1 represents the distance from the top-most pair P to the top **206** of the stay **200**, D2 represents the distance from the top **206** of the stay **200** to the pair P immediately below the topmost pair P, D3 represents the distance from the top **206** of stay **200** to the third pair P from the top **206** of stay **200** and D4 represents the distance from the top **206** of stay **200** to the lower-most pair P. Thus, a second mounting clip **215** of each pair P is pre-installed on the left side **212** of the stay **200** at the same distances, i.e., D1, D2, D3 and D4 from the top **206** of the stay **200** as the first mounting clip **215** of pair P.

In addition, stay **200** comprises at least one pre-installed locator **216** operatively connected to the stay **200**, the at least one pre-installed locator **216** comprising a connected end **218** whereby the pre-installed locator **216** is connected to the front side **202** of the stay **200**, a distal end **220** and a length L, whereby the pre-installed locator **216**, precisely locates the position for the installation of an adjacent stay on the elevator cab shell wall W. In this embodiment, pre-installed locator **216** is operatively connected to the right side **210** of the front **202** of stay **200**.

Pre-installed locator **216** may comprise a fixed deployed position as illustrated in FIG. **9**, where the pre-installed locator **216** is fixed at angle α with respect to the edge E of stay **200**. Preferably, this angle α is fixed at 90 degrees. Alternatively, and most preferably, pre-installed locator **216** may comprise at least two positions, a stored position and a deployed position, wherein the pre-installed locator **216** is rotatable or otherwise moveable between the stored position of FIG. **8** and the deployed position of FIG. **9**. In this preferred embodiment, pre-installed locator **216** comprises a connector **219** that allows the locator **216** to rotate around connector **219** from the stored position as illustrated in, e.g., FIG. **8** to the deployed position illustrated in FIG. **9**. As with the fixed position configuration for pre-installed locator **216** described above, the preferred angle α for the rotatably achieved deployed position is 90 degrees, though other angles are of course possible as will be appreciated by the skilled artisan. In practice, the pre-installed locator **216** when in the deployed position, either as a consequence of rotation away from the stored position or in the fixed position embodiment, is used to precisely mark the position, i.e., the precise horizontal distance, of an adjacent stay on the elevator cab shell wall W from the installed stay **200**.

Various embodiments of the stay **200** further comprise a first lip **222** disposed at the bottom **208** of the right side **210** of the stay **200**, and a second lip **224** disposed at the bottom **208** of the left side **212** of the stay **200**, each of the first **222** and second **224** lips extending outwardly from the front side **202** of the stay **200** a distance that is equal to or less than the thickness T of the wall panel **12** as discussed supra in connection with FIG. **2**. In certain embodiments, wall panels **12** may be supported by lips **222**, **224** during installation of wall panels **12**.

FIGS. **10-12** illustrate another stay embodiment **300**. Thus, stay **300** may comprise a front side **302**, a rear side **304**, a top **306**, a bottom **308**, a right side **310**, a left side **312**, and a center portion **314** that is vertically integrated and disposed between the right side **310** and the left side **312**.

Stay **300** comprises a corner piece for fitting on adjacent elevator cab shell walls W and may comprise right side **310**, left side **312** and center portion **314** wherein center portion comprises an angle β. Angle β preferably comprises 90 degrees, though other angles are within the scope of the invention as the skilled artisan will readily recognize. Note that 90 degrees in this context accommodates elevator shell walls W that are disposed at right angles to each other. In the case of non-right angled elevator walls W, angle β may be modified to complement the actual angle formed by the adjacent elevator walls W. Each angle β is within the scope of the present invention.

As a consequence of the center portion **314** comprising angle β, the right side **310** and left side **312** of stay **300** are not parallel with each other. Instead, right side **310** and left side **312** are, in the preferred case where angle β is substantially 90 degrees, the right side **310** and left side **312** are disposed at substantially 90 degrees to each other.

In addition, a plurality of through holes **313**, disposed on the right side **310**, and left side **312**, of the stay **300** are provided, as illustrated in pairs but may be in any configuration as understood by the skilled artisan. One half of through holes **313** pairs may be disposed on the right side **310** and the other half of the through holes **113** may be disposed on the left side **312** of the stay **300**. Through holes **313** are provided for securing the stay **300** to the wall W of the elevator cab shell **10** with a fastener (not shown as this is a well-known structure to the skilled artisan, e.g., screw and the equivalent).

A plurality of pairs P of pre-installed mounting clips **315** are also provided, each pair P of pre-installed mounting clips comprising a first mounting clip and a second mounting clip mounted on the front side **302**, of the stay **300**, wherein the first mounting clip of each pair P is pre-installed on the right side **310**, of the stay at a distance D1, D2, D3, D4, from the top **306** of the stay **300**, wherein D1 represents the distance from the top-most pair P to the top **306** of the stay **100**, D2 represents the distance from the top **306** of the stay **300** to the pair P immediately below the topmost pair P, D3 represents the distance from the top **306** of stay **300** to the third pair P from the top **306** of stay **300** and D4 represents the distance from the top **306** of stay **300** to the lower-most pair P. Thus, a second mounting clip **315** of each pair P is pre-installed on the left side **312** of the stay **300** at the same distances, i.e., D1, D2, D3 and D4 from the top **306** of the stay **300** as the first mounting clip **315** of pair P.

In addition, stay **300** in this embodiment comprises at least one pre-installed locator **316** operatively connected to the stay **300**. The at least one pre-installed locators **316** may comprise a first locator **316** operatively connected to the front **302** of the right side **310** of the stay **300** and a second locator **316** operatively connected to the front **302** of the left side **312** of the stay. Each of the at least one pre-installed locators **316** comprising a connected end **318** whereby the pre-installed locator **316** is connected to the respective side (right **310** or left **312**) of the front side **302** of the stay **300**, a distal end **320** and a length L, whereby the pre-installed locator **316**, precisely locates the position for the installation of an adjacent stay on the elevator cab shell wall W. In the

illustrated embodiment, two pre-installed locators **316** are operatively connected to the right side **310**, and the left side **312** of the front **302** of stay **300**, thus two adjacent stays may be located with this embodiment of stay **300**. Alternative embodiments may comprise one pre-installed locator **316** operatively connected to the right side **310** of the front **302** of stay **300**. Another alternative may comprise one pre-installed locator **316** operatively connected to the left side **312** of the front **302** of stay **300**.

Pre-installed locator **316** may comprise a fixed deployed position as illustrated in FIG. **12**, where the pre-installed locator **316** is fixed at angle α with respect to the edge E of stay **300**. Preferably, this angle α is fixed at 90 degrees. Alternatively, and most preferably, pre-installed locator **316** may comprise at least two positions, a stored position and a deployed position, wherein the pre-installed locator **316** is rotatable or otherwise moveable between the stored position of FIG. **10** and the deployed position of FIG. **2**. In this preferred embodiment, pre-installed locator **216** comprises a connector **319** that allows the locator **316** to rotate around connector **219** from the stored position as illustrated in, e.g., FIG. **10** to the deployed position illustrated in FIG. **12**. The preferred angle α for the rotatably achieved deployed position is 90 degrees, though other angles are of course possible as will be appreciated by the skilled artisan. In practice, the pre-installed locator **316** when in the deployed position, either as a consequence of rotation away from the stored position or in the fixed position embodiment, is used to precisely mark the position, i.e., the precise horizontal distance, of an adjacent stay on the elevator cab shell wall W from the installed stay **300**.

Various embodiments of the stay **300** further comprise a first lip **322** disposed at the bottom **308** of the right side **310** of the stay **300**, and a second lip **324** disposed at the bottom **308** of the left side **312** of the stay **300**, each of the first **322** and second **324** lips extending outwardly from the front side **302** of the stay **300** a distance that is equal to or less than the thickness T of the wall panel **12** as discussed supra in connection with FIG. **2**. In certain embodiments wall panels **12** may be supported by lips **322**, **324**.

Finally, a finishing stay **400** is provided in FIGS. **13**A and **13**B which are mirror images of each other. The embodiment in FIG. **13**A, stay **400**, provides a center portion **414** and a right side **410**. The embodiment in FIG. **13**B, stay **400'** provides a center portion and a left side **412**. The preferred embodiments are illustrated, though other embodiments may comprise a pre-installed locator on the right side **410** of FIG. **13**A or a pre-installed locator on the left side **412** of FIG. **13**B, as those pre-installed locators are described above in connection with elements **116**, **216** and **316**. In addition, stay **410** comprises a lip **422** on the bottom of the right side **410** in FIG. **13**A's embodiment and a lip **424** on the bottom of the left side **412** in FIG. **13**B's embodiment. Lips **422**, **424** are configured in the same way with the same structure and function as lips **122**, **124**, **222**, **224**, and **322**, **324** described above. A single set of mounting clips **415**, as opposed to the pairs P of embodiments **100**, **200** and **300**, are provided on either the front right side **410** of FIG. **13**A or the front left side **412** of FIG. **13**B. Through holes **413** are provided on either the right side **410** of FIG. **13**A or the left side **412** of FIG. **13**B to secure stay **400** to the elevator cab shell wall W with fasteners. Stay **400** thus provides a finishing element as will be further described herein.

Various embodiments of the structure of the present invention having been described, we now turn to the method of installation.

With reference to the Figures, with particular reference to the top view of an elevator cab shell **10** comprising a plurality of stays **100**, **200**, **300**, **400**, **400'** installed therein with a plurality of wall panels **12** installed according to the above descriptions, a preferred installation method will now be described.

The installation may begin at a corner of the elevator cab shell, e.g., either at corner A or B with a measured installation of stay **300**. Stay **300** will thus be installed generally vertically within the corner A formed by two adjacent walls W using a fastener and through holes **313** to affix stay **300** to walls forming corner A. The pre-installed locator **316** operatively connected to right side **310** of stay **300** is used, either as a fixed deployed element or rotated out of a stored to the extended deployed position as described above, to locate the position of the next adjacent stay **200**. Proceeding along the back side of the elevator cab shell wall W between corner A and corner B, the next adjacent stay **200** is located by aligning the stay **200** against the distal end **320** of pre-installed locator **316** in deployed position and ensuring the stay **200** is substantially vertically aligned, with subsequent attachment and securement of the stay with fasteners and through holes **213** to elevator wall W. Next the next adjacent stay **100** or **200** (either stay **100** or **200** may be used in this case, subject to installer preference) is located using the pre-installed locator **216** on the previously installed stay **200** to locate the position of the next adjacent stay **100** or **200**, depending on the selection of stay **100** or **200** by the installer, in the same manner as described in connection with pre-installed locator **316** and stay **200**. Following location in the prescribed manner, the stay **100** or **200** is vertically aligned and affixed and secured to the elevator cab shell wall W by fasteners and through holes **113** or **213**, depending on the stay selected by the installer. Stay **300** in corner B may be installed at the same time as stay **300** for corner A or following installation of the final stay **100** or **200** along wall W between corners A and B. Once stay **300** is secured in corner B in the same way stay **300** was installed in corner A, the pre-installed locator **316** on the right side of stay **300** is used as described above to locate the next adjacent stay **100** or **200** along wall between corners B and C. Once stay **100** or **200** is located in this manner, it is vertically aligned and secured using fasteners and through holes **113** or **213**.

Next, proceeding along the left side of the elevator cab shell from corner A and toward corner D, the process is repeated for the second pre-installed locator **316**, i.e., the locator **316** on the left side **312** of stay **300** to locate the position of the next adjacent stay **100** or **200**, subject to the installer's selection of stay **100** or **200**, along wall between corners A and D. The next adjacent stay **100** or **200** is then vertically aligned after locating and affixed with fasteners and through holes **113** or **213** to the elevator wall W. In the illustrated embodiment, the final stay **400** on the wall W between corners A and D is then secured using through holes **413** and fasteners.

Finally, a finishing stay **400** according to the embodiment of FIG. **13**A is secured against the corner D along the wall between corners A and D by fasteners securing engaging through holes **413** to elevator cab shell wall W. Similarly, a finishing stay **400'** according to the embodiment of FIG. **13**B is secured against the corner C along the wall between corners B and C with fasteners engaging through holes **413** and elevator cab shell wall W.

As illustrated, the cab shell **10** on its back side, i.e., between corners A and B, requires two corner stays **300** and then two intermediate stays **100** or **200** therebetween to locate and support three wall panels **12**. Each of the two

intermediate stays **100** or **200** between the corner A and corner B stays **300** may be located by the pre-installed locators **316** as the skilled artisan will readily understand. In certain cab shells **10**, however, more wall panels W than three may be required. In this case, the pre-installed locators of one or more of the intermediate stays **100** and/or **200** will be required to be employed to locate the next-adjacent intermediate stay **100** and/or **200** by placing the next-adjacent stay **100** and/or **200** next to the relevant extended locator **116** or **216**, with subsequent vertical alignment as described above. The methods of the present invention will allow for precise locating of any number of intermediate stays **100** or **200** using an initial corner stay **300** as the basis for locating the next intermediate stays **100** or **200** on both the right side and the left side of the corner stay **300**. The skilled artisan will readily appreciate the utility of the present invention and the versatility of intermediate stays **100** and **200**, depending on the configuration and needs of the particular elevator cab shell **12**.

At this point, following precise location and installation of stays **100**, **200**, **300**, **400**, **400'**, the installation of wall panels **12** begins. Each wall panel **12** comprises, as described above, a plurality of pairs of zee-type mounting clips **11** mounted to the rear side of the panel. Each of these pre-mounted pairs of zee-type mounting clips **11** now matches precisely with the plurality of pairs of pre-installed mounting clips on the right or left sides of the now-installed stays **100**, **200**, **300**, **400** or **400'** as discussed above.

Thus, beginning with the wall between corners D and A of FIG. **1**'s elevator cab shell **10**, the first wall panel **12** is hung between stay **400** and the next adjacent stay **100** or **200**. Specifically, one half of the pairs of pre-installed zee-type clips **11** of the wall panel **12** is hung or otherwise connected or secured to the pre-installed mounting clips **415** on the right side of stay **400**. The other half of the pairs of pre-installed zee-type clips **11** of the wall panel **12** is hung or otherwise connected or secured to the pre-installed mounting clips **115** or **215** on the left side **112** or **212** of stay **100** or **200**, depending on installer's selection of stay **100** or **200** at this point in the installation. In addition, the wall panel **12** rests on lip **424** of stay **400** and lip **122** or **222** of stay **100** or **200**, depending on whether stay **100** or **200** is selected by the installer.

The next adjacent wall panel **12** along wall W from corners D to A comprising hanging one half of the pairs of the next wall panel W's pre-installed zee-type clips **11** to the pre-installed mounting clips **115** or **215** on the right side **110** or **210** of stay **100** or **200**, depending on installer's selection of stay **100** or **200**. The other half of the pairs of pre-installed zee-type clips **11** of wall panel W is hung on the pre-installed mounting clips **315** on the left side **312** of stay **300**. In addition, wall panel **12** rests on lip **124** or **224** of stay **100** or **200** and on lip **322** of stay **300**.

The installation may continue with attention to the wall spanning corners C to A of FIG. **1**, though as the skilled artisan will readily understand, the installation may progress at different but substantially equivalent starting points, each equivalent installation method is within the scope of the present invention. Thus, beginning with the wall W between corners D and A of FIG. **1**'s elevator cab shell **10**, the first wall panel **12** may be hung between stay **400'** and the next adjacent stay **100** or **200**, depending on which stay the installer selects for that position. Specifically, one half of the pairs of pre-installed zee-type clips **11** of the wall panel W is hung or otherwise connected or secured to the pre-installed mounting clips on the left side **412** of stay **400'**. The other set of the pairs of pre-installed zee-type clips of the wall panel W is hung or otherwise connected or secured to the pre-installed mounting clips **115** or **215** on the right side **110** or **210** of stay **100** or **200**, again dependent on the installer's selection of stay **100** or **100**. In addition, the wall panel **12** rests on lip **422** of stay **400'** and lip **124** or **224** of stay **100** or **200**, depending on whether stay **100** or **200** is selected by the installer.

The next most adjacent wall panel **12** along wall W from corners C to B comprising hanging one half of the pairs of the next wall panel's **12** pre-installed zee-type clips **11** to the pre-installed mounting clips **115** or **215** on the left side **112** or **222** of stay **100** or **200**. The other half of the pairs of pre-installed zee-type clips **11** of wall panel **12** is hung on the pre-installed mounting clips **315** on the right side **312** of stay **300**. Wall panel **12** also rests on lip **122** or **222** of stay **100** or **200** and on lip **324** of stay **300**.

Finally, the wall panels **12** along wall W between corners A and B are hung and secured. First, one half of the pairs of the wall panel **12** pre-installed zee-type clips **11** are hung on or otherwise secured to the pre-installed mounting clips **315** on the right side **310** of stay **300** which is secured to corner A. The other half of the pairs of the pre-installed zee-type clips **11** are hung on the pre-installed mounting clips on the left side **212** of stay **200**. The wall panel **12** is also supported by lip **324** of stay **300** and lip **222** of stay **200**.

The next most adjacent wall panel **12**, moving from corner A to corner B comprises one half of the pairs of the wall panel's **12** pre-installed zee-type clips **11** being hung or secured to the pre-installed mounting clips **215** on the right side **210** of stay **200**. The other half of the pairs of the wall panel's **12** pre-installed zee-type clips **11** are hung on the pre-installed mounting clips **115** or **215** on the left side **112** or **212** of stay **100** or **200**, either stay **100** or stay **200** may be selected here, depending on the installer's selection and installation process as the skilled artisan will readily understand. The wall panel **12** is further supported on lip **224** of stay **200** and lip **122** or **222** of stay **100** or **200**, respectively.

The third and final wall panel **12** along wall W moving from corner A to corner B, and the panel **12** proximate to corner B is installed similarly. Thus, half of the pre-installed zee-type clips on wall panel **12** are hung or secured to the pre-installed mounting clips on the right side **110** or **210** of stay **100** or **200**. The other half of the pre-installed zee-type clips of wall panel **12** are hung on the pre-installed mounting clips on the left side **112** or **210** of stay **100** or **200**. Finally, this wall panel **12** is supported by lip **124** or **224** of stay **100** or **200**, depending on which stay **100** or **200** the installer selected, as well as lip **322** of stay **300**, completing wall panel **12** installation of wall between corners A and B.

In the case where the locators **116**, **216**, **316** are rotatable, the locators may be rotated down into the stored position before hanging the wall panels **12** as described herein. If locators **116**, **216**, **316** are not rotatable, wall panels **12** are simply installed over the locators **116**, **216**, **316**, as described above.

In each case, the wall panels **12** are supported by two stays, the right and left sides of the stays are covered by the secured and installed wall panels **12**, leaving the center portion **114**, **214**, **314**, **414**, uncovered by wall panels **12** for visual effect. The center portions **114**, **214**, **314**, **414** are commonly known as reveals and may be formed of a metal, e.g., stainless steel. The stays **100**, **200**, **300**, **400**, **400'** may be formed of metal.

Thus, a preferred method for the present invention for precisely locating and installing a wall panel between two vertically located and installed stays on a wall of an elevator cab shell having a ceiling and a floor, the wall panel having

a front side, a rear side, a height, a width, a top side, a bottom side and a thickness may comprise:

providing a plurality of pairs of zee-type mounting clips mounted to the rear side of each of the plurality of wall panels;

providing a plurality of vertically mounted stays, each stay comprising

a front side, a rear side, a top, a bottom, a right side, a left side and a center vertically disposed between the right side and the left side,

a plurality of pairs of pre-installed mounting clips, each pair of pre-installed mounting clips comprising a first and a second mounting clip mounted on the front side of the stay, each pair of pre-installed mounting clips being the same distance from the top of the stay, wherein the first mounting clip is pre-installed on the right side of the stay and the second mounting clip is pre-installed on the left side of the stay, and

at least one pre-installed locator operatively connected to the stay, the at least one pre-installed locator comprising a connected end whereby the locator is connected to the stay, a distal end and a length;

locating and installing a first stay of the plurality of stays in a substantially vertical position on the elevator cab shell;

locating and installing a second stay of the plurality of stays adjacent to and at a distance from the first located and installed stay using the length of the pre-installed locator on the first stay to determine the location for the second stay; and

hanging a wall panel between the first and second located and installed stays by mating the pre-installed mounting clips on the rear side of the wall panel with the pre-installed zee-type clips on each of the located and installed stays.

This preferred method may further comprise providing wall panels having a height that is approximately 1.5 inches less than the height of the walls elevator cab shell and locating the first stay on a wall of the elevator cab shell to achieve a clearance of about 0.5 inches from the bottom side of the wall panel to the elevator cab shell floor and about 1 inch from the top side of the wall panel to the elevator cab shell ceiling.

The invention has been described with reference to various specific and preferred embodiments and techniques. However, it should be understood that many variations and modifications may be made while remaining within the spirit and scope of the invention.

We claim:

1. A *wall panel and* stay *system* for mounting a wall panel on a wall within an elevator cab shell having a ceiling and a floor**[**, the wall panel having a front side, a rear side, a height, a width and a thickness, the rear side of the wall panel comprising a plurality of pairs of pre-installed mounting clips thereon**]**, the *wall panel and* stay *system* comprising:

a wall panel having a front side, a rear side, a height, a width, and a thickness, the rear side of the wall panel comprising a plurality of pairs of pre-installed or pre-punched mounting mechanisms thereon; and

a stay comprising:

a front side, a rear side, a top, a bottom, a right side, a left side and a center portion vertically integrated between the right side and the left side;

a plurality of through holes disposed on the right and left sides of the stay for securing the stay to the wall of the elevator cab with a fastener;

a plurality of pairs of pre-installed mounting clips, each pair of pre-installed mounting clips comprising a first mounting clip and a second mounting clip mounted on the front side of the stay, wherein the first mounting clip of each pair is pre-installed on the right side of the stay at a distance from the top of the stay and the second mounting clip of each pair is pre-installed on the left side of the stay at the same distance from the top of the stay as the first mounting clip;

[at least one pre-installed locator operatively connected to the stay, the at least one pre-installed locator comprising a connected end whereby the locator is connected to the front side of the stay, a distal end and a length, whereby the locator precisely locates the position for the installation of an adjacent stay on the elevator cab shell;**]**

a first lip disposed at the bottom of the right side of the stay; and

a second lip disposed at the bottom of the left side of the stay, wherein each of the first and second lips extends perpendicularly away from the front side of the stay in a direction opposite the rear side of the stay a distance that is adapted to be equal to or less than the thickness of the wall panel.

2. The stay of claim **1**, wherein the wall panel comprises four pairs of pre-installed **[**mounting clips**]** *or pre-punched mounting mechanisms* and the stay comprises four pairs of pre-installed mounting clips.

3. The stay of claim **[1]** *20*, wherein the at least one locator is rotatably connected to the front side of the stay.

4. The stay of claim **3**, wherein the at least one locator is rotatably connected to the right side of the stay.

5. The stay of claim **3**, wherein the at least one locator is rotatably connected to the left side of the stay.

6. The stay of claim **3**, wherein a first locator is rotatably connected to the right side of the stay and a second locator is rotatably connected to the left side of the stay.

7. The stay of claim **3**, wherein the at least one locator is rotatable from a first stored position to a second deployed locating position.

8. The stay of claim **1**, wherein the stay is manufactured from at least one metal.

9. The stay of claim **8**, wherein the center of the stay comprises stainless steel.

10. The stay of claim **[1]** *9*, wherein the right and left sides of the stay comprise a metal that is not stainless steel.

11. The stay of claim **1**, further comprising the front side of the right side, the front side of the left side and the front side of the center portion of the stay being parallel to each other.

12. The stay of claim **1**, wherein the front side of the right side and the front side of the left side of the stay are disposed at a 90 degree angle to each other.

13. The stay of claim **12**, wherein the center portion comprises a right center portion and a left center portion, the right center portion and the left center portion disposed at a 90 degree angle to each other.

14. The stay of claim **[13]** *21*, wherein a first pre-installed locator is connected to the right side of the stay.

15. The stay of claim **14**, wherein the first pre-installed locator is rotatably connected to the right side of the stay and is rotatable from a first stored position to a second deployed locating position.

16. The stay of claim **14**, wherein a second pre-installed locator is connected to the left side of the stay.

17. The stay of claim **16**, wherein the second pre-installed locator is rotatably connected to the right side of the stay and is rotatable from a first stored position to a second deployed locating position.

18. A method for precisely locating and installing a wall panel between two vertically located and installed stays on a wall of an elevator cab shell having a ceiling and a floor, the wall panel having a front side, a rear side, a height, a width, a top side, a bottom side and a thickness, comprising:

providing a plurality of pairs of mounting **[**clips**]** *mechanisms at least one of* mounted to*, pre-installed on, or pre-punched in* the rear side of **[**each of**]** the **[**plurality of**]** wall **[**panels**]** *panel*;

providing a plurality of vertically mounted stays, each stay comprising*:*

a front side, a rear side, a top, a bottom, a right side, a left side and a center vertically disposed between the right side and the left side, a first lip disposed at the bottom of the right side of the stay**[**;**]**, and a second lip disposed at the bottom of the left side of the stay, wherein each of the first and second lips extends perpendicularly away from the front side of the stay in a direction opposite the rear side of the stay a distance that is adapted to be equal to or less than the thickness of the wall panel; *and*

a plurality of pairs of pre-installed mounting clips, each pair of pre-installed mounting clips comprising a first and a second mounting clip mounted on the front side of the stay, *the first and second mounting clip of* each pair of pre-installed mounting clips being the same distance from the top of the stay, wherein the first mounting clip is pre-installed on the right side of the stay and the second mounting clip is pre-installed on the left side of the stay**[**, and

at least one pre-installed locator operatively connected to the stay, the at least one pre-installed locator comprising a connected end whereby the locator is connected to the stay, a distal end and a length**]**;

locating and installing a first stay of the plurality of stays in a substantially vertical position on the elevator cab shell;

locating and installing a second stay of the plurality of stays **[**adjacent to and**]** at a distance from the first located and installed stay **[**using the length of the pre-installed locator on the first stay to determine the location for the second stay**]**; and

hanging a wall panel between the first and second located and installed stays by mating *a first half of* the pre-installed *pairs of* mounting **[**clips**]** *mechanisms* on the rear side of the wall panel with *at least some of* the pre-installed mounting clips on **[**each of**]** the *first* located and installed **[**stays**]** *stay and mating a second half of the pre-installed pairs of mounting mechanisms on the rear side of the wall panel with at least some of the pre-installed mounting clips on the second located and installed stay,* and supporting the wall panel on the first lip *of one of the first and second located and installed stays and the second lip of the other of the located and installed stays*.

19. The method of claim **18**, further comprising providing wall panels having a height that is approximately 1.5 inches less than the height of the walls elevator cab shell and locating the first stay on a wall of the elevator cab shell to achieve a clearance of about 0.5 inches from the bottom side of the wall panel to the elevator cab shell floor and about 1 inch from the top side of the wall panel to the elevator cab shell ceiling.

20. The stay of claim 1, further comprising at least one pre-installed locator operatively connected to the stay, the at least one pre-installed locator comprising a connected end whereby the locator is connected to the front side of the stay, a distal end and a length, whereby the locator precisely locates the position for the installation of an adjacent stay on the elevator cab shell.

21. The stay of claim 13, further comprising at least one pre-installed locator operatively connected to the stay, the at least one pre-installed locator comprising a connected end whereby the locator is connected to the front side of the stay, a distal end and a length, whereby the locator precisely locates the position for the installation of an adjacent stay on the elevator cab shell.

22. The wall panel and stay system of claim 1, wherein the wall panel is operably attached to the stay such that one pre-installed or pre-punched mounting mechanism of each of the plurality of pairs of pre-installed or pre-punched mounting mechanisms thereon is operably attached to a corresponding first mounting clip on the stay, thereby covering each of the first mounting clips of the stay but not the second mounting clips of the stay.

23. The wall panel and stay system of claim 1, wherein the wall panel is operably attached to the stay such that one pre-installed or pre-punched mounting mechanism of each of the plurality of pairs of pre-installed or pre-punched mounting mechanisms thereon is operably attached to a corresponding second mounting clip on the stay, thereby covering each of the second mounting clips of the stay but not the first mounting clips of the stay.

24. A system for mounting a wall panel on a wall within an elevator cab shell having a ceiling and a floor, the system comprising:

a wall panel having a front side, a rear side, a height, a width, and a thickness, the rear side of the wall panel comprising a plurality of pairs of pre-installed or pre-punched mounting mechanisms thereon; and

a vertically mounted strip comprising:

a front side, a rear side, a top, a bottom, a right side, a left side, with the front side of the strip including a right side portion, a left side portion, and a center portion vertically integrated between the right side portion and the left side portion;

a plurality of through holes disposed on the right and left side portions of the strip for securing the strip to the wall of the elevator cab with a fastener;

a plurality of pairs of pre-installed mounting clips, each pair of pre-installed mounting clips comprising a first mounting clip and a second mounting clip mounted on the front side of the strip, wherein the first mounting clip of each pair is pre-installed on the right side portion of the strip and the second mounting clip of each pair is pre-installed on the left side portion of the strip; and

a lip adjacent the bottom of the strip that extends perpendicularly away from the front side of the strip in a direction opposite the rear side of the strip a distance that is adapted to be equal to or less than the thickness of the wall panel.

25. A method for locating and installing a wall panel between two vertically located and installed strips on a wall of an elevator cab shell having a ceiling and a floor, the wall panel having a front side, a rear side, a height, a width, a top side, a bottom side and a thickness, comprising:

providing a plurality of pairs of mounting mechanisms at least one of mounted to, preinstalled on, or pre-punched in the rear side of the wall panel;

providing an elevator cab wall mounted system comprising:

a plurality of wall mountable strips, each having a front side, a rear side, a top, a bottom, a right side, a left side, a center portion vertically disposed between the right side and the left side, and a plurality of through holes disposed on the right and left sides for securing the strip to the wall of the elevator cab with a fastener;

a plurality of pairs of pre-installed mounting clips provided on each strip, each pair of pre-installed mounting clips comprising a first mounting clip pre-installed on the right side of the strip and a second mounting clip pre-installed on the left side of the strip; and

at least one lip adjacent the bottom of the strips that extends perpendicularly away from the front side of the strips in a direction opposite the rear side of the strips a distance that is adapted to be equal to or less than the thickness of the wall panel;

locating and installing a first strip of the plurality of strips in a substantially vertical position on the elevator cab shell;

locating and installing a second strip of the plurality of strips at a distance from the first located and installed strip; and

hanging a wall panel between the first and second located and installed strips by mating a first half of the pairs of mounting mechanisms on the rear side of the wall panel with at least some of the pre-installed mounting clips on the first located and installed strip and mating a second half of the pairs of mounting mechanisms on the rear side of the wall panel with at least some of the pre-installed mounting clips on the second located and installed strip, and supporting the wall panel on the at least one lip.

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