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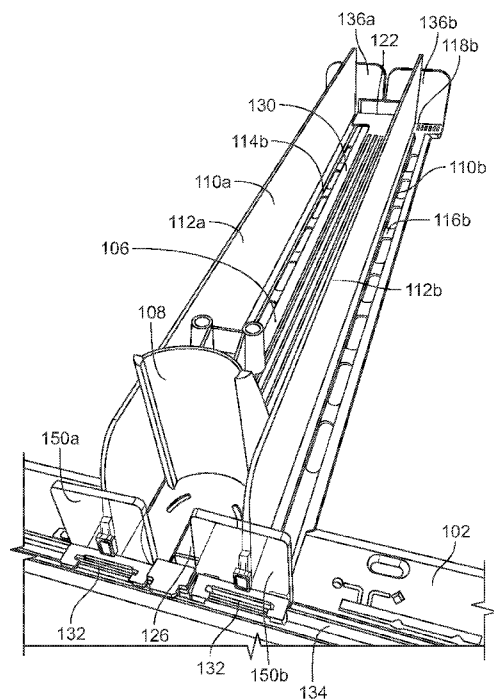


FIG. 1

(57) **Abstract:** A merchandising display system can include one or more of a front rail configured to mount to a shelf, a first divider assembly, a second divider assembly, and a central track or floor, and a pusher assembly. In one example aspect, the example merchandising display system can be configured to prevent splaying of the divider assemblies when a row of product is loaded toward the rear of the shelf or when displaying the product in rows on the shelf. In one example, the central track in conjunction with the weight of the product can be configured to maintain even spacing between the first divider assembly and the second divider assembly, such that the first divider assembly and the second divider assembly are maintained in position on the shelf thereby maintaining the product organized in their respective rows on the shelf.

## MERCHANDISE DISPLAY SYSTEM WITH AN ANTI-SPLAY DEVICE

## RELATED APPLICATIONS

- [01] This application claims priority to U.S. Provisional Application No. 62/278,312, filed on January 13, 2016, and relates to U.S. Application No. 14/611,767, filed on February 2, 2015, which is a continuation of U.S. Application No. 13/833,500, filed on March 15, 2013, and granted as U.S. Patent No. 8,967,394, which is a continuation-in-part of U.S. Application No. 13/542,419 filed on July 5, 2012, and granted as U.S. Patent No. 8,739,984, which is a continuation-in-part of United States Application No. 12/639,656 filed December 16, 2009, and granted as U.S. Patent No. 8,322,544, which is a continuation-in-part application of United States Application No. 12/357,860 filed January 22, 2009, and granted as U.S. Patent No. 8,453,850, which is a continuation-in-part application of United States Application No. 11/760,196 filed June 8, 2007, and granted as U.S. Patent No. 8,312,999, which is a continuation-in-part application of United States Application No. 11/411,761 filed April 25, 2006, and granted as U.S. Patent No. 7,823,734, which claims benefit to United States Provisional Application Nos. 60/716,362 filed September 12, 2005 and 60/734,692 filed November 8, 2005, all of which are incorporated herein fully by reference. U.S. Application No. 13/542,419 also claims benefit to United States Provisional Application Nos. 61/530,736 filed September 2, 2011, 61/542,473 filed October 3, 2011, and 61/553,545 filed October 31, 2011. All of the above applications are incorporated herein fully by reference.

## FIELD

- [02] The exemplary embodiments relate generally to a shelf assembly for use in merchandising product and more particularly to a shelf assembly having improved mechanisms for displaying and pushing product on the shelves.

## BACKGROUND

- [03] Retail and wholesale stores, such as convenience stores, drug stores, grocery stores, discount stores, and the like, require a large amount of shelving both to store product and to display the product to consumers. In displaying product, it is may be desirable for the product on the shelves to be situated toward the front of the shelf so that the product is visible and accessible to consumers. In the case of coolers or refrigerators that are used to store and display such products as soft drinks, energy drinks, bottled water, and other bottled or canned beverages, it may be desirable for these products to also be situated toward the front of the shelf and visible and accessible to the consumers.
- [04] To accomplish this placement of product, systems may include inclined trays or floors that through gravity will cause the product to move toward the front of the shelf. Many of these systems include floors or shelves made of a plastic material such as polypropylene that due its low coefficient of friction permit the product to easily slide along the inclined floor or surface. Other systems may include the use of a pusher system to push the product toward the front of the shelf as the product at the front of the shelf is removed. Pusher systems can be mounted to a track and may include a pusher paddle and a coiled spring to urge the product forward.

## SUMMARY

- [05] One exemplary embodiment described herein is directed to a product management display system for merchandising product on a shelf and displaying and merchandising product to a consumer. In one example, the merchandising display system is configured to display product in rows by use of divider assemblies while maintaining the spacing between the rows during dispensing of the product. The example merchandising display system can include one or more of a front rail, divider assemblies, a central track or floor, and a pusher assembly. In one example aspect,

the example merchandising display system can be configured to prevent splaying or separating of the divider assemblies, when a row of product is loaded toward the rear of the shelf or when the rows of product are displayed to consumers. In one example, the central track in conjunction with the weight of the product can be configured to help maintain even spacing between the first divider assembly and the second divider assembly, such that the first divider assembly and the second divider assembly are better maintained in position on the shelf thereby helping to maintain the product organized in their respective rows on the shelf.

#### BRIEF DESCRIPTION OF THE DRAWINGS

- [06] Figure 1 depicts a right-side isometric view of an example product management display system in a first position.
- [07] Figure 2 depicts a front isometric view of the example product management display system of Figure 1.
- [08] Figure 3 depicts another isometric view of a rear section of the example product management display system of Figure 1.
- [09] Figure 4 depicts a front isometric view of the example product management display system of Figure 1 in a second position.
- [10] Figure 5 depicts another isometric view of a rear section of the example product management display system of Figure 1 in the second position.
- [11] Figure 6 depicts another isometric view of a bottom rear section of the floor of the example product management display system of Figure 1.
- [12] Figure 7a shows a side-perspective view of a front portion of an example central track.
- [13] Figure 7b shows another side-perspective view of a front portion of the example central track of Figure 7a.

- [14] Figure 8 shows a front perspective view of another example merchandise display system.
- [15] Figure 9 shows a side perspective view of a rear portion of the example merchandise display system of Figure 8.
- [16] Figure 10 shows a rear perspective view of the example merchandise display system of Figure 8.
- [17] Figures 11a-11g depict an exemplary method of adjusting and loading the merchandise display system of Figure 8.
- [18] Before the embodiments of the invention are explained in detail, it is to be understood that the invention is not limited in its application to the details of construction and the arrangement of the components set forth in the following description or illustrated in the drawings. The invention is capable of other embodiments and of being practiced or being carried out in various ways. Also, it is to be understood that the phraseology and terminology used herein are for the purpose of description and should not be regarded as limiting. The use of “including” and “comprising” and variations thereof is meant to encompass the items listed thereafter and equivalents thereof as well as additional items and equivalents thereof. Further, the use of the term “mount,” “mounted” or “mounting” is meant to broadly include any technique or method of mounting, attaching, joining or coupling one part to another, whether directly or indirectly.
- [19] Also, while the terms “front,” “back,” “rear,” “side,” “forward,” “rearward,” and “backward” and the like may be used in this specification to describe various example features and elements of the invention, these terms are used herein as a matter of convenience, e.g., based on the example orientations shown in the figures and/or the orientations in typical use. Nothing in this specification should be construed as requiring a specific three dimensional or spatial orientation of structures in order to fall within the scope of the disclosure.

## DETAILED DESCRIPTION

- [20] The disclosure may be embodied in various forms. Referring to the Figures wherein like numerals indicate like elements, Figures 1-6 depict an example anti-splay merchandising display system 100, for displaying and merchandising product to a consumer. The merchandising display system 100 is configured to display product in rows by use of divider assemblies while maintaining the spacing between the rows during dispensing of the product.
- [21] As shown in Figures 1, 2, and 4, the example merchandising display system 100 can include a front rail 102, identical first and second divider assemblies 110a, 110b, and a central track or floor 106 accommodating a pusher assembly 108. Product can be placed in rows between the first divider assembly 110a and the second divider assembly 110b and on the central track 106 of the merchandising display system 100. When a first product located in the front of a particular row is removed, the pusher assembly 108 advances the entire row of product remaining in the row toward first and second product barriers 150a, 150b until the next product abuts the first and second product barriers 150a, 150b. Although only two divider assemblies 110a, 110b and one central track 106 are depicted in the Figures, it is contemplated that more than two divider assemblies and multiple central tracks can be provided along the rail 102 to accommodate several rows of product.
- [22] The example merchandising display system 100 is configured to prevent splaying or separating of the divider assemblies 110a, 110b, particularly when a row of product is loaded toward the rear of the shelf. As is discussed in more detail below, the central track 106 in conjunction with the weight of the product are configured to maintain the spacing of the first divider assembly 110a and the second divider assembly 110b, to help maintain the first divider assembly 110a and the second divider assembly 110b in position on the shelf thereby helping to maintain the product organized in their respective rows on the shelf.

- [23] The merchandising display system 100 can also be configured to be adjusted to accommodate different sized product and can be positioned in any desired location along the front rail 102. In particular, the spacing between the first divider assembly 110a and the second divider assembly 110b can be adjustable relative to each other. The first divider assembly 110a, the second divider assembly 110b, and the central track 106 can each be configured to slide along the front rail 102 to any desired position, and once in the desired position can be locked into place onto the front rail 102 by way of cams 132. For example, Figures 1-3 show the example merchandising display system 100 in a first position to accommodate product of a first width, and Figures 4 and 5 show the example merchandising display system 100 in a second position to accommodate product of a second width.
- [24] The first divider assembly 110a can be provided with a first divider wall 112a separating the first divider assembly into sections to define a first pair of floors 114a, 114b, which provide a first track and a second track for supporting product on either side of the first divider wall 112a. Likewise, the second divider assembly 110b can include a second divider wall 112b separating the second divider assembly 110b into sections to define a second pair of floors 116a, 116b to provide a third track and a fourth track for supporting product. Additionally, as shown in Figures 1-5, the central track 106 can be configured to sit on top of one of the first divider floors 114b and one of the second divider floors 116a in a position to accommodate the corresponding width of the product in the row. The central track 106 is configured to extend between the first divider assembly 110a and the second divider assembly 110b. Together the first divider floor 114b, the second divider floor 116a, and the central track 106 define a floor 130 for receiving a row of product. In one example, when positioned in the smallest setting, the floor 106, the second track 114b, and the third track 116a can form an integral surface for receiving product. However, in other settings, for example as shown in Figure 4, the central track 106 can be spaced apart from the second track 114b and the third track 116a.

- [25] The central track 106 can include an outwardly extending flange or tail 122. The outwardly extending flange 122 engages the first divider assembly 110a at the first divider assembly rear and the floor 106 engages the second divider assembly 110b at the second divider assembly rear to prevent the first divider assembly 110a and the second divider assembly 110b from splaying in relation to one another. This helps to maintain the product neatly in rows on the shelves in between the first divider wall 112a of the first divider assembly 110a and the second divider wall 112b of the second divider assembly 110b.
- [26] In one example, the rear portion of each of a first pair of floors 114a, 114b of the first divider assembly 110a and the rear portion of each of the second pair of floors 116a, 116b of the second pair of floors 116a, 116b of the second divider assembly 110b can be provided with a plurality of notches 118a, 118b for accommodating various different sized product. The notches are configured to receive corresponding projections 120a, 120b on the flange of the central track 106.
- [27] As shown in Figure 6, the flange or tail 122 on the central track 106 can include a first tooth or projection 120a and a second tooth or projection 120b. Both the first projection 120a and the second projection 120b can be oriented vertically on the flange 122. The first projection 120a can be configured to align with and rest within one of the plurality of notches 118a on the second track 114b on the first divider assembly 110a. Similarly, the second projection 120b can be configured to align with and rest within one of the plurality of notches 118b in the third track 116a on the second divider assembly 110b.
- [28] Also as shown in Figure 6, the central track 106 can be provided with an extended base area 154, which can be received in between the first divider assembly 110a and the second divider assembly 110b and acts as a spacing guide for the first divider assembly 110a and the second divider assembly 110b when the divider assemblies 110a, 110b are in the smallest setting. The central track 106 can be provided with a ramp 152. It is also contemplated that the flange 122 can be provided with multiple

projections that can be received in multiple openings in the first divider assembly 110a and the second divider assembly 110b to provide additional traction between the central track 106, the first divider assembly 110a, and the second divider assembly 110b. This can help increase the retention forces between the central track 106, the first divider assembly 110a, and the second divider assembly 110b and the ability of the central track 106 to prevent splaying of the first divider assembly 110a and the second divider assembly 110b when product is loaded therein.

[29] As discussed herein, the central track 106 sits on top of the one of the first pair of floors 114a, 114b of the first divider assembly 110a and one of the second pair of floors 116a, 116b of the second divider assembly 110b at their respective rear portions. The first divider assembly 110a and the second divider assembly 110b can be arranged relative to each other to the corresponding width of the product. As product is loaded from the front of the shelf, the pusher assembly 108 moves backwards on the central track 106, and the weight of the product itself causes the first projection 120a and the second projection 120b on the flange 122 of the central track 106 to engage the notches 118a, 118b of the first divider assembly 110a and the second divider assembly 110b respectively. When product is pushed toward the rear of the shelf, splaying can become more prevalent, and this configuration essentially locks the divider assemblies 110a, 110b together at the rear automatically. This example can be easier to implement in that arranging the divider assemblies simply requires that the divider assemblies 110a, 110b be oriented according to the width of the product, and the central track 10 be placed on the divider assemblies at the desired width.

[30] In addition, the flange or tail 122 can be provided with an upstanding rear portion 138. The rear portion 138 can help to prevent product from falling off of the rear portion of the shelf. In combination with the projections 120a, 120b described above or in the alternative, although not shown, the rear portion 138 may also be provided with a series of projections that can fit within corresponding notches on the first and second rear product barriers 136a, 136b. Moreover, the rear portion 138 can also be

provided with a texturized surface to also help prevent the divider assemblies 110a, 110b from splaying.

- [31] The central track 106 can also support the pusher assembly 108. The pusher assembly 108 can be any type of pusher assembly and can be configured according to the type of product that is being merchandised in the merchandising display system 100. For example, the pusher assembly 108 can be any of the pusher examples disclosed in U.S. Application No. 14/611,767, incorporated by reference above. The pusher 108 can be held onto the central track 106 by only the coiled spring. Also the central track 106 can include a guide or track and the pusher assembly 108 can include a corresponding projection that engages the guide or track located on the central track 106.
- [32] In one example, the pusher assembly 108 can include a pusher floor 140, a pusher paddle 124, and a coiled spring 126 positioned behind the pusher paddle 124. The coiled spring 126 is configured to bias the pusher assembly 108 toward the front rail 102 and the barriers 150a, 150b. In this example, the pusher paddle 124 can be mounted to the central track 106 and can be configured to bias product toward a front of a shelf such that a consumer can easily remove the product from the front of the shelf.
- [33] At a front portion, each of the first divider assembly 110a, the second divider assembly 110b, and the central track 106 can be configured to connect to the front rail 102 by way of various connections. The types of connections may include a cam or lock that engages the front rail 102, which are shown and described in U.S. Application No. 14/611,767, fully incorporated by reference above. In this example, the divider assemblies 110a, 110b can be provided with a separate cam 132. The cam 132 can be configured to move between a first position and a second position for selective engagement with a groove or channel 134 in the front rail 102. When the respective cam 132 is in the first position and the particular component (e.g. the first divider assembly 110a or the second divider assembly 110b) is on the rail, the

particular component can be (a) movable in a lateral direction parallel to the front rail 102 and (b) secured in a direction perpendicular to the front rail 102. However, when the respective cam 132 is in the second position and the particular component is engaged with the rail, the particular component is (a) fixed in the lateral direction parallel to the front rail 102 and (b) secured in the direction perpendicular to the front rail 102.

[34] In one example, the central track 106 can be secured to the front rail 102 by a friction-engagement-type fit that allows the central track 106 to be fixed to the front rail 102 and to also move along the front rail 102 for adjusting the product management display system 100 to receive product therein. Specifically, as shown in Figures 7a and 7b, the front of the central track 106 can be provided with an extension 165 having a pair of semi-ocular protrusions 162, which are configured to fit into the front rail groove or channel 134. Together the extension 165 and the semi-ocular protrusions 162 provide a frictional fit into the front rail groove or channel 134. Additionally, the extension 165 can be provided with a tab 166 for the user to grasp the front portion of the central track 106 such that the central track 106 can be placed onto, removed from, or slid along the front rail 102. The extension 165 and the semi-ocular protrusions 162 allows for user to slide the central track 106 along the front rail 102 in order to center the central track 106 once the divider assemblies 110a, 110b have been sized to the container width.

[35] In one example, the extension 165, the semi-ocular protrusions 162, and the tab 166 can be formed of an elastomeric material, which allows for the extension 165 and the semi-ocular protrusions 162a, 162b to sufficiently flex when placed into the front rail groove or channel 134. Moreover, the front rail 102 can be formed of a flexible material, such as a suitable plastic in order to also flex when the extension 165 and the semi-ocular protrusions 162 are received within the groove 134. It is also contemplated that the central track 106 can connect to the front rail 102 using other connection methods. For example, the central track 106 can be provided with a

similar cam and lock system as the divider assemblies discussed above with respect to the divider assemblies 110a, 110b for securing the central track 106 to the front rail.

- [36] Additionally, product can be prevented from sliding off of the front or the rear of the shelf. Specifically, the first and second product barriers 150a, 150b can be affixed to the first divider assembly 110a and the second divider assembly 110b respectively. Additionally, the first divider assembly 110a and the second divider assembly 110b can be provided with integral first and second rear product barriers 136a, 136b to prevent product from being displaced off of the rear of shelves.
- [37] Additionally, the merchandising display system 110 can be configured to support several rows of the same or different product. Although not shown, another central track can be placed on top of either the other of the first pair of floors 114a, 114b of the first divider assembly 110a, or another central track can be placed in on the other one of the second pair of floors 116a, 116b of the second divider assembly 110b. Furthermore, another divider assembly can be provided to accommodate the central track on the other side and can be arranged for receiving any width of product therein.
- [38] For example, in addition to the first divider assembly 110a and the second divider assembly 110b and the central track 106, a third divider assembly (not shown) and a second central track (not shown) can be configured to connect to the front rail adjacent either the first divider assembly 110a or the second divider assembly 110b. Like the first divider assembly 110a and the second divider assembly 110b, the third divider assembly can also include a third divider wall separating the third divider assembly to define a pair of floors for receiving product, i.e., a fifth track and a sixth track for supporting product. Additionally like the central track 106, the second central track can be configured to extend between the respective divider assemblies. For example, the second central track can be configured to engage the second divider assembly, and the second central track can be configured to engage the third divider assembly to provide an additional row for product. Also the second central track can be provided with a pair of notches for engaging the second divider assembly and the

third divider assembly for preventing the second divider assembly and the third divider assembly from splaying in relation to one another.

[39] Figures 8-11g show another example merchandising display system 200, where like numerals indicate like elements as in the example shown in Figures 1-7. The example merchandise display system 200 is similar to the example disclosed above in relation to Figures 1-6. However, in this example, the central track 206 is provided with a spring tab 260 (shown in Figures 8 and 9) located on the underside of the central track 206.

[40] The spring tab 260 allows the user to freely adjust the first divider assembly 210a and the second divider assembly 210b before product is loaded in the merchandise display system 200. In particular, the spring tab 260 lifts the rear portion and flange 222 of the central track 206 to prevent the flange 222 of the central track 206 from engaging the rear portion of the first divider assembly 210a and the second divider assembly 210b when the merchandise display system 200 is in the unloaded condition. The spring tab 260 can be configured to engage the shelf floor and bias the central track 206 up off of the first divider assembly 210a and the second divider assembly 210b floors 214a, 214b, 216a, 216b, such that the first divider assembly 210a and the second divider assembly 210b can be moved relative to the central track 206. As shown in Figure 9, the spring tab 260 can be configured to raise the central track 206 to a predetermined height  $H_1$  above the floors 214a, 214b, 216a, 216b to allow for the first divider assembly 210a and the second divider assembly 210b to be freely adjusted relative to the central track 206. Once product is loaded into the merchandise display system 200, the weight of the product pushes down on the spring tab 260 and forces the spring downwardly into a recess (not shown) located at the bottom of the central track 206, such that the flange 222 engages the floors 214b, 216a of the divider assemblies 210a, 210b to help prevent the divider assemblies 210a, 210b from splaying.

- [41] In one example, the spring tab 206 can be a spring steel leaf spring. The spring tab 260, in one example, can be integrally molded into the central track 206 or can be attached to the central track 206 by any other fastening method. The spring tab 206 may also be formed of the same material as the central track in such a way that it resiliently extends from the bottom of the central track 206 when the merchandise display system 200 is in an unloaded position. For example, the spring tab 206 can be formed as a resilient lever or projection extending at a predetermined angle, and the bottom of the central track 206 may include a recess for receiving the lever or projection when the central track 206 is loaded with product. In other examples, the spring tab 260 can be an elastomeric material that resiliently deflects when the central track 206 is loaded with product.
- [42] Figures 11a-11g show an exemplary method of adjusting and loading the merchandise display system 200. As shown in Figure 11a, one row of product can be loaded in between the first divider assembly 210a and the second divider assembly 210b. In Figure 11b, the central track 206 can be adjusted to the middle location of the product width. In Figure 11c, with only one row of product loaded therein, the divider assemblies 210a, 210b can be moved freely underneath the rear portion of the central track 206, so that the product has just enough space to move forward in the merchandise display assembly 200. Next, the divider assemblies 210a, 210b can be locked into place on the front rail 202 in Figure 11d. As shown in Figures 11e-11g as rows of product are added into the merchandise display assembly 200, the weight of the product flexes the spring tab 260 into the recess (not shown) on the bottom of the central track 206 and allows the flange 222 of the central track 206 to engage the divider assemblies 210a, 210b, which helps to secure the central track 206 and the divider assemblies 210a, 210b thereby helping to prevent splaying of the divider assemblies 210a, 210b.
- [43] Other alternative examples are contemplated for preventing splaying of the divider assemblies. For example, the flange can include slots or notches and the divider assemblies can include projections that can be received in the slots or notches in the

flange. Moreover, other connection types are contemplated for connecting the divider assemblies to the central track, such as using texturized surfaces, interference fits, snap fits, ball and socket connections, threaded fasteners, hook and loop connections, elastomeric connections, adhesive connections, and the like. In addition, the flange and central track can be arranged such that the central track and flange sits below the divider assemblies. In this way when weight is placed on the divider assemblies, the divider assemblies will push down on the central track, which can help prevent the divider assemblies from splaying. Also, the flange can be located on other areas along the central track, and the divider assemblies can be provided with areas for receiving the flange, and the flange can be connected to the central track by any connection method. Moreover, a plurality of flanges can be provided on the central track. Each of the plurality of flanges can include pair of projections similar to flange 122 or can include a plurality of notches and the divider assemblies can include corresponding notches or projections for receiving the plurality of flanges. Also the flanges can include arms or upright sections for wrapping around the divider assemblies for preventing splaying. The arms or upright sections can be provided with an elastomeric material to accommodate for different sized product. In addition, the rear section of the divider assemblies can be provided with a cam lock and the rear of the shelf can be provided with a similar rail as the front rail 102 for locking the divider assemblies at their rear portions. Also the divider assemblies and shelves can be configured to removably connect at the rear portion of the divider assemblies. For example, the divider assemblies can be provided with projections that can be placed in corresponding recesses at the rear section of the shelf or can be provided with recesses for receiving corresponding projections on the shelf.

- [44] An example merchandise display system can include a front rail configured to mount to a shelf and a first divider assembly configured to connect to the front rail. The first divider assembly can include a first divider wall separating the first divider assembly to define a first track and a second track for supporting product, and the first divider assembly can define a first divider assembly front and a first divider assembly rear. The merchandise display system can also include a second divider assembly. The

second divider assembly can be configured to connect to the front rail and can define a second divider assembly front and a second divider assembly rear. The second divider assembly can include a second divider wall separating the second divider assembly to define a third track and a forth track for supporting product.

[45] The merchandise display system may also include a floor configured to connect to the front rail and can be configured to extend between the first divider wall and the second divider wall. The floor can be configured to engage the first divider assembly at the first divider assembly rear, and the floor can be configured to engage the second divider assembly at the second divider assembly rear to aid in preventing the first divider assembly and the second divider assembly from splaying in relation to one another. The floor can include a pusher assembly having a pusher paddle and a coiled spring positioned behind the pusher paddle and can be configured to bias the pusher paddle toward the front rail. The floor, the second track, and the third track can together form a surface for receiving at least one product.

[46] In another example, the first divider assembly and the second divider assembly spacing can be adjustable. For example, each first divider section, e.g., the first track and the second track, can include a first plurality of notches, and each second divider section, e.g., the third track and the second track, can include a second plurality of notches. Also the floor can include a first projection and a second projection, and the first projection can be configured to extend into one of the first plurality of notches, and the second projection can be configured to extend into one of the second plurality of notches. The weight of the product causes the floor to engage the first divider assembly and the second divider assembly at the second divider assembly to aid in preventing the first divider assembly and the second divider assembly from splaying in relation to one another. The floor can also include a spring for raising the floor above a rear portion of the first divider assembly and a rear portion of the second divider assembly when the merchandise display system is in the unloaded position.

- [47] The merchandise display system may also include a third divider assembly. The third divider assembly can be configured to connect to the front rail and can include a third divider wall separating the third divider assembly to define a fifth track and a sixth track for supporting product. Also the merchandising assembly can include second floor, and the second floor can be configured to connect to the front rail and can be configured to extend between the second divider wall and the third divider wall. The second floor can also engage the second divider assembly and the third divider assembly to prevent the second divider assembly and the third divider assembly from splaying in relation to one another.
- [48] In another example, a method can include providing a front rail configured to connect to a shelf, providing a first divider assembly and configuring the first divider assembly to connect to the front rail. The first divider assembly can include a first divider wall and at least one first floor for supporting product. A second divider assembly can also be provided, and the method can also include configuring the second divider assembly to connect to the front rail. The second divider assembly can include a second divider wall and at least one second floor for supporting product. The method may include providing a track configured to connect to the front rail and configuring the track to extend between the first divider wall and the second divider wall. The method can also include configuring the track to engage the first divider assembly and configuring the track to engage the second divider assembly to help prevent the first divider assembly and the second divider assembly from splaying in relation to one another. The track, the at least one first floor, and the at least one second floor together form a surface for receiving at least one product.
- [49] The method can also include configuring the first divider assembly and the second divider assembly spacing to be adjustable. In addition, the method can include providing the at least one floor of the first divider assembly with a first plurality of notches, providing the at least one floor of the second divider assembly with a second plurality of notches, providing the track with a first projection and a second projection, and configuring the first projection to extend into one of the first plurality

of notches and configuring the second projection to extend into one of the second plurality of notches. The method may also include providing the track with a pusher assembly having a pusher paddle and positioning a coiled spring behind the pusher paddle and configuring the coiled spring to bias the pusher paddle toward the front rail.

- [50] The method can also include providing a third divider assembly, configuring the third divider assembly to connect to the front rail, providing the third divider assembly with a third divider wall and at least one third floor for supporting product and providing a second track and configuring the second track to connect to the front rail and to extend between the second divider wall and the third divider wall. The second track can be configured to engage the second divider assembly, and the second floor can be configured to engage the third divider assembly to help prevent the second divider assembly and the third divider assembly from splaying in relation to one another.
- [51] The method may also include configuring the track to engage the first divider at a rear portion of the first divider assembly and configuring the track to engage the second divider assembly at a rear portion of the second divider assembly such that weight of product loaded on the at least one first floor, the at least one second floor, and the track aids in preventing the first divider assembly and the second divider assembly from splaying in relation to one another.
- [52] In another example, a merchandise display system can include a front rail configured to mount to a shelf and a first divider assembly configured to connect to the front rail. The first divider assembly can include a first divider assembly front and a first divider assembly rear. The first divider assembly can include a first divider wall separating the first divider assembly to define a first track and a second track for supporting product. The first track and the second track can include a first plurality of notches. The merchandise system may also include a second divider assembly defining a second divider assembly front and a second divider assembly rear. The second divider assembly can be configured to connect to the front rail, and the second divider

assembly can include a second divider wall separating the second divider assembly to define a third track and a forth track for supporting product. The third track and the forth track can include a second plurality of notches.

- [53] A floor can be configured to connect to the front rail and can be configured to extend between the first divider wall and the second divider wall. The floor can include a first projection and a second projection. Additionally, the floor can engage the first divider assembly at the first divider assembly rear, and the floor can engage the second divider assembly at the second divider assembly rear such that the first projection extends into one of the first plurality of notches and the second projection extends into one of the second plurality of notches to aid in preventing the first divider assembly and the second divider assembly from splaying in relation to one another. The first plurality of notches, the second plurality of notches and the corresponding first and second projections allows for the first divider assembly and the second divider assembly spacing to be adjustable.
- [54] The floor can also include a pusher assembly having a pusher paddle and a coiled spring positioned behind the pusher paddle that is configured to bias the pusher paddle toward the front rail. The floor, the second track, and the third track can together form a surface for receiving at least one product.
- [55] The merchandise display system can also include a third divider assembly, and the third divider assembly can be configured to connect to the front rail. The third divider assembly can include a third divider wall separating the third divider assembly to define a fifth track and a sixth track for supporting product. The merchandise display system can also include a second floor, and the second floor can be configured to connect to the front rail and can be configured to extend between the second divider wall and the third divider wall. Also the second floor can be configured to engage the second divider assembly and the third divider assembly to help prevent the second divider assembly and the third divider assembly from splaying in relation to one another. Additionally the weight of the product can cause the floor to forcefully

engage the first divider assembly and the second divider assembly at the second divider assembly to aid in preventing the first divider assembly and the second divider assembly from splaying in relation to one another.

- [56] Variations and modifications of the foregoing are within the scope of the present disclosure. For example, one of skill in the art will understand that multiples of the described components may be used in stores and in various configurations. The present disclosure is therefore not to be limited to a single system, nor the upright pusher configuration, depicted in the Figures, as the system is simply illustrative of the features, teachings and principles of the disclosure. It should further be understood that the disclosure defined herein extends to all alternative combinations of two or more of the individual features mentioned or evident from the text and/or drawings. All of these different combinations constitute various alternative aspects of the present disclosure. The embodiments described herein explain the best modes known for practicing the disclosure and will enable others skilled in the art to utilize the disclosure.

What is claimed is:

1. A merchandise display system comprising:
  - a front rail configured to mount to a shelf;
  - a first divider assembly configured to connect to the front rail, the first divider assembly defining a first divider assembly front and a first divider assembly rear the first divider assembly comprising a first divider wall separating the first divider assembly to define a first track and a second track for supporting product;
  - a second divider assembly defining a second divider assembly front and a second divider assembly rear, the second divider assembly configured to connect to the front rail, the second divider assembly comprising a second divider wall separating the second divider assembly to define a third track and a fourth track for supporting product; and
  - a floor configured to connect to the front rail and configured to extend between the first divider wall and the second divider wall;wherein the floor engages the first divider assembly at the first divider assembly rear and the floor engages the second divider assembly at the second divider assembly rear to aid in preventing the first divider assembly and the second divider assembly from splaying in relation to one another.
2. The merchandise display system of claim 1 wherein the first divider assembly and the second divider assembly spacing is adjustable.
3. The merchandise display system of claim 2 wherein the first track and the second track comprises a first plurality of notches, and wherein the third track and the fourth track comprises a second plurality of notches, the floor comprising a first projection and a second

projection, the first projection configured to extend into one of the first plurality of notches and the second projection configured to extend into one of the second plurality of notches.

4. The merchandise display system of claim 1 wherein the floor further comprises a pusher assembly having a pusher paddle and a coiled spring positioned behind the pusher paddle and configured to bias the pusher paddle toward the front rail.

5. The merchandise display system of claim 1 wherein the floor, the second track, and the third track together form a surface for receiving at least one product.

6. The merchandise display system of claim 1 further comprising a third divider assembly, the third divider assembly configured to connect to the front rail, the third divider assembly comprising a third divider wall separating the third divider assembly to define a fifth track and a sixth track for supporting product and a second floor and wherein the second floor is configured to connect to the front rail and is configured to extend between the second divider wall and the third divider wall; wherein the second floor engages the second divider assembly and the second floor engages the third divider assembly to prevent the second divider assembly and the third divider assembly from splaying in relation to one another.

7. The merchandise display system of claim 1 wherein weight of the product causes the floor to engage the first divider assembly and the second divider assembly to aid in preventing the first divider assembly and the second divider assembly from splaying in relation to one another.

8. The merchandise display system of claim 1 wherein the floor further comprises a spring for raising the floor above a rear portion of the first divider assembly and a rear portion of the second divider assembly when the merchandise display system is in the unloaded position.

9. A method comprising:
- providing a front rail configured to connect to a shelf;
  - providing a first divider assembly and configuring the first divider assembly to connect to the front rail, the first divider assembly comprising a first divider wall and at least one first floor for supporting product;
  - providing a second divider assembly, configuring the second divider assembly to connect to the front rail, the second divider assembly comprising a second divider wall and at least one second floor for supporting product; and
  - providing a track and configuring the track to connect to the front rail and configuring the track to extend between the first divider wall and the second divider wall, and configuring the track to engage the first divider assembly and configuring the track to engage the second divider assembly to help prevent the first divider assembly and the second divider assembly from splaying in relation to one another.
10. The method of claim 9 further comprising configuring the first divider assembly and the second divider assembly spacing to be adjustable.
11. The method of claim 10 further comprising providing the at least one floor of the first divider assembly with a first plurality of notches, providing the at least one floor of the second divider assembly with a second plurality of notches, providing the track with a first projection and a second projection, where the first projection is configured to extend into one of the first plurality of notches and the second projection is configured to extend into one of the second plurality of notches.

12. The method of claim 9 further comprising providing the track with a pusher assembly having a pusher paddle and positioning a coiled spring behind the pusher paddle and configuring the coiled spring to bias the pusher paddle toward the front rail.
13. The method of claim 9 wherein the track, the at least one first floor, the at least one second floor together form a surface for receiving at least one product.
14. The method of claim 9 further comprising providing a third divider assembly, configuring the third divider assembly to connect to the front rail, providing the third divider assembly with a third divider wall and at least one third floor for supporting product and a second track and configuring the second track to connect to the front rail and to extend between the second divider wall and the third divider wall; wherein the second track engages the second divider assembly and the second floor engages the third divider assembly to help prevent the second divider assembly and the third divider assembly from splaying in relation to one another.
15. The method of claim 9 further comprising configuring the track to engage the first divider at a rear portion of the first divider assembly and configuring the track to engage the second divider assembly at a rear portion of the second divider assembly such that weight of product loaded on the at least one first floor, the at least one second floor, and the track aids in preventing the first divider assembly and the second divider assembly from splaying in relation to one another.
16. The method of 9 further comprising providing the floor with a spring for raising the floor above a rear portion of the first divider assembly and a rear portion of the second divider assembly when the merchandise display system is in the unloaded position.
17. A merchandise display system comprising:

a front rail configured to mount to a shelf;

a first divider assembly configured to connect to the front rail, the first divider assembly comprising a first divider assembly front and a first divider assembly rear the first divider assembly comprising a first divider wall separating the first divider assembly to define a first track and a second track for supporting product, the first track and the second track comprising a first plurality of notches;

a second divider assembly defining a second divider assembly front and a second divider assembly rear, the second divider assembly configured to connect to the front rail, the second divider assembly comprising a second divider wall separating the second divider assembly to define a third track and a forth track for supporting product, the third track and the forth track comprising a second plurality of notches; and

a floor configured to connect to the front rail and configured to extend between the first divider wall and the second divider wall, the floor having a first projection and a second projection;

wherein the floor engages the first divider assembly at the first divider assembly rear and the floor engages the second divider assembly at the second divider assembly rear such that the first projection extends into one of the first plurality of notches and the second projection extends into one of the second plurality of notches to aid in preventing the first divider assembly and the second divider assembly from splaying in relation to one another.

18. The merchandise display system of claim 17 wherein the first divider assembly and the second divider assembly spacing is adjustable.

19. The merchandise display system of claim 17 wherein the floor further comprises a pusher assembly having a pusher paddle and a coiled spring positioned behind the pusher paddle and configured to bias the pusher paddle toward the front rail.
20. The merchandise display system of claim 17 wherein the floor, the second track, and the third track together form a surface for receiving at least one product.
21. The merchandise display system of claim 17 further comprising a third divider assembly, the third divider assembly configured to connect to the front rail, the third divider assembly comprising a third divider wall separating the third divider assembly to define a fifth track and a sixth track for supporting product and a second floor and wherein the second floor is configured to connect to the front rail and is configured to extend between the second divider wall and the third divider wall, wherein the second floor engages the second divider assembly and the second floor engages the third divider assembly to help prevent the second divider assembly and the third divider assembly from splaying in relation to one another.
22. The merchandise display system of claim 17 wherein weight of the product causes the floor to engage the first divider assembly and the second divider assembly to aid in preventing the first divider assembly and the second divider assembly from splaying in relation to one another.

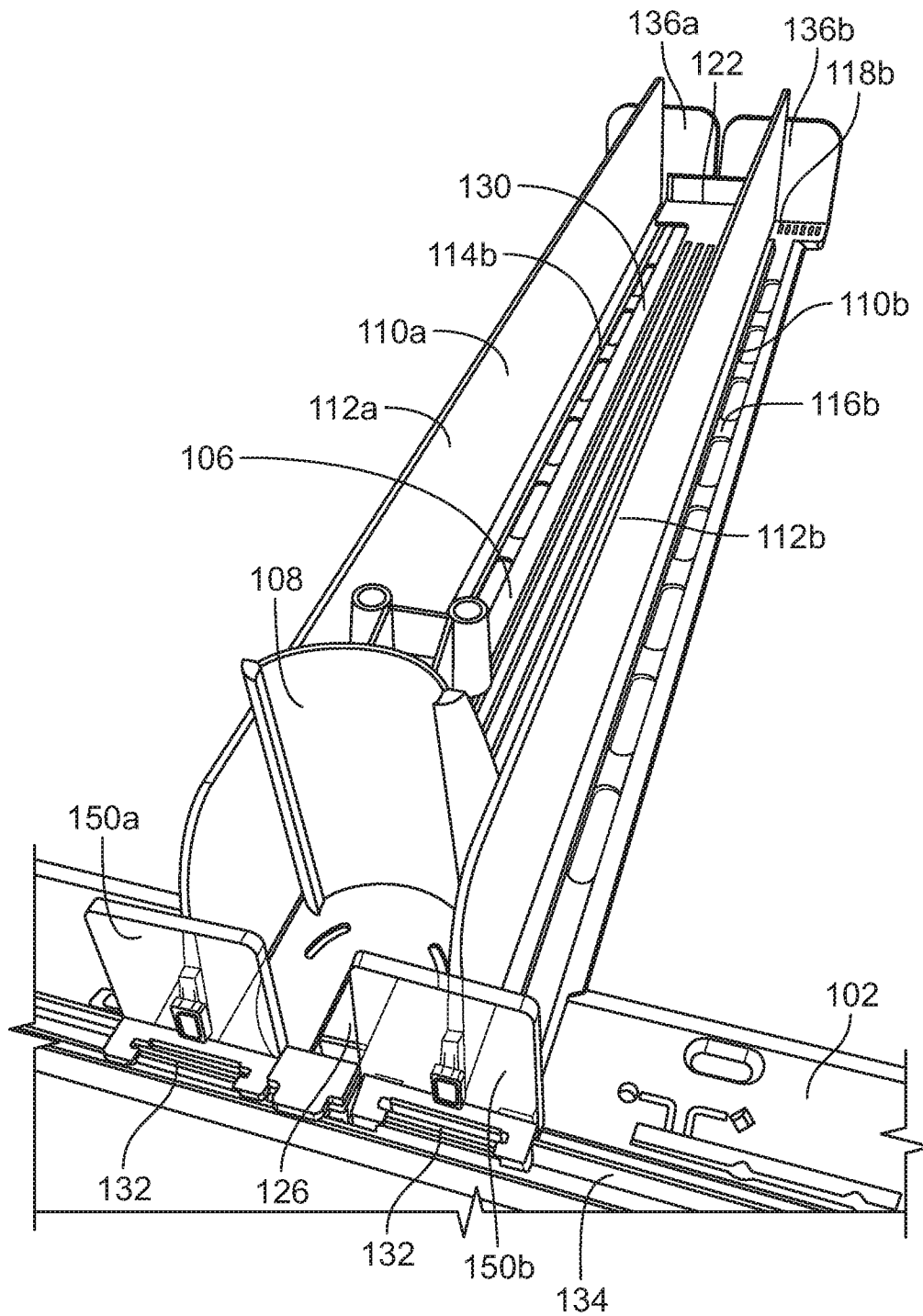


FIG. 1

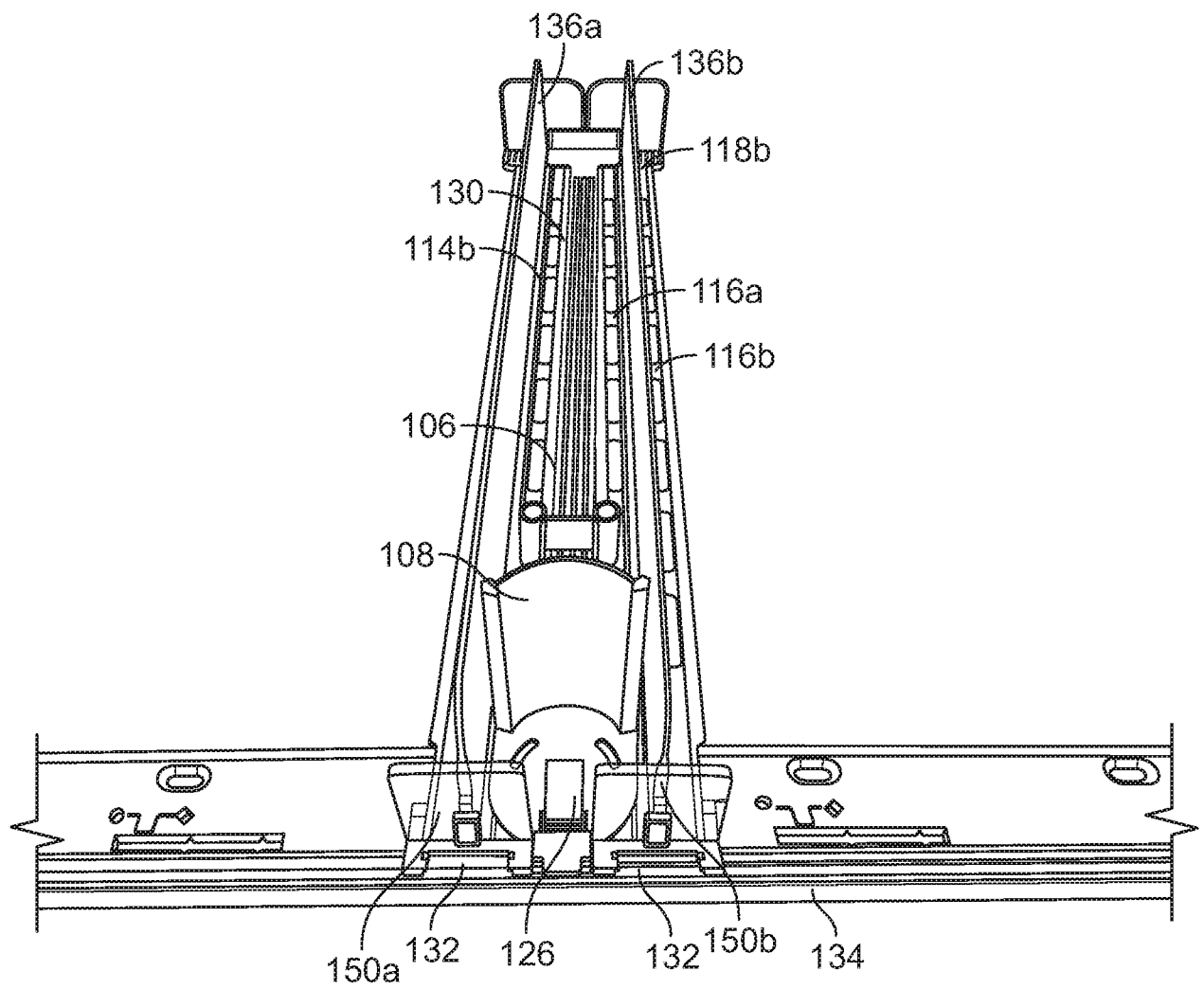


FIG. 2

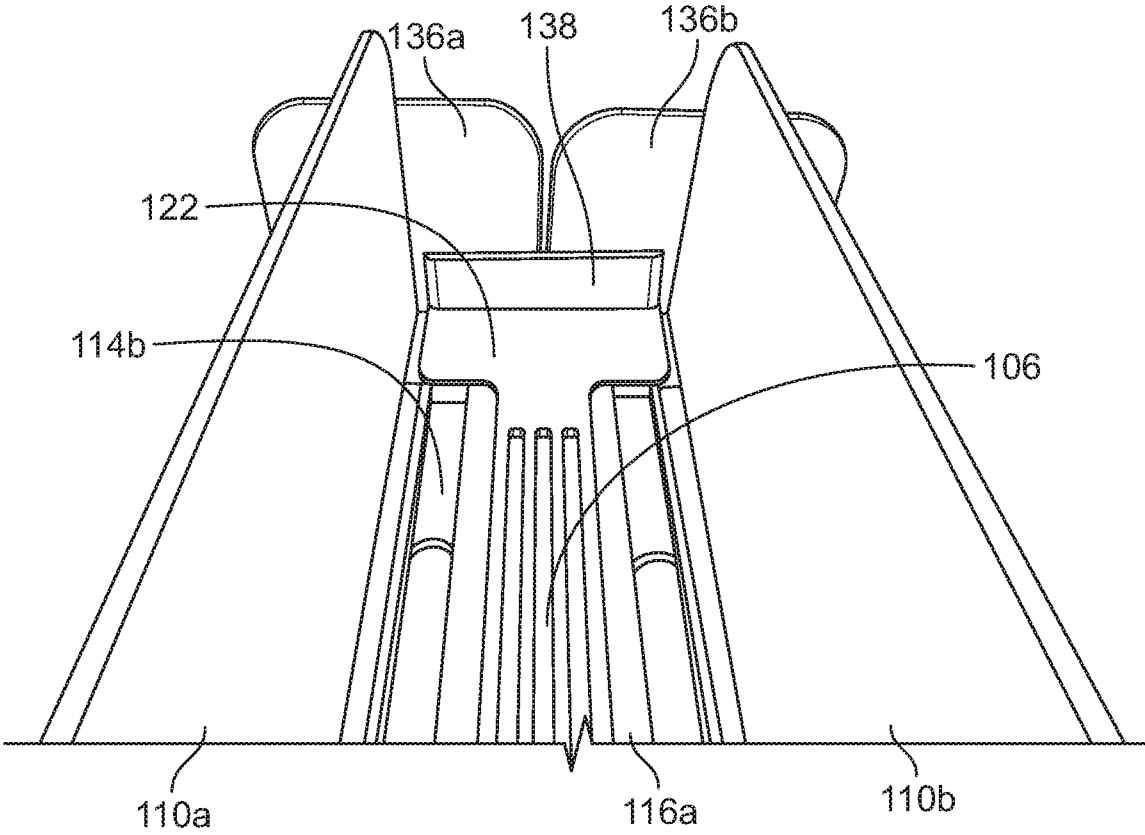


FIG. 3

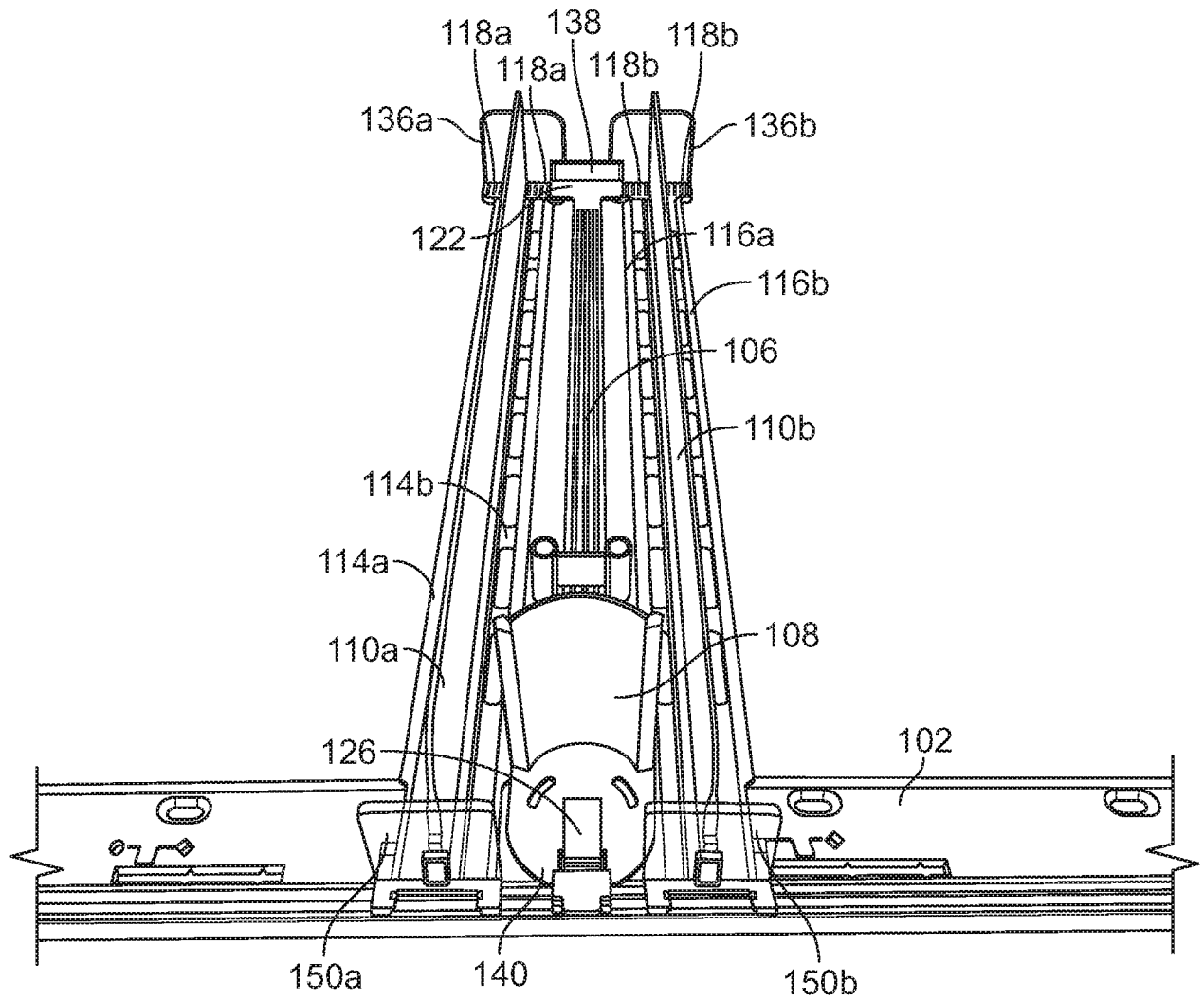


FIG. 4

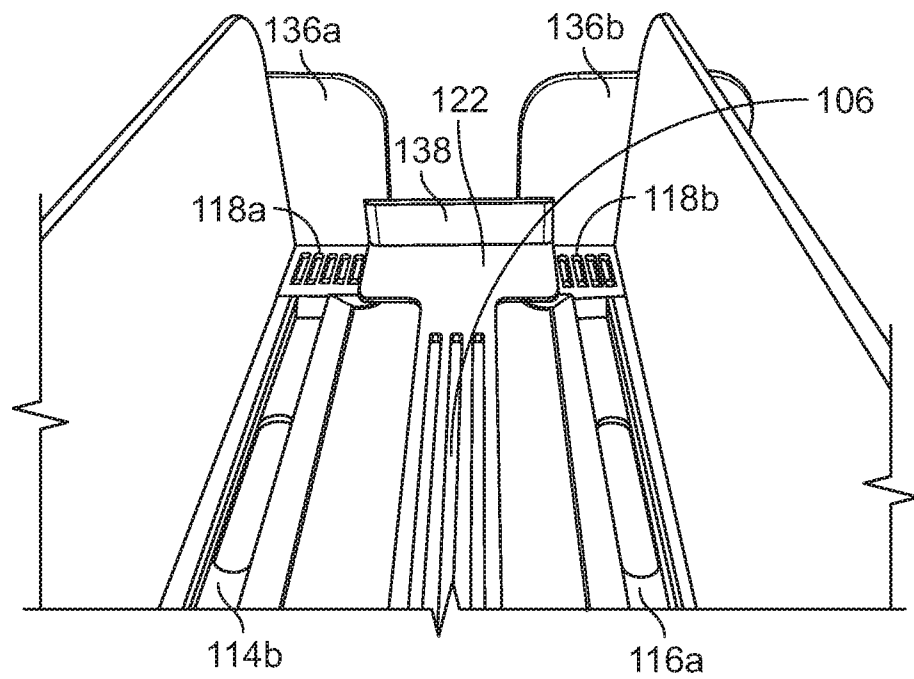


FIG. 5

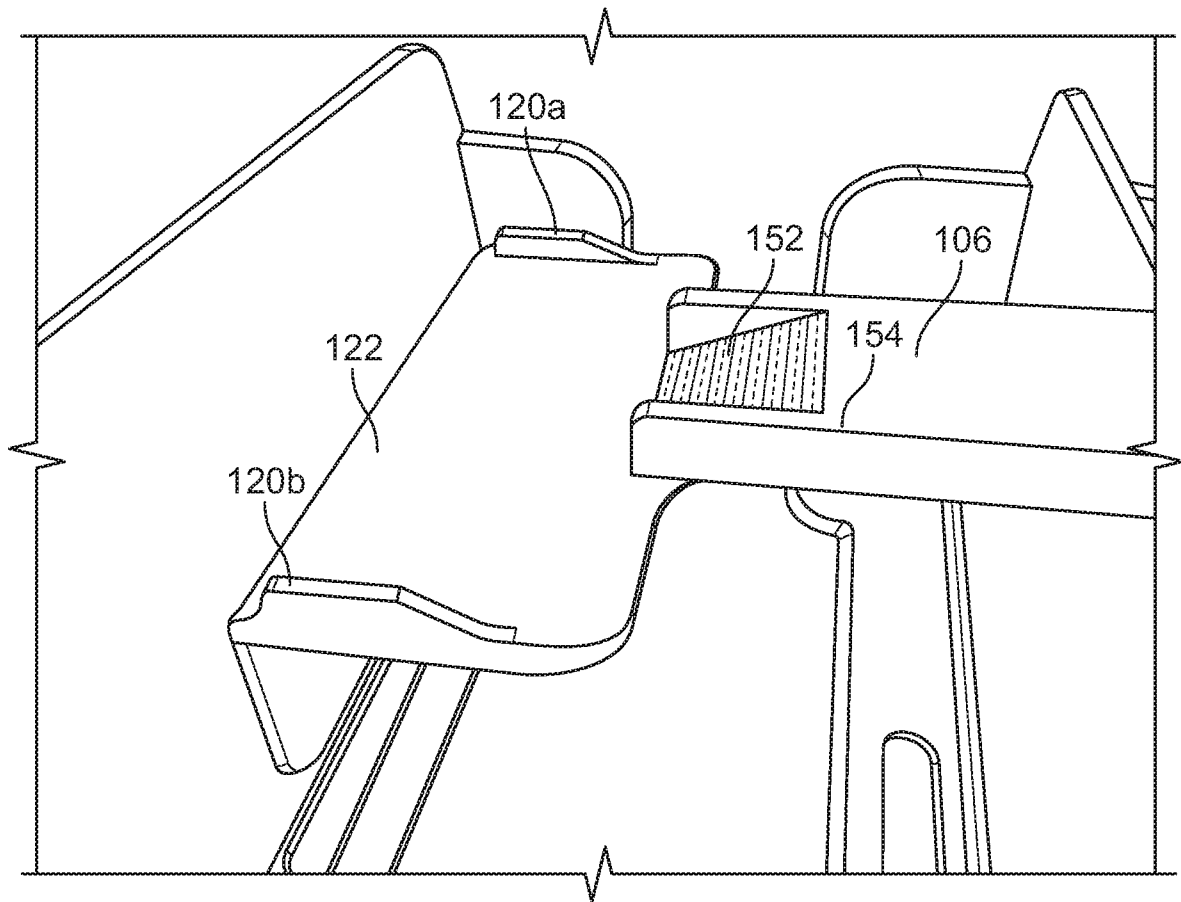
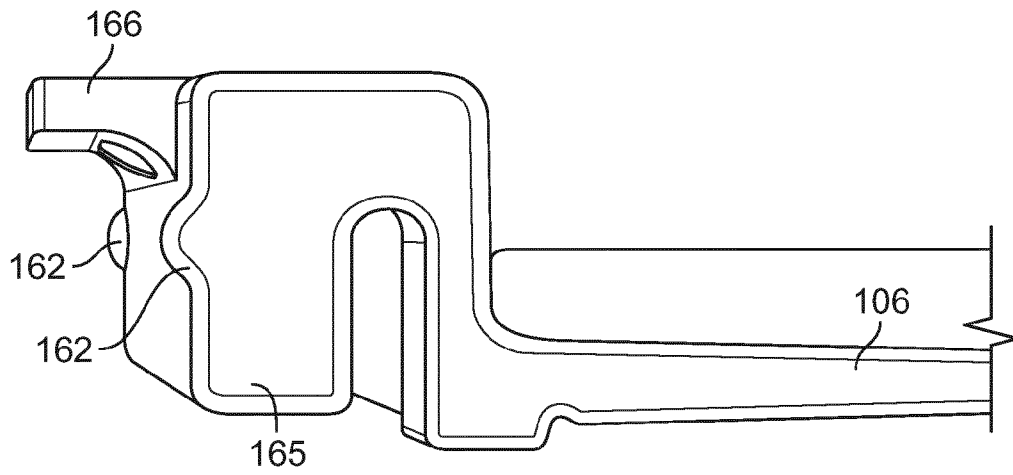
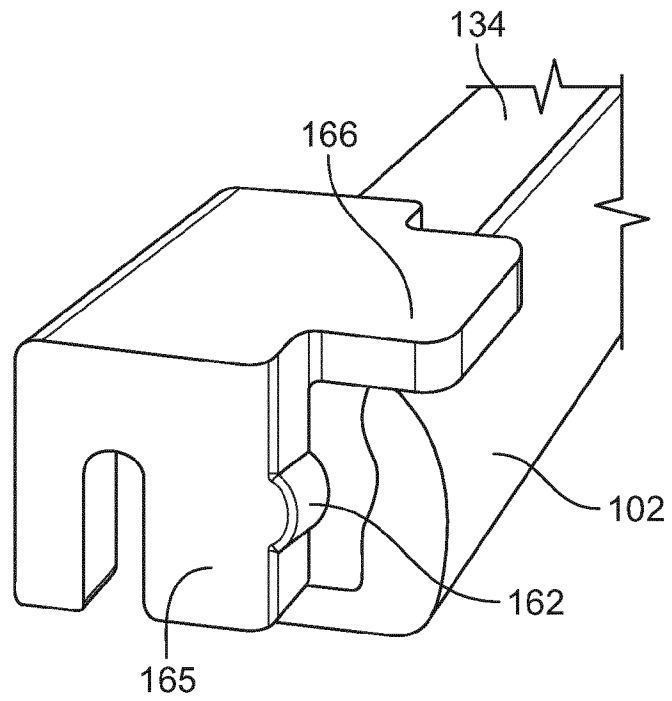


FIG. 6



**FIG. 7a**



**FIG. 7b**

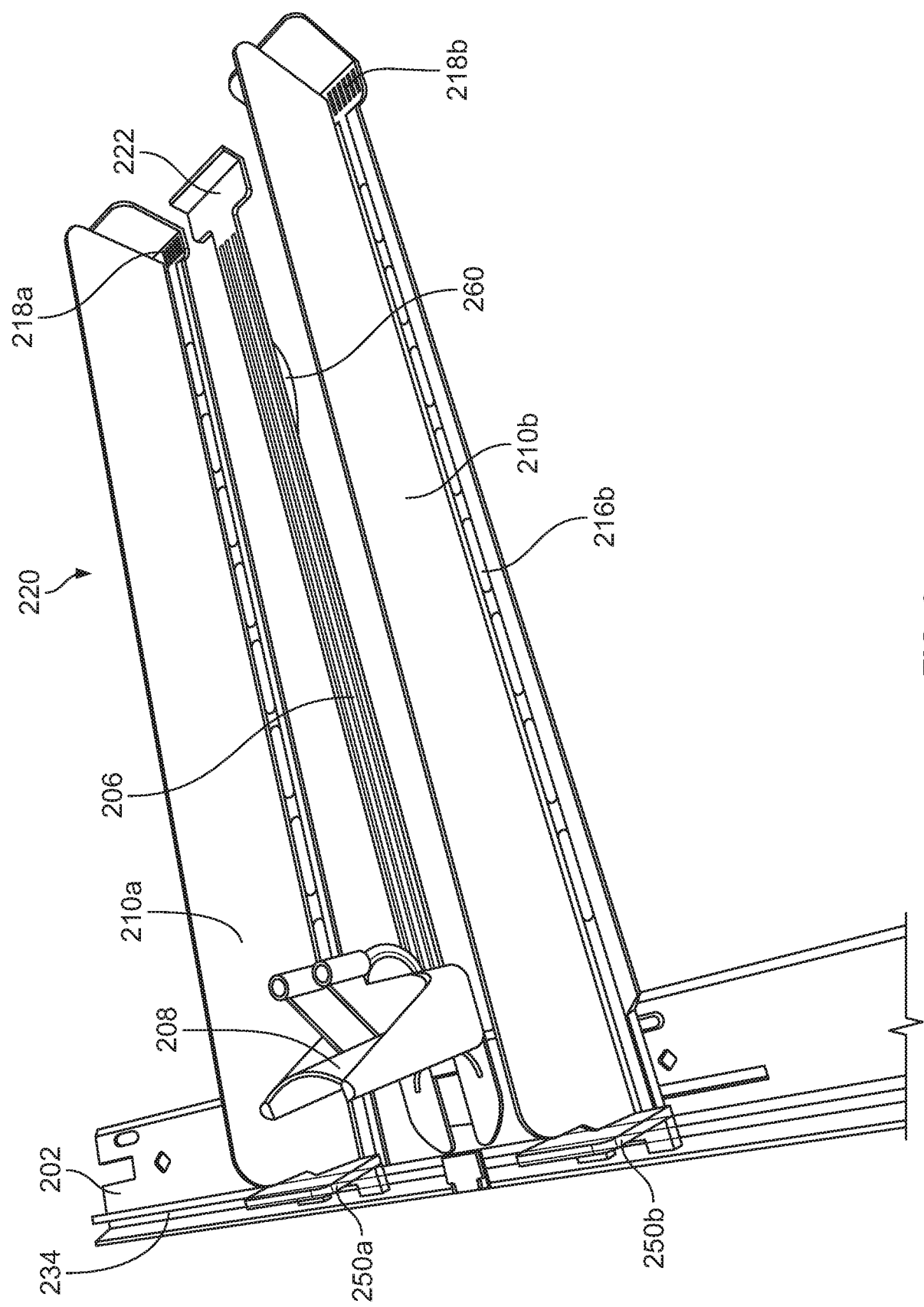


FIG. 8

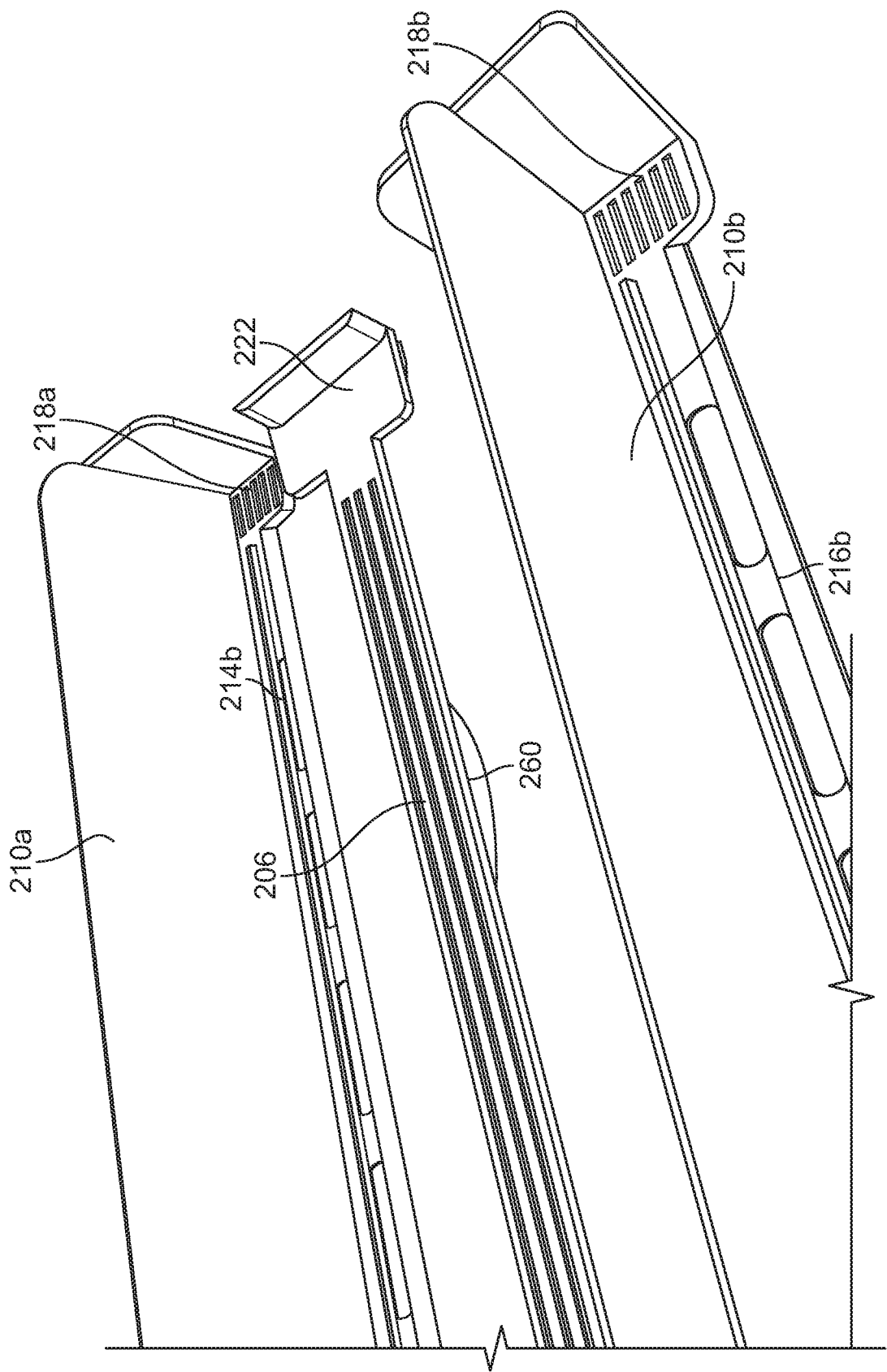


FIG. 9

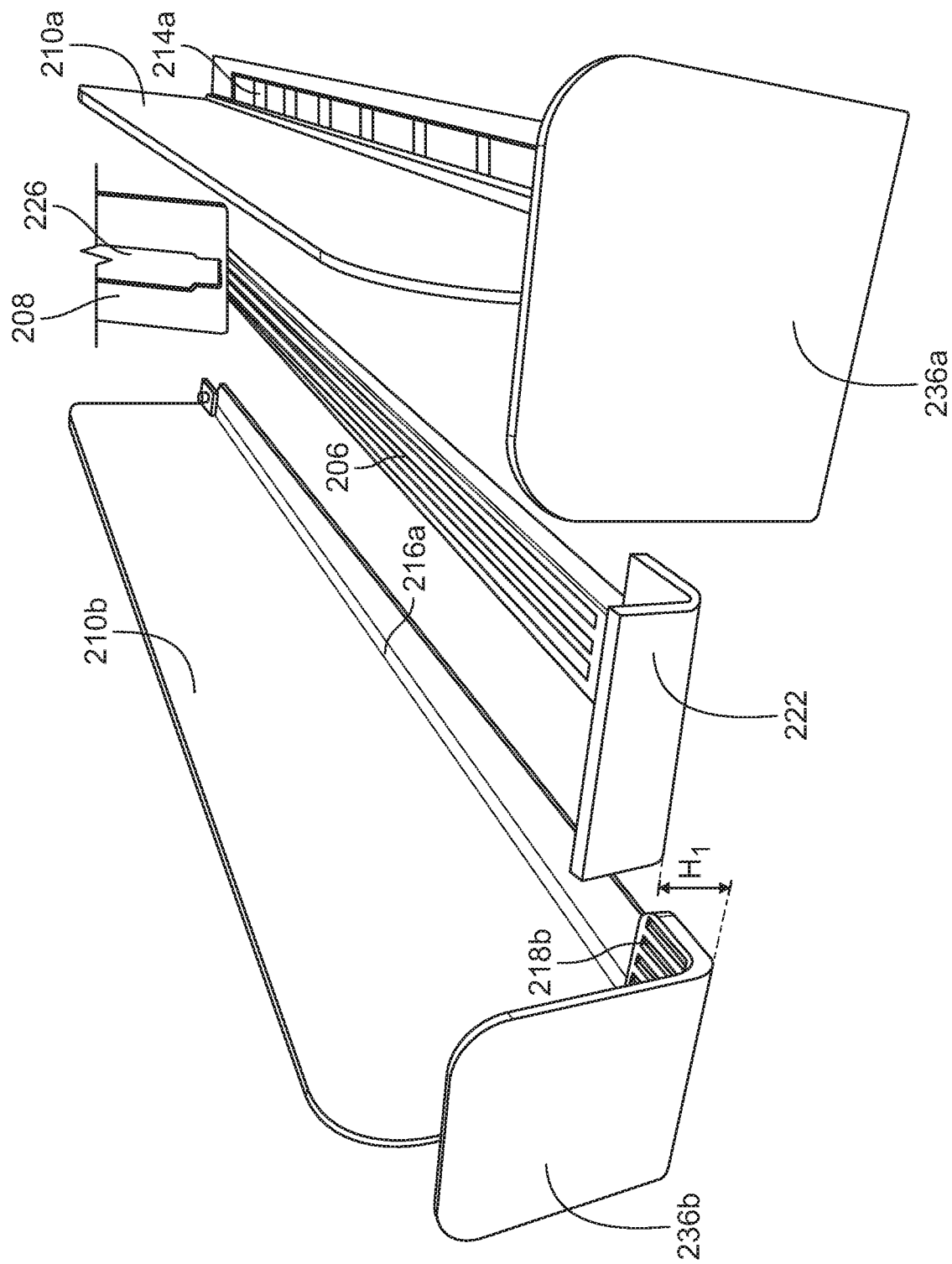
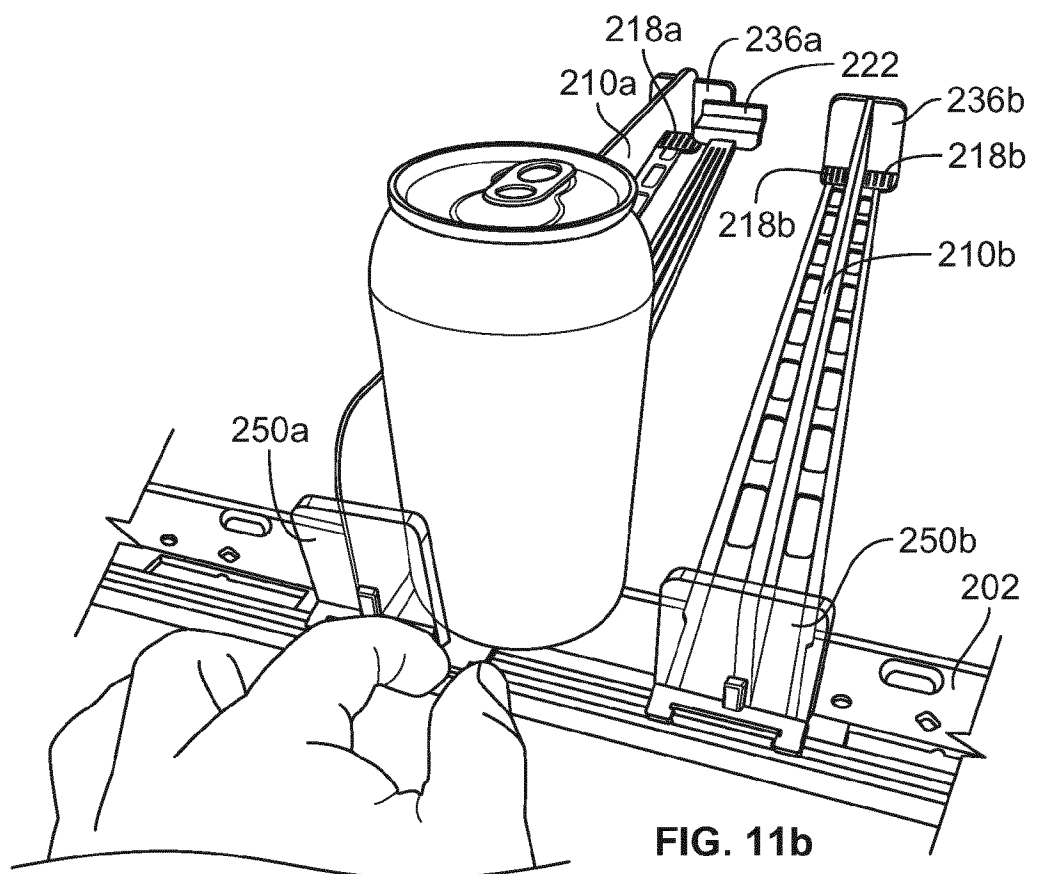
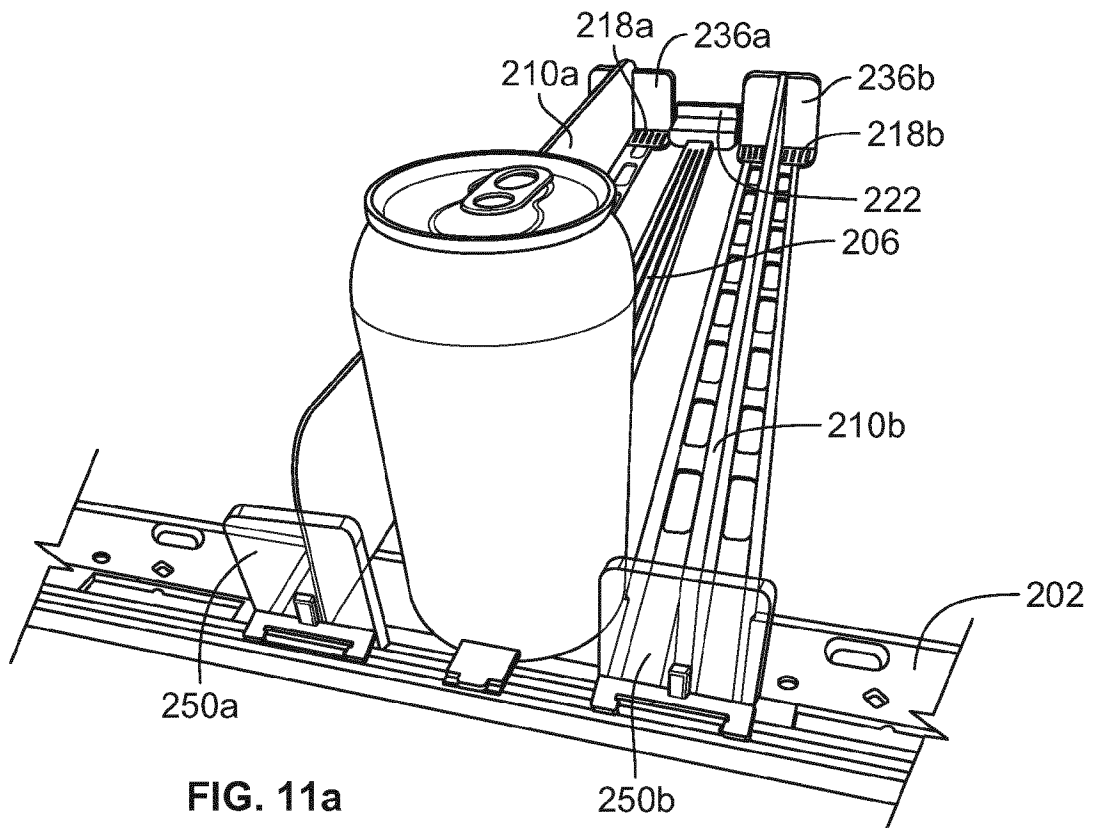


FIG. 10



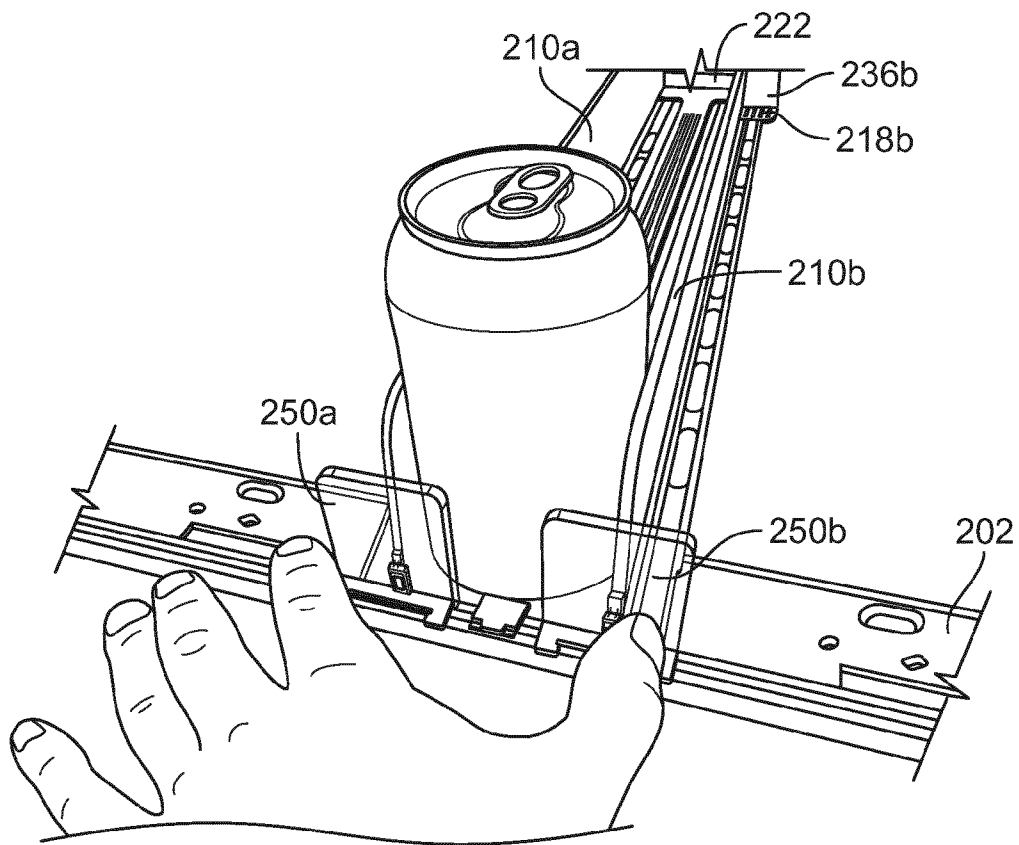


FIG. 11c

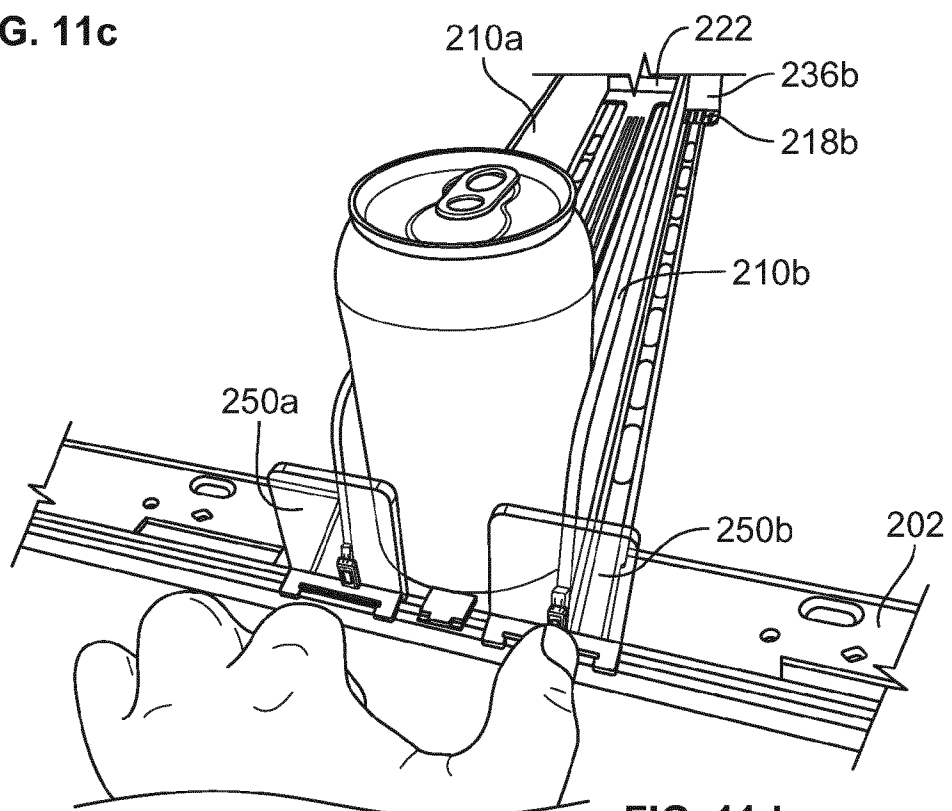


FIG. 11d

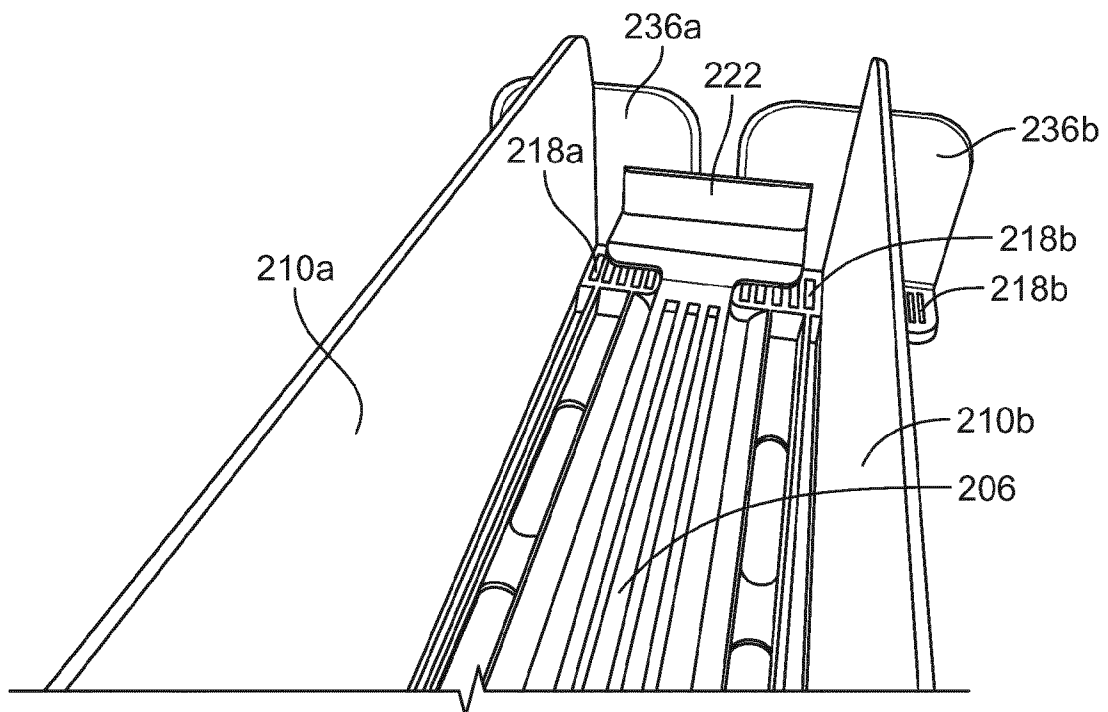


FIG. 11e

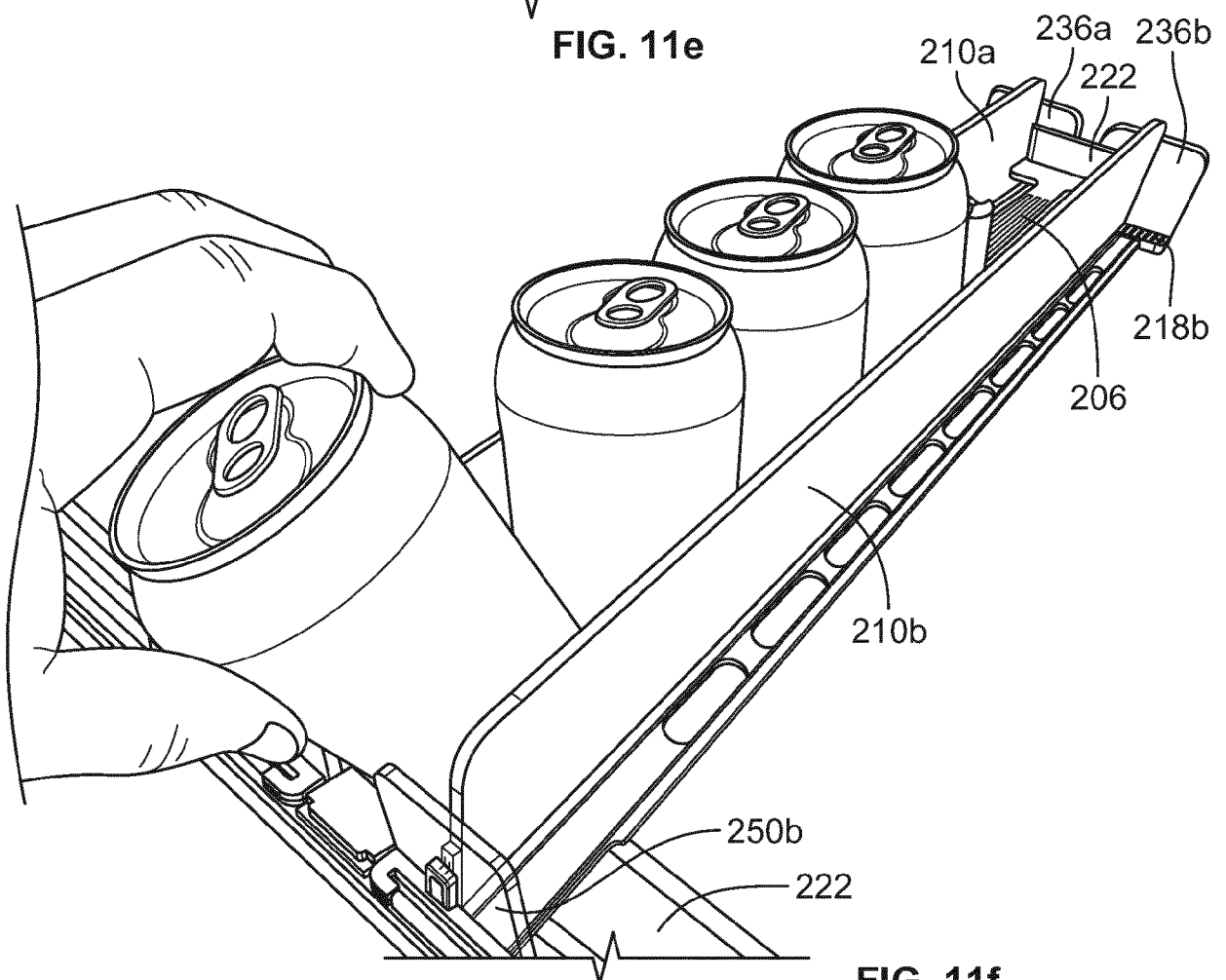
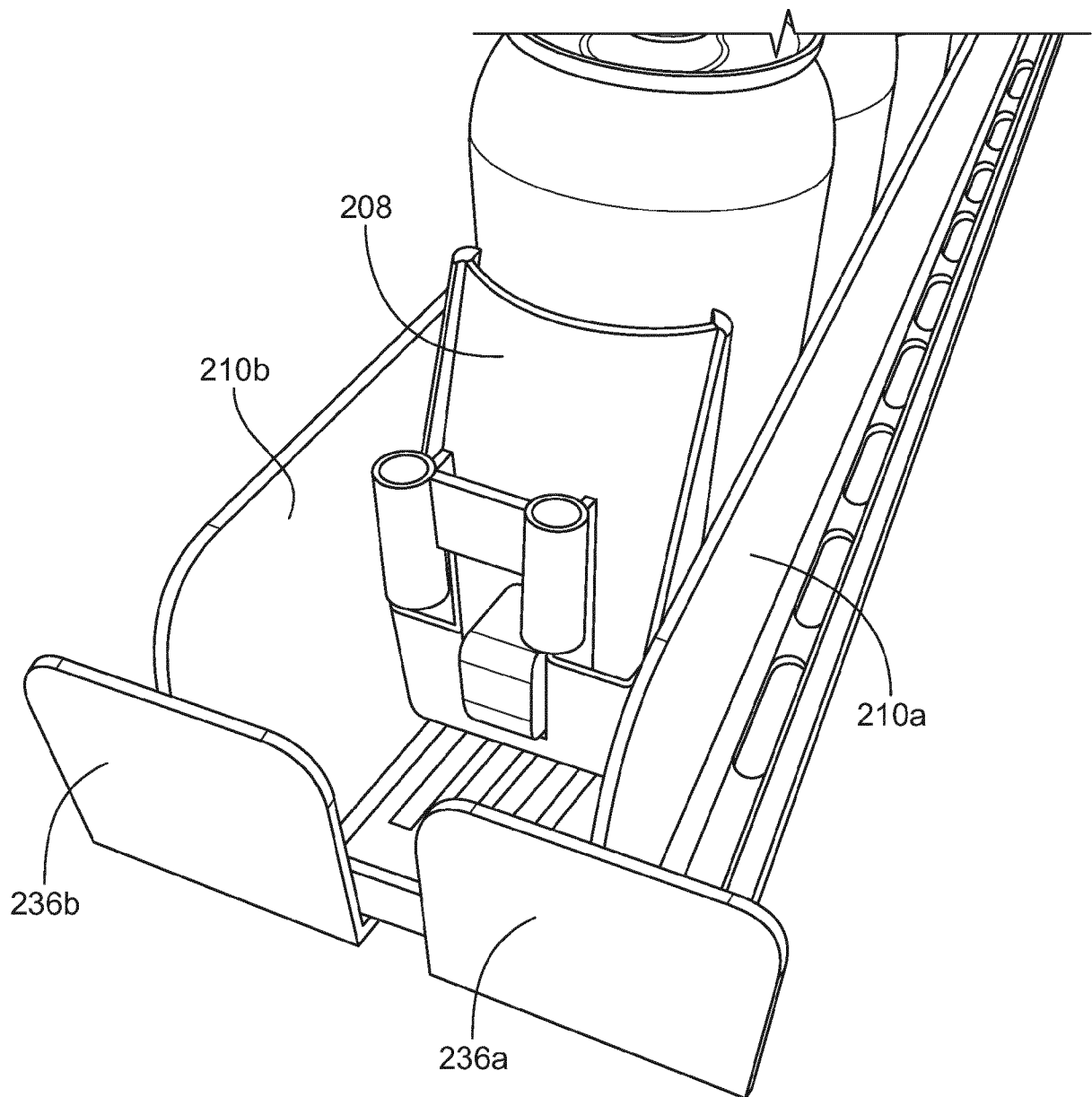


FIG. 11f



**FIG. 11g**

## INTERNATIONAL SEARCH REPORT

International application No

PCT/US2017/013494

## A. CLASSIFICATION OF SUBJECT MATTER

INV. A47F1/12 A47F5/00  
ADD.

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)

A47F

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)

EPO-Internal, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                                                                                                                                                                                         | Relevant to claim No.                   |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| X         | US 2015/041418 A1 (GRUBBS MATTHEW [US] ET AL) 12 February 2015 (2015-02-12)<br><br>paragraph [0026] - paragraph [0029]<br>paragraph [0032]<br>paragraph [0034] - paragraph [0035]<br>paragraph [0042]; figures 1-8<br>-----                                                | 1-7,<br>9-15,<br>17-22                  |
| X         | US 2010/078402 A1 (DAVIS RAYMOND E [US] ET AL) 1 April 2010 (2010-04-01)<br><br>paragraph [0045] - paragraph [0046]<br>paragraph [0049] - paragraph [0051]<br>paragraph [0060] - paragraph [0062]<br>paragraph [0065] - paragraph [0070];<br>figures 1-11<br>-----<br>-/-- | 1-3,5,6,<br>9-11,14,<br>17,18,<br>20,21 |



Further documents are listed in the continuation of Box C.



See patent family annex.

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"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

"&amp;" document member of the same patent family

Date of the actual completion of the international search

22 March 2017

Date of mailing of the international search report

29/03/2017

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Fax: (+31-70) 340-3016

Authorized officer

Jacquemin, Martin

## INTERNATIONAL SEARCH REPORT

International application No

PCT/US2017/013494

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                                              | Relevant to claim No.     |
|-----------|---------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| X<br>A    | DE 299 02 688 U1 (VOSHENRICH [DE])<br>8 July 1999 (1999-07-08)<br>page 5, line 7 - page 6, line 20; figures<br>1-7<br><br>----- | 1,5-7,9,<br>13-15<br>4,12 |

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2017/013494

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s) | Publication<br>date                                        |
|-------------------------------------------|---------------------|----------------------------|------------------------------------------------------------|
| US 2015041418                             | A1                  | 12-02-2015                 | NONE                                                       |
| US 2010078402                             | A1                  | 01-04-2010                 | US 2010078402 A1 01-04-2010<br>WO 2010039973 A1 08-04-2010 |
| DE 29902688                               | U1                  | 08-07-1999                 | NONE                                                       |