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(54) **PRODUCT MANAGEMENT DISPLAY SYSTEM WITH EXTENDED PUSHER TRAVEL**

(57) A product management display system includes a pusher assembly (204) configured to be coupled to a shelf. The pusher assembly (204) includes a floor (216), a track, a channel, a mating interface, and a pusher. The floor has a front end and a back end (204b) of the floor opposite the front end. The track extends between the front end of the floor and the back end of the floor. The

channel extends longitudinally in the floor between the front end and the back end of the floor. The pusher is movable along the track between an initial position adjacent the front end of the floor and an extended position. Both the channel and the mating interface are configured to receive an attachment (272) that extends a length of the track beyond the back end of the floor.

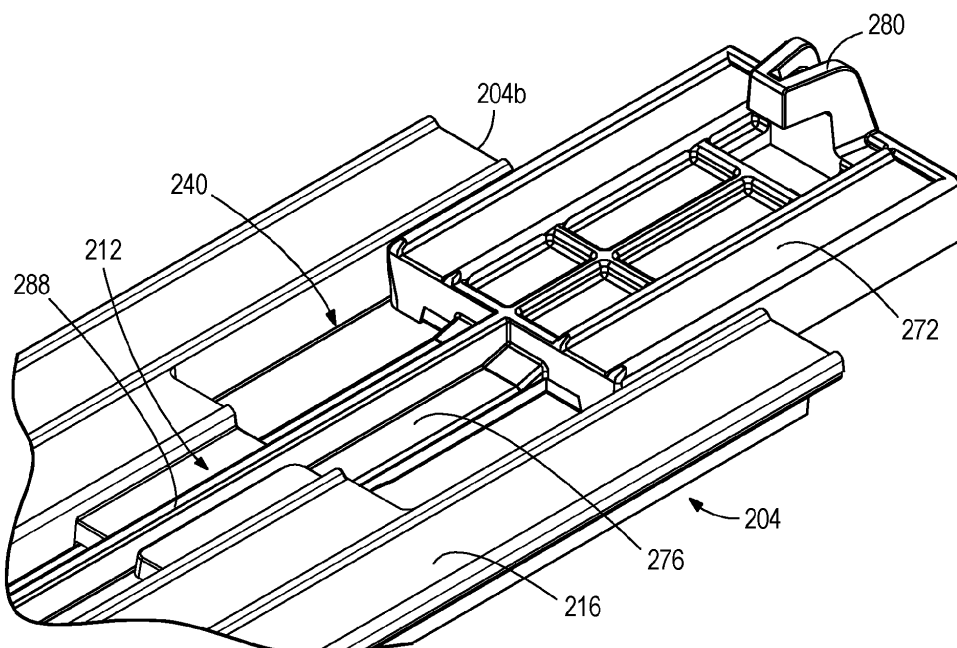


FIG. 13B

Description

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority to U.S. Provisional Application No. 63/506,468, filed June 6, 2023, the entire contents of which are incorporated by reference herein.

FIELD OF THE INVENTION

[0002] The present disclosure relates generally to shelf assemblies, and more particularly to shelf assemblies for use in merchandising product and having product management display systems for displaying and pushing product on shelves.

BACKGROUND

[0003] 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 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 is desirable for these products to also be situated toward the front of the shelf and visible and accessible to the consumers.

[0004] To accomplish this placement of product, known 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. However, over time, these surfaces can become obstructed with debris or sticky substances that inhibit the product from properly sliding, sometimes causing several products to tip over thus blocking additional product from moving to the front of the shelf. Other systems 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. The known pusher systems are typically mounted to a track and include a pusher paddle and a coiled spring to urge the product forward.

SUMMARY

[0005] In known pusher systems, rearward movement of the pusher is limited by the length of the track. That is, the pusher typically encounters a wall or stop near a back end of the track. However, in some shelving systems additional space may exist behind the end of the track. Accordingly, a need exists for a pusher system able to

take advantage of the additional space behind the end of the track, which may allow additional product to be placed on the shelf.

[0006] In some aspects, the techniques described herein relate to a product management display system for a shelf assembly including a shelf for supporting a product, the product management display system including: a pusher assembly configured to be coupled to the shelf, the pusher assembly including a floor including a front end, a back end of the floor opposite the front end, and a first attachment receptacle, a track extending between the front end of the floor and the back end of the floor, an extension removably coupled to the floor, the extension including a front end, a back end, and a track portion configured to extend a length of the track when the extension is coupled to the floor, the extension including a second attachment receptacle, a pusher movable along the track between an initial position and an extended position, wherein the pusher is moved away from the front end of the floor and toward the back end of the floor when the pusher is moved from the initial position toward the extended position, and an extension adapter couplable to the first attachment receptacle when the extension is removed from the floor and couplable to the second extension attachment receptacle when the extension is coupled to the floor, wherein the extension adapter is configured to move between a first position in which a back end of the extension adapter is located at the back end of the floor or the back end of the extension, and a second position in which the back end of the extension adapter is offset from the back end of the floor or the back end of the extension such that at least a portion of the extension adapter is cantilevered from the floor or the extension in the second position.

[0007] In some aspects, the techniques described herein relate to a product management display system, wherein the track includes a pair of track rails, and wherein the pusher includes guide rails, each of the guide rails wrapped around a corresponding one of the track rails.

[0008] In some aspects, the techniques described herein relate to a product management display system, wherein the each of the pair of track rails defines an outer edge of the floor.

[0009] In some aspects, the techniques described herein relate to a product management display system, wherein the floor defines a channel that extends longitudinally between the front end and the back end of the floor, and wherein the extension adapter includes a tongue portion that is at least partially receivable within the channel.

[0010] In some aspects, the techniques described herein relate to a product management display system, wherein the floor includes alignment flanges that extend into the channel, and wherein the tongue portion includes a tongue ridge that is configured to slide between the alignment flanges as the extension adapter moves between the first position and the second position.

[0011] In some aspects, the techniques described

herein relate to a product management display system, wherein each of the first attachment receptacle and the second attachment receptacle includes a protrusion, and wherein the extension adapter includes a tab ridge that engages the protrusion in the second position to inhibit the extension adapter from sliding out of the first attachment receptacle or the second attachment receptacle.

[0012] In some aspects, the techniques described herein relate to a product management display system, wherein the floor defines a channel that extends longitudinally between the front end and the back end of the floor, wherein the extension defines an extension channel that is aligned with the channel when the extension is coupled to the floor, and wherein the extension adapter includes a tongue portion that extends through both the channel and the extension channel to hold the extension together with the floor.

[0013] In some aspects, the techniques described herein relate to a product management display system, wherein the extension is a first extension and the track portion is a first track portion, wherein the pusher assembly further includes a second extension that is removably coupled to the first extension, the second extension including a second track portion that further extends the length of the track when the first extension and the second extension are coupled to the floor.

[0014] In some aspects, the techniques described herein relate to a product management display system, wherein the floor defines a channel in the floor that extends longitudinally between the front end and the back end of the floor, and wherein the pusher assembly further includes a divider wall configured to be received in the channel, the divider wall having a bottom flange, a top flange, and a wall extending from the top flange such that the wall defines two rows of product space above the floor when the divider wall is received in the channel.

[0015] In some aspects, the techniques described herein relate to a product management display system, wherein the floor includes alignment flanges that extend into the channel, and wherein the alignment flanges are received between the bottom flange and the top flange of the divider wall.

[0016] In some aspects, the techniques described herein relate to a product management display system for a shelf assembly including a shelf for supporting a product, the product management display system including: a pusher assembly configured to be coupled to the shelf, the pusher assembly including a floor having a front end and a back end opposite the front end, a track extending between the front end and the back end, a channel defined in the floor and extending longitudinally between the front end and the back end of the floor, a mating interface at the back end of the floor, and a pusher movable along the track between an initial position and an extended position, wherein the pusher is moved away from the front end of the floor and toward the back end of the floor when the pusher is moved from the initial position toward the extended position, wherein both the

channel and the mating interface are configured to receive an attachment that extends a length of the track beyond the back end of the floor.

[0017] In some aspects, the techniques described herein relate to a product management display system, wherein the channel is configured to receive a first attachment and the mating interface is configured to receive a second attachment, and wherein the first attachment and the second attachment are different.

[0018] In some aspects, the techniques described herein relate to a product management display system, wherein the first attachment is an extension adapter, and wherein the second attachment is an extension.

[0019] In some aspects, the techniques described herein relate to a product management display system, wherein the floor includes an extension adapter receptacle that is configured to receive an attachment that extends the length of the track beyond the back end of the floor.

[0020] In some aspects, the techniques described herein relate to a product management display system, wherein the track includes a pair of track rails, and wherein the pusher includes guide rails, each of the guide rails wrapped around a corresponding one of the track rails.

[0021] In some aspects, the techniques described herein relate to a product management display system, wherein the each of the pair of track rails defines an outer edge of the floor.

[0022] In some aspects, the techniques described herein relate to a product management display system for a shelf assembly including a shelf for supporting a product and a back wall spaced from a back end of the shelf by a gap, the product management display system including: a pusher assembly configured to be coupled to the shelf, the pusher assembly including a floor including a front end and a back wall defining a back end of the floor opposite the front end, a track extending between the front end of the floor and the back end of the floor, and a pusher movable along the track between an initial position and an extended position, wherein the pusher is moved away from the front end of the floor and toward the back end of the floor when the pusher is moved from the initial position toward the extended position, wherein a portion of the pusher extends beyond the back end of the floor in the extended position, wherein the back wall includes stop surfaces that limit movement of the pusher to the extended position.

[0023] In some aspects, the techniques described herein relate to a system, wherein the portion of the pusher extends into the gap in the extended position.

[0024] In some aspects, the techniques described herein relate to a system, wherein the pusher includes a body portion and a paddle portion, wherein the body portion defines a back end of the pusher, and wherein the back end of the pusher extends 0.25 to 2.0 inches beyond the back end of the floor when the pusher is in the extended position. An inch is approximately 2.54 cm.

[0025] In some aspects, the techniques described

herein relate to a system, wherein the pusher includes a body portion having an upper surface and product may rest on the upper surface, wherein a length of the body portion defines an initial product space when the pusher is in the initial position, and wherein the initial product space has a length between 2 inches and 8 inches.

[0026] Other features and aspects of the disclosure will become apparent by consideration of the following detailed description and accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0027]

FIG. 1 is a perspective view of an exemplary shelving system. 15

FIG. 2 is a perspective view illustrating a gap between a shelf and a back wall of the shelving system of FIG. 1. 20

FIG. 3 is a perspective view of a product management display system according to an embodiment of the present disclosure and which may be positioned on the shelf of FIG. 2. 25

FIG. 4 is a rear view of a portion of the product management display system of FIG. 3.

FIG. 5 is a perspective view illustrating a rear portion of the product management display system of FIG. 3. 30

FIG. 6 is a bottom perspective view of a portion of a pusher of the product management display system of FIG. 3. 35

FIG. 7 is a top view of a rear portion of the pusher system of FIG. 3, with the pusher in a fully-extended position. 40

FIG. 8 is a perspective view of a product management display system including a pusher assembly according to another embodiment of the disclosure.

FIG. 9 is a perspective view of a rear portion of the pusher assembly of FIG. 8. 45

FIG. 10 is another perspective view of a rear portion of the pusher assembly of FIG. 8. 50

FIG. 11A is a front perspective view of the pusher of FIG. 8.

FIG. 11B is a rear perspective view of the pusher of FIG. 8. 55

FIG. 12A is a top perspective view of the extension adapter of FIG. 8.

FIG. 12B is a bottom perspective view of the extension adapter of FIG. 8.

FIG. 13A is a perspective view of a rear portion of the product management display system of FIG. 8 with the extension adapter in an initial position.

FIG. 13B is a perspective view of a rear portion of the product management display system of FIG. 8 with the extension adapter in an extended position.

FIG. 14 is another perspective view of a rear portion of the product management display system of FIG. 8 with the extension adapter in the extended position.

FIG. 15 is a perspective view of a product management display system including a pusher assembly according to another embodiment of the disclosure.

FIG. 16A is a perspective view of a rear portion of the product management display system of FIG. 15.

FIG. 16B is another perspective view of a rear portion of the product management display system of FIG. 15.

FIG. 17A is a top plan view of a pusher stop that is couplable to the pusher assembly of the product management display system of FIG. 15.

FIG. 17B is a bottom perspective view of the pusher stop of FIG. 17A.

FIG. 17C is a front view of the pusher stop of FIG. 17A.

FIG. 18 is a perspective view of the rear portion of the product management display system of FIG. 15 coupled with the pusher stop of FIG. 17A.

FIG. 19 is a top plan view of a first track extension that is couplable to the mating interface of the product management display system of FIG. 15.

FIG. 20 is a perspective view of the rear portion of the product management display system of FIG. 15 coupled with the first track extension of FIG. 19.

FIG. 21 is a top plan view of a second track extension that is couplable to the mating interface of the product management display system of FIG. 15.

FIG. 22 is a perspective view of the rear portion of the product management display system of FIG. 15 coupled with the second track extension of FIG. 21.

FIG. 23 is a perspective view of the rear portion of the product management display system of FIG. 15

coupled with the first track extension of FIG. 19 and the second track extension of FIG. 21.

FIG. 24 illustrates a portion of a divider wall configured to be coupled to the product management display system of FIG. 15.

FIG. 25 is a perspective view illustrating the divider wall of FIG. 24 partially coupled to the product management display system of FIG. 15.

FIG. 26 is a perspective view illustrating the divider wall of FIG. 24 coupled to the product management display system of FIG. 15.

[0028] Before any embodiments of the disclosure are explained in detail, it is to be understood that the disclosure is not limited in its application to the details of construction and the arrangement of components set forth in the following description or illustrated in the following drawings. The disclosure is capable of other embodiments and of being practiced or of being carried out in various ways.

DETAILED DESCRIPTION

[0029] FIG. 1 illustrates an exemplary shelf assembly 10, which may also be referred to as a gondola, for merchandising product in a retail setting. The shelf assembly 10 includes uprights 14, one or more shelves 18 mounted to and supported by the uprights 14, and a back wall 22 mounted to and supported by the uprights 14. In some embodiments, including the illustrated embodiment, the shelf assembly 10 may include three or more uprights 14. In such embodiments, the back wall 22 may comprise a plurality of back wall sections, each extending between two consecutive uprights 14. In yet other embodiments, the shelf assembly 10 may include only two uprights, with the back wall 22 extending between the uprights 14. The illustrated uprights 14 and back wall 22 are vertical, and the shelves 18 are horizontal; however, the uprights 14, back wall 22, and/or shelves 18 may be obliquely angled in some embodiments. The shelves 18 may be mounted at various positions along the uprights 14 depending on the desired positioning and spacing of the shelves 18. Similarly, the shelves 18 may be moved or relocated to different positions along the uprights 14.

[0030] With continued reference to FIG. 1, the illustrated shelf assembly 10 is a double-sided shelf assembly 10, such that shelves 18 extend from the uprights 14 and the back wall 22 in opposite directions. As such, the uprights 14 and back wall 22 may be generally located along a center of the shelf assembly 10 and separate the opposite shelves 18. In other embodiments, the shelf assembly 10 may be a single-sided shelf assembly 10. The terms "back" and "front" are used herein from a point of reference of a particular shelf 18, rather than the shelf assembly 10 as a whole. More specifically, the term

"back," as used herein, refers to a region farthest from a user when the user is facing a distal end of a particular shelf 18, and the term "front" refers to a region closest to the user.

[0031] Referring to FIG. 2, in some embodiments, the back wall 22 may include an array of holes 26 to facilitate mounting hardware, such as product hangers, displays, price tags, and the like, to the back wall 22. In such embodiments, the back wall 22 may be referred to as a peg board. In other embodiments, the back wall 22 may include other configurations of slots, grooves, and the like.

[0032] With continued reference to FIG. 2, each shelf 18 includes a generally planar support surface 30 configured to support product thereon. The support surface 30 terminates at a back edge 34. The back edge 34 is spaced from the back wall 22 by a gap distance G1. The gap distance G1 may vary in different embodiments of the shelf assembly 10. In some embodiments, double-sided shelf assemblies 10 may use a single back wall 22 shared between two opposite sets of shelves 18. In such embodiments, the gap distance G1 may be relatively large. For example, the gap distance G1 may be 0.5 to 2.0 inches in some embodiments, 0.75 to 1.75 inches in some embodiments, 0.75 to 1.5 inches in some embodiments, 1.0 to 1.5 inches in some embodiments, or other distances in yet other embodiments. As described in greater detail below, the present disclosure provides a product management display system that is able to extend into the gap distance G1 in order to accommodate additional product on the shelf 18.

[0033] For example, FIG. 3 illustrates a product management display system 100 according to one embodiment. The illustrated product management display system 100 includes a front rail 104 and a pusher assembly 108 removably coupled to and selectively positionable along the front rail 104. The pusher assembly 108 may be one of a plurality of pusher assemblies 108, each coupled to the front rail 104. The pusher assemblies 108 may separate product on the shelf 18 into lanes, which may also be referred to as rows or facings. The width of each lane may be adjustable by varying the positions of the pusher assemblies 108 along the front rail 104. In some embodiments, each pusher assembly 108 may be selectively locked in a desired position via a locking mechanism 112, such as any of the mechanisms disclosed in U.S. Patent No. 9,930,973, the entire content of which is incorporated herein by reference.

[0034] The illustrated pusher assembly 108 includes a base or floor 113 and a divider wall 115 extending vertically upward from the floor 113. In the illustrated embodiment, the floor 113 includes portions on both sides of the divider wall 115 (e.g., to define a generally T-shaped cross-section). As such, product may at least partially rest on the floor portions on either side of the divider wall 115. In some embodiments, product may rest on one floor 113 of one pusher assembly 108 and on a second floor of a second pusher assembly (not shown). In yet other embodiments, the floor 113 of the pusher assembly

108 may extend from only one side of the divider wall 115 (e.g., to define a generally L-shaped cross-section).

[0035] With continued reference to FIG. 3, the product management display system 100 further includes one or more pushers 116, which can be used to urge and automatically move product forward along the shelf 18. The pusher assembly 108 in the illustrated system 100 supports two pushers 116, each movable along a track 120 in the floor 113. The pushers 116 and pusher tracks 120 are positioned on opposite sides of the divider wall 115. In other embodiments, the pusher assembly 108 may include only a single pusher 116.

[0036] The illustrated pushers 116 have a body portion 124 with an upper surface 128 and a paddle portion 132 with a pushing surface 136. Product may rest on the upper surface 128 of the body portion 124 and be engaged by the pushing surface 136 of the paddle portion 132 to be moved by the pusher 116 along the track 120. The upper surface 128 may be generally coplanar with adjacent surfaces of the floor 113, and the pushing surface 136 may be generally perpendicular to the upper surface 128 and the floor 113. In some embodiments, all or a portion of the pushing surface 136 may be obliquely oriented relative to the upper surface 128 and the floor 113.

[0037] The illustrated pusher assembly 108 further includes a retaining wall 140 located proximate a front end of the pusher assembly 108. In the illustrated embodiment, the retaining wall 140 is positioned behind the locking mechanism 112; however, in other embodiments, the retaining wall 140 may be located at the front end of the pusher assembly 108, with the locking mechanism 112 being located within or behind the retaining wall 140. Product may be positioned within a product space P1 defined between the retaining wall 140 and the pushing surface 136. The pusher 116 is movable between an extended position, in which the product space P1 is at its maximum, and an initial or retracted position, in which the product space P1 is at its minimum. Accordingly, a length of the body portion 124 of the pusher 116 defines the product space P1 when the pusher 116 is in the initial position. In the illustrated embodiment, product space P1 when the pusher 116 is in the initial position has a length that is greater than 2 inches and shorter than 8 inches. Specifically, the length of the product space P1 when the pusher 116 is in the initial position is roughly 3 inches.

[0038] The pusher 116 is biased toward the initial position by a coiled spring 144 (FIG. 4) to push product forward on the shelf 18 and to reduce the product space P1 as product is removed from the shelf 18. The pusher 116 can also be moved toward the extended position, against the biasing force of the spring 144, to increase the product space P1 and allow for additional product to be loaded on to the shelf 18.

[0039] With reference to FIG. 4, the illustrated pusher 116 includes a pair of pusher guide rails 148 extending from a bottom side of the body portion 124. The pusher guide rails 148 are received by and slidable along elongated slots 152 formed along each side of the track 120.

The illustrated pusher 116 also includes upper and lower pairs of pusher retaining rails 154a, 154b (only the upper pusher retaining rails 154a are visible in FIG. 4; the lower pusher retaining rails 154b are visible in FIG. 6). The upper and lower pusher retaining rails 154a, 154b extend outwardly from the pusher guide rails 148. In addition, the illustrated upper and lower pusher retaining rails 154a, 154b are parallel to each other and perpendicular to the pusher guide rails 148.

[0040] The illustrated track 120 includes a pair of first track rails 156 extending along the inner sides of the pusher guide rails 148. The first track rails 156 engage and support the bottom side of the body portion 124. The illustrated track 120 further includes a pair of second track rails 160, which are received between the upper and lower pusher retaining rails 154a, 154b. That is, the second track rails 160 are sandwiched between the upper and lower pusher retaining rails 154a, 154b, which retains the pusher 116 on the track 120 in directions perpendicular to the length of the track 120.

[0041] With reference to FIG. 5, the floor 113 includes a back wall 164, which, in the illustrated embodiment, defines a back end 184 of the floor 113. The slots 152 extend through the back wall 164, such that the back wall 164 includes openings 168. The openings 168 are sized and positioned to accommodate the pusher guide rails 148. Accordingly, as described in greater detail below, a portion of the pusher 116 may extend beyond the back wall 164 when the pusher is in its extended position.

[0042] Referring to FIGS. 5-6, the body portion 124 of the pusher 116 includes a back end 172. The upper pusher retaining rails 154a extend to the back end 172; however, the bottom pusher retaining rails 154b have angled end surfaces 176 that terminate a distance away from the back end 172. The angled end surfaces 176 are engageable with corresponding angled stop surfaces 180 on the back wall 164 adjacent the openings 168. The angled end surfaces 176 and stop surfaces 180 are obliquely oriented relative to a longitudinal axis L of the track 120 in the illustrated embodiment. Engagement between the end surfaces 176 and the stop surfaces 180 limits movement of the pusher 116 to the extended position. Because the angled end surfaces 176 are offset forwardly from the back end 172 of the pusher 116, the back end 172 of the pusher 116 may be located behind the back end 184 of the floor 113 in the extended position.

[0043] FIG. 7 illustrates a portion of the product management display system 100 positioned on a shelf 18 and with the pusher 116 in its extended position. In the illustrated embodiment, the pusher 116 is able to extend beyond the back end 184 of the floor 113 by a cantilever distance B1. In some embodiments, the cantilever distance B1 may be equal to the gap distance G1, allowing the pusher 116 to span the entire gap distance G1 until the back end 172 of the pusher 116 contacts the back wall 22. For example, in some embodiments, the cantilever distance B1 may be between 0.25 inches and 2.0 inches. In some embodiments, the cantilever distance

B1 may be between 0.25 inches and 1.75 inches. In some embodiments, the cantilever distance B1 may be between 0.5 inches and 2.0 inches. In some embodiments, the cantilever distance B1 may be between 0.5 inches and 1.75 inches. In some embodiments, the cantilever distance B1 may be between 0.75 inches and 1.5 inches. In some embodiments, the cantilever distance B1 may be between 0.75 inches and 1.25 inches. In the illustrated embodiment, the cantilever distance B1 is 1.2 inches. By spanning the gap distance G1, the available product space P1 (FIG. 3) is increased compared to known pusher systems, in which the pusher is not able to travel beyond a rear edge of the shelf.

[0044] In some embodiments, the floor 113 may extend to the back edge 34 of the shelf 18. In some embodiments, however, the floor 113 may be configured to overhang past the back edge 34 of the shelf 18 by an overhang distance A. In such embodiments, the sum of the distances A and B1 may be equal to the gap distance G1, allowing the pusher 116 to span an even larger gap distance G1. For example, in the illustrated embodiment, the overhang distance A is about 0.3 inches, and the cantilever distance B1 is about 1.2 inches, such that the cantilever distance B1 is about four times greater than the overhang distance A. In some embodiments, the overhang distance A is at least 0.2 inches. In some embodiments, the back end 172 of the pusher 116 may be offset at least 1 inch behind the back end 184 of the floor when in the extended position. In yet other embodiments, the relative cantilever distance B1 and overhang distance A may vary, and the product management display system 100 may be able to span a range of different gap distances G1, to suit a variety of different shelf assemblies 10.

[0045] FIG. 8 illustrates another embodiment of a product management display system 200 for use with a shelf assembly, such as the shelf assembly 10 of FIG. 1. The product management display system 200 includes a pusher assembly 204, a pusher 208 slidably mounted on the pusher assembly 204, a coiled spring (not shown), and an extension adapter 212 (shown in detail in FIG. 12A). Like the pusher assembly 108, the pusher assembly 204 may be configured to be coupled to a front rail, such as the front rail 104 illustrated in FIG. 3.

[0046] The pusher assembly 204 includes a base or floor 216 and a retaining wall 220 located proximate a front end 204a of the pusher assembly 204. Product may be placed and rest on the floor 216. Specifically, product may be positioned within a product space P2 defined between the retaining wall 220 and the pusher 208. In some embodiments, product may rest partially on one floor 216 of one pusher assembly 204 and partially on a second floor of a second pusher assembly (not shown). In the illustrated embodiment, the retaining wall 220 is positioned behind the locking mechanism (e.g., the locking mechanism 112 illustrated in FIG. 3); however, in other embodiments, the retaining wall 220 may be located at the front end 204a of the pusher assembly 204, with the locking mechanism being located within or be-

hind the retaining wall 220. In some embodiments, the pusher assembly 204 may include a divider wall (such as the divider wall 115) extending from the floor 216; however, the illustrated pusher assembly 204 does not include a divider wall and may be used, for example, to push larger products requiring multiple pusher assemblies 204.

[0047] With reference to FIGS. 9 and 10, the floor 216 includes a first pair of track rails 224 that extend along the sides of the pusher assembly 204 and a second pair of track rails 228 that extend along either side of a longitudinal center of the pusher assembly 204. In the illustrated embodiment, the first pair of track rails 224 defines outer edges of the floor 216. Each of the first track rails 224 creates an overhang space 232 along the respective side of the pusher assembly 204. The second pair of track rails 228 defines a channel 236 therebetween, which extends along the longitudinal center of the pusher assembly 204. The illustrated channel 236 extends from the front end 204a of the pusher assembly 204 (e.g., adjacent the retaining wall 220) to a back end 204b of the floor 216 (FIG. 8). At the back end 204b of the floor 216, the channel 236 opens to an extension adapter receptacle 240 that is configured to receive the extension adapter 212, as described in greater detail below. The extension adapter receptacle 240 includes a protrusion 244 that is configured to engage the extension adapter 212 and inhibit removal of the extension adapter 212 once the extension adapter 212 has been installed on the pusher assembly 204. The floor 216 further includes alignment flanges 248 that extend into the channel 236 from a corresponding one of the second pair of track rails 228. The alignment flanges 248 are configured to engage a portion of the extension adapter 212 to guide the extension adapter 212 along the channel 236. As such, the channel 236 may also be referred to as an extension adapter receptacle separately from the extension adapter receptacle 240 or as a part of the extension adapter receptacle 240. Alternatively, the channel 236 and the extension adapter receptacle 240 may be referred to as an attachment receptacle.

[0048] Returning reference to FIG. 8, the pusher 208 can be used to urge and automatically move product forward along the floor 216 of the pusher assembly 204 on the shelf 18 (FIG. 1). As such, the pusher 208 is movable between an extended position adjacent the back end 204b of the floor 216, in which the product space P2 is at its maximum, and an initial or retracted position adjacent the front end 204a of the pusher assembly 204, in which the product space P2 is at its minimum. As illustrated in FIGS. 11A and 11B, the pusher 208 includes a guide rail portion 252 that may engage and slide along the floor 216 (FIG. 8) and a pushing surface 256 that may engage product to move product as the guide rail portion 252 slides along the floor 216 (FIG. 8).

[0049] With reference to FIGS. 11A and 11B, the guide rail portion 252 of the pusher 208 defines an inlet 260 and includes a pair of pusher guide rails 264 extending

from a bottom side of the pusher 208. The pusher guide rails 264 are received by and slidable along a corresponding one of the first pair of track rails 224. Specifically, with reference to FIGS. 10 and 11A, each of the pusher guide rails 264 curves around a corresponding one of the first pair of track rails 224 from a top of the track rail 224 to a bottom of the track rail 224 and into the overhang space 232. In other words, the pusher guide rails 264 are wrapped around a corresponding one of the first pair of track rails 224. As such, the pusher guide rails 264 constrain movement of the pusher 208 in a direction extending along the first pair of track rails 224. That is, the pusher guide rails 264 constrain movement of the pusher 208 in a direction extending along the pusher assembly 204.

[0050] In some embodiments, the floor 216 may include a back wall that defines the back end 204b of the floor. The back wall may be substantially similar to the back wall 164 of FIG. 5. As such, the back wall may include angled stop surfaces that are configured to engage the pusher 208 to limit movement of the pusher 208 to the extended position. Specifically, the pusher guide rails 264 may be configured to engage the stop surfaces of the back wall to limit further rearward movement of the pusher 208. In such embodiments, the pusher guide rails 264 may be offset from a back end of the pusher 208 such that at least a portion of the pusher 208 is configured to overhang, or be cantilevered from, the back end 204b of the floor 216.

[0051] Returning reference to FIG. 11A, the pushing surface 256 includes a first portion 256a and a second portion 256b. The first portion 256a of the pushing surface 256 extends substantially perpendicularly to the floor 216, and the second portion 256b of the pushing surface 256 extends at an angle relative to the first portion 256a. The first portion 256a defines a spring aperture 268 for the coiled spring (not shown) to feed through as the coiled spring is unwound when the pusher 208 is moved toward the extended position (e.g., toward the back end 204b of the floor 216 illustrated in FIG. 8). The first portion 256a is positioned adjacent to the floor 216 (FIG. 8) such that the second portion 256b extends from the first portion 256a away from the floor 216 (FIG. 8). In other embodiments, the entire pushing surface 256 may be oriented perpendicularly to the floor 216 (FIG. 8). In further embodiments, the entire pushing surface 256 may be oriented at an angle relative to the floor 216 (FIG. 8).

[0052] Although not illustrated in FIGS. 11A and 11B, the coiled spring is substantially similar to the coiled spring 144 of FIG. 4 and is configured to be mounted to the guide rail portion 252 of the pusher 208 at the center of the pusher 208. As such, the coiled spring may include an end coupled to the front of the pusher assembly 204 and a coiled portion positioned on the pusher 208 behind the pushing surface 256. The coiled portion is configured to wind and unwind through the spring aperture 268 defined in the pushing surface 256 as the pusher 208 is moved along the pusher assembly 204. With reference to FIG. 8, the coiled spring biases the pusher 208 toward

the retaining wall 220 to push product forward on the shelf (e.g., the shelf 18 illustrated in FIG. 1) and to reduce the product space P2 as product is removed from the shelf. The pusher 208 can also be moved toward the extended position, against the biasing force of the spring, to increase the product space P2 and allow for additional product to be loaded on to the shelf (e.g., the shelf 18 illustrated in FIG. 1).

[0053] As illustrated in FIGS. 12A and 12B, the extension adapter 212 includes a tab portion 272 and a tongue portion 276. The tab portion 272 is complementarily shaped to fit within the extension adapter receptacle 240, and the tongue portion 276 is complementarily shaped to fit within the channel 236 of the pusher assembly 204. As such, the tab portion 272 is wider and shorter than the tongue portion 276. The tab portion 272 includes a stop protrusion 280 on a top side of the tab portion 272 and a tab ridge 284 extending around the periphery of a bottom side of the tab portion 272. The tongue portion 276 extends from the tab portion 272 at an end of the tab portion 272 opposite from the stop protrusion 280. The tongue portion 276 includes a tongue ridge 288 on a top side of the tongue portion 276 and a flat surface on a bottom side of the tongue portion 276. The tongue ridge 288 extends from the tab portion 272 along the length of the tongue portion 276.

[0054] The extension adapter 212 is insertable into the extension adapter receptacle 240 from the back end 204b of the floor 216. Specifically, the extension adapter 212 may be inserted into the extension adapter receptacle 240 by inserting the tongue portion 276 into the channel 236. As the tongue portion 276 is inserted into the channel 236, the tongue ridge 288 slides between the alignment flanges 248. When the tongue portion 276 is completely inserted into the channel 236, the tab portion 272 fills the space of the extension adapter receptacle 240, and a top surface of the tab portion 272 lies substantially flush with the surface of the floor 216 of the pusher assembly 204.

[0055] As such, with reference to FIGS. 10 and 11A when the tab portion 272 is positioned within the extension adapter receptacle 240 (FIG. 9), the stop protrusion 280 is configured to inhibit the pusher 208 from sliding off the back end 204b of the floor 216 (FIG. 8). Specifically, as the pusher 208 moves toward the back end 204b (FIG. 8), the stop protrusion 280 may be received in the inlet 260 of the guide rail portion 252 to inhibit the pusher 208 from moving further in the rearward direction.

[0056] With reference to FIGS. 10, 13A and 13B, when the tab portion 272 is received in the extension adapter receptacle 240, the extension adapter 212 is slidable between an initial or retracted position (FIG. 13A) and an extended position (FIG. 13B). In the initial position, the stop protrusion 280 of the tab portion 272 is positioned at the back end 204b of the floor 216. As such, as the pusher 208 is moved further away from the retaining wall 220 (FIG. 8) at the front end 204a (FIG. 8) of the pusher assembly 204, the inlet 260 of the guide rail portion 252

of the pusher 208 comes into contact with the stop protrusion 280. That is, the inlet 260 may receive the stop protrusion 280. The stop protrusion 280 may provide some resistance to inhibit a further rearward movement of the pusher 208. However, the resistance may be overcome by applying a force on the pusher 208 against the stop protrusion 280. As such, the force induces the extension adapter 212 to slide rearwardly from the pusher assembly 204. As the extension adapter 212 slides rearwardly, a forward-edge of the tab ridge 284 (FIG. 12B) on the bottom of the tab portion 272 slides into engagement with the protrusion 244 (FIG. 9) of the extension adapter receptacle 240 such that the protrusion 244 (FIG. 9) inhibits further rearward movement of the extension adapter 212. As such, in the extended state, at least a portion of the extension adapter 212 is cantilevered from the pusher assembly 204, and the pusher 208 may be supported on the cantilevered portion of the extension adapter 212.

[0057] FIG. 14 illustrates a rear portion of the product management display system 200 positioned on a shelf 290 and with the extension adapter 212 in the extended position. In the illustrated embodiment, with reference to FIGS. 8 and 14, the extension adapter 212, and therefore, the pusher 208, is able to extend beyond a back end 204b of the floor 216 by a cantilever distance B2. In some embodiments, the cantilever distance B2 may be equal to a gap distance G2 defined between the back end 204b of the floor 216 and a back wall 291, thereby allowing the extension adapter 212 and the pusher 208 to span the entire gap distance G2 until the back end of the pusher 208 contacts the back wall 22. In some embodiments, a back end 212a of the extension adapter 212 may be offset at least 1 inch behind the back end 204b of the floor 216 when in the extended position. In yet other embodiments, the relative cantilever distance B2 may vary, and the product management display system 200 may be able to span a range of different gap distances G2, to suit a variety of different shelf assemblies 10. By spanning the gap distance G2, the available product space P2 (FIG. 8) is increased compared to known pusher systems, in which the pusher 208 is not able to travel beyond a back end 204b of the pusher assembly.

[0058] FIGS. 15-16B illustrate another embodiment of a product management display system 300. The product management display system 300 is substantially similar to the product management display system 200 of FIG. 8, except for the differences described below. The product management display system 300 of FIGS. 15-16B includes a pusher assembly 304 with a pusher 308. The pusher assembly 304 has a base or floor 316, and the pusher 308 is configured to slide along the floor 316. In the illustrated embodiment, the pusher 308 has foot 309 that engages the top side and the lateral sides of the floor 316 to retain the pusher 308 on the floor 316. In some embodiments, the bottom side of the floor 316 may be slightly elevated (i.e., offset) from the top side of the shelf. In such embodiments, the foot 309 of the pusher may

wrap around the lateral sides of the floor 316 to also engage the bottom side of the floor 316.

[0059] In the illustrated embodiment, the floor 316 defines a channel 336 including alignment flanges 348 through the center of the floor 316 (FIGS. 16A-16B). The pusher assembly 304 includes a mating interface 392 at a back end 304b of the floor 316. The mating interface 392 is configured to couple with a pusher stop 396 (FIGS. 17A-17C), a first track extension 400 (FIG. 19), a second track extension 404 (FIG. 21), a divider wall 406 (FIGS. 24-26), or a combination thereof at the back end 304b of the floor 316. As such, each of the pusher stop 396, the first track extension 400, the second track extension 404, and the divider wall 406 may be referred to as an attachment. The mating interface 392 includes two receptacles 408, each receptacle having three female mating protrusions 412. The channel 336 extends between the two receptacles 408 through the back end 304b of the floor 316. The channel 336 may alternatively be referred to as an attachment receptacle.

[0060] As illustrated in FIGS. 17A-17C, the pusher stop 396 includes a bottom flange 416, a top flange 420, a center ridge 424 extending between the bottom flange 416 and the top flange 420 to define two alignment channels 428, and a stop protrusion 432 located at a back end of the center ridge 424. The bottom flange 416 includes a bottom protrusion 436. The bottom flange 416 and the top flange 420 are complementarily shaped to fit within the channel 336. As such, the pusher stop 396 may be inserted into the channel 336 of the pusher assembly 304. As the pusher stop 396 is inserted into the channel 336, the center ridge 424 extends between the alignment flanges 348, and each of the alignment channels 428 receives a corresponding one of the alignment flanges 348. With reference to FIG. 18, once the pusher stop 396 has been inserted into the channel 336, the stop protrusion 432 may be located at, or minimally offset from, the back end 304b of the floor 316. The stop protrusion 432 of the pusher stop 396 may function substantially similarly to the stop protrusion 280 of the extension adapter 212 of FIG. 12A to inhibit the pusher 308 (FIG. 15) from sliding off of the back end 304b of the floor 316. As such, the bottom protrusion 436 is configured to engage a bottom floor of the channel 336 to inhibit the pusher stop 396 from sliding out of the channel 336 as the pusher 308 presses against the stop protrusion 432.

[0061] As illustrated in FIGS. 19 and 20, the first track extension 400 includes a first extension floor 440 that defines a first extension channel 444, two first coupling tabs 448 extending from a front end 440a of the first extension floor 440, and an extension mating interface 452 at a back end 440b of the first extension floor 440 that is substantially similar to the mating interface 392 of the pusher assembly 304 of FIG. 16B. The first extension channel 444 is sized similarly to the channel 336 of the pusher assembly 304 (FIG. 16B) and extends between the two first coupling tabs 448. The first extension channel 444 includes first extension alignment flanges 454.

Each of the two first coupling tabs 448 includes two male mating protrusions 456. The first coupling tabs 448 are configured to be inserted into the coupling receptacles 408 of the mating interface 392 of the pusher assembly 304 such that the male mating protrusions 456 of each of the first coupling tabs 448 interface with the female mating protrusions 412 of a corresponding coupling receptacle 408 to align the first extension channel 444 with the channel 336 of the pusher assembly 304. In the illustrated embodiment, the engagement between the first coupling tabs 448 and the coupling receptacles 408 does not directly couple the first track extension 400 to the pusher assembly 304. Rather, a pusher stop 396 may be inserted into the first extension channel 444 at the back end 440b of the first extension floor 440 such that the pusher stop 396 extends the entire length of the first track extension 400 and into the channel 336 of the pusher assembly 304. As such, the pusher stop 396 may receive and engage alignment flanges 348, 454 from both the pusher assembly 304 and the first track extension 400 to secure the first track extension 400 to the pusher assembly 304. In other words, the pusher stop 396 may hold the first track extension 400 together with the floor 316.

[0062] As illustrated in FIGS. 21 and 22, the second track extension 404 includes a second extension floor 460 that defines a second extension channel 464, two second coupling tabs 468 extending from a front end 460a of the second extension floor 460, and an extension adapter receptacle 472 at a back end 460b of the second extension floor 460 that is substantially similar to the extension adapter receptacle 240 of FIG. 9. The extension adapter receptacle 472 may also be referred to as an attachment receptacle. The second extension channel 464 is sized similarly to the channel 336 of the pusher assembly 304 and extends between the two second coupling tabs 468. The second extension channel 464 includes second extension alignment flanges 474. Each of the two second coupling tabs 468 includes two male mating protrusions 476. The second coupling tabs 468 are configured to be inserted into the coupling receptacles 408 of the mating interface 392 of the pusher assembly 304 such that the male mating protrusions 476 of each of the coupling tabs 468 interfaces with the female mating protrusions 412 of a corresponding coupling receptacle 408 to align the second extension channel 464 with the channel 336 of the pusher assembly 304. In the illustrated embodiment, the engagement between the second coupling tabs 468 and the coupling receptacles 408 does not directly couple the second track extension 404 to the pusher assembly 304. Rather, an extension adapter 480 may be inserted into the extension adapter receptacle 472 at the back end 460b of the second extension floor 460 such that a tongue portion 484 of the extension adapter 480 extends the entire length of the second track extension 404 and into the channel 336 of the pusher assembly 304. As such, the extension adapter 480 may hold, or secure, each of the first track extension 400, the

second track extension 404, and the floor 316 together. The extension adapter 480 may function substantially similarly to the extension adapter 212 of FIGS. 13A-14.

[0063] In some embodiments, each of the first extension floor 440 and the second extension floor 460 may include a back wall that defines the back end 440b of the first track extension 400 and the back end 460b of the second track extension 404, respectively. The back wall may be substantially similar to the back wall 164 of FIG. 5. As such, the back wall may include angled stop surfaces that are configured to engage the pusher 308 to limit movement of the pusher 308 to the extended position. Specifically, pusher guide rails on the pusher 308 may be configured to engage the stop surfaces of the back wall to limit further rearward movement of the pusher 308. In such embodiments, the pusher guide rails may be offset from a back end of the pusher 308 such that at least a portion of the pusher 308 is configured to overhang, or be cantilevered from, the back end 440b of the first extension floor 440 and the back end 460b of the second extension floor 460.

[0064] As such, the pusher assembly 304 may be coupled to each of the pusher stop 396 (FIGS. 17A-17C), the first track extension 400 (FIG. 19), and the second track extension 404 (FIG. 21). In some instances, the pusher assembly 304 may be coupled to a combination of the pusher stop 396 (FIGS. 17A-17C), the first track extension 400 (FIG. 19), and the second track extension 404 (FIG. 21). That is, as illustrated in FIG. 23 for example, the first track extension 400 may couple to the mating interface 392 (FIG. 16B) of the pusher assembly 304, the second track extension 404 may couple to the extension mating interface 452 (FIG. 19) of the first track extension 400, and the extension adapter 480 may have a tongue portion 484 long enough to extend from the extension adapter receptacle 472 (FIG. 21), through the first extension channel 444 (FIG. 19), and into the channel 336 (FIG. 15) of the pusher assembly 304 to secure the first track extension 400 and the second track extension 404 to the pusher assembly 304. In other instances, the pusher assembly 304 may be coupled to multiple first track extensions 400 and one second track extension 404. Alternatively, the pusher assembly 304 may be coupled to multiple first track extensions 400 and a pusher stop 396 long enough to extend through each of the first track extensions 400 and into the channel 336 of the pusher assembly 304. As such, the product management display system 300 advantageously enables length adjustments of the pusher assembly 304 for compatibility with various shelving units.

[0065] As illustrated in FIGS. 24-26, the divider wall 406 includes a bottom flange 488, a top flange 492, a center ridge 496 extending between the bottom flange 488 and the top flange 492 to define two alignment channels 500, and a wall 504 extending away from the top flange 492 and generally aligned with the center ridge 496. The bottom flange 488 and the top flange 492 are complementarily shaped to fit within the channel 336 of

the pusher assembly 304. As such, the divider wall 406 may be inserted into the channel 336 of the pusher assembly 304. As the divider wall 406 is inserted into the channel 336, the center ridge 496 extends between the alignment flanges 348 in the channel 336 of the pusher assembly 304, and each of the alignment channels 500 receives a corresponding one of the alignment flanges 348. Once the divider wall 406 has been inserted into the channel 336, the divider wall 406 may extend along the entire length of the pusher assembly 304 such that the wall 504 extends from the top flange 492 at the center of the floor 316, thereby splitting the floor 316 of the pusher assembly 304 in half. The divider wall 406 may extend along the length of the pusher assembly 304 and one or multiple first track extensions 400 (FIG. 19) coupled to the pusher assembly 304 such that the divider wall 406 couples the one or more first track extensions 400 (FIG. 19) to the pusher assembly 304 and splits the first extension floor 440 (FIG. 19) in half. The divider wall 406 advantageously forms two rows R1, R2 of product space for the pusher assembly 304 for use, for example, with smaller sized product. In some applications, multiple pusher assemblies 304 may be placed in proximity to one another such that a row of product space is formed between the divider walls 406 of two adjacent pusher assemblies 304.

[0066] Thus, the product management display system 300 provides, among other things, a modular construction that can be adapted to many different product and shelving configurations by interchanging and connecting different components to the floor 316, such as the track extensions 400, pusher assembly 304, pusher stop 396, and divider wall 406. Components of the product management display system 300, including but not limited to the floor 316, track extensions 400, and divider wall 406 may be extruded and therefore readily customized to any suitable length needed for a particular shelving configuration.

[0067] Although the disclosure has been described in detail with reference to certain preferred embodiments, variations and modifications exist within the scope and spirit of one or more independent aspects of the disclosure as described.

REPRESENTATIVE FEATURES

[0068] Representative features are set out in the following clauses, which stand alone or may be combined, in any combination, with one or more features disclosed in the text and/or drawings of the specification.

[0069] Clause 1. A product management display system for a shelf assembly including a shelf for supporting a product, the product management display system comprising: a pusher assembly configured to be coupled to the shelf, the pusher assembly including a floor including a front end, a back end of the floor opposite the front end, and a first attachment receptacle, a track extending between the front end of the floor and the back end of the

floor, an extension removably coupled to the floor, the extension including a front end, a back end, and a track portion configured to extend a length of the track when the extension is coupled to the floor, the extension including a second attachment receptacle, a pusher movable along the track between an initial position and an extended position, wherein the pusher is moved away from the front end of the floor and toward the back end of the floor when the pusher is moved from the initial position toward the extended position, and an extension adapter couplable to the first attachment receptacle when the extension is removed from the floor and couplable to the second extension attachment receptacle when the extension is coupled to the floor, wherein the extension adapter is configured to move between a first position in which a back end of the extension adapter is located at the back end of the floor or the back end of the extension, and a second position in which the back end of the extension adapter is offset from the back end of the floor or the back end of the extension such that at least a portion of the extension adapter is cantilevered from the floor or the extension in the second position.

[0070] Clause 2. The product management display system of clause 1, wherein the track includes a pair of track rails, and wherein the pusher includes guide rails, each of the guide rails wrapped around a corresponding one of the track rails.

[0071] Clause 3. The product management display system of clause 2, wherein the each of the pair of track rails defines an outer edge of the floor.

[0072] Clause 4. The product management display system of clause 1, wherein the floor defines a channel that extends longitudinally between the front end and the back end of the floor, and wherein the extension adapter includes a tongue portion that is at least partially receivable within the channel.

[0073] Clause 5. The product management display system of clause 4, wherein the floor includes alignment flanges that extend into the channel, and wherein the tongue portion includes a tongue ridge that is configured to slide between the alignment flanges as the extension adapter moves between the first position and the second position.

[0074] Clause 6. The product management display system of clause 1, wherein each of the first attachment receptacle and the second attachment receptacle includes a protrusion, and wherein the extension adapter includes a tab ridge that engages the protrusion in the second position to inhibit the extension adapter from sliding out of the first attachment receptacle or the second attachment receptacle.

[0075] Clause 7. The product management display system of clause 1, wherein the floor defines a channel that extends longitudinally between the front end and the back end of the floor, wherein the extension defines an extension channel that is aligned with the channel when the extension is coupled to the floor, and wherein the extension adapter includes a tongue portion that extends

through both the channel and the extension channel to hold the extension together with the floor.

[0076] Clause 8. The product management display system of clause 1, wherein the extension is a first extension and the track portion is a first track portion, wherein the pusher assembly further includes a second extension that is removably coupled to the first extension, the second extension including a second track portion that further extends the length of the track when the first extension and the second extension are coupled to the floor.

[0077] Clause 9. The product management display system of clause 1, wherein the floor defines a channel in the floor that extends longitudinally between the front end and the back end of the floor, and wherein the pusher assembly further includes a divider wall configured to be received in the channel, the divider wall having a bottom flange, a top flange, and a wall extending from the top flange such that the wall defines two rows of product space above the floor when the divider wall is received in the channel.

[0078] Clause 10. The product management display system of clause 9, wherein the floor includes alignment flanges that extend into the channel, and wherein the alignment flanges are received between the bottom flange and the top flange of the divider wall.

[0079] Clause 11. A product management display system for a shelf assembly including a shelf for supporting a product, the product management display system comprising: a pusher assembly configured to be coupled to the shelf, the pusher assembly including a floor having a front end and a back end opposite the front end, a track extending between the front end and the back end, a channel defined in the floor and extending longitudinally between the front end and the back end of the floor, a mating interface at the back end of the floor, and a pusher movable along the track between an initial position and an extended position, wherein the pusher is moved away from the front end of the floor and toward the back end of the floor when the pusher is moved from the initial position toward the extended position, wherein both the channel and the mating interface are configured to receive an attachment that extends a length of the track beyond the back end of the floor.

[0080] Clause 12. The product management display system of clause 11, wherein the channel is configured to receive a first attachment and the mating interface is configured to receive a second attachment, and wherein the first attachment and the second attachment are different.

[0081] Clause 13. The product management display system of clause 12, wherein the first attachment is an extension adapter, and wherein the second attachment is an extension.

[0082] Clause 14. The product management display system of clause 11, wherein the floor includes an extension adapter receptacle that is configured to receive an attachment that extends the length of the track beyond the back end of the floor.

[0083] Clause 15. The product management display system of clause 11, wherein the track includes a pair of track rails, and wherein the pusher includes guide rails, each of the guide rails wrapped around a corresponding one of the track rails.

[0084] Clause 16. The product management display system of clause 15, wherein the each of the pair of track rails defines an outer edge of the floor.

[0085] Clause 17. A product management display system for a shelf assembly including a shelf for supporting a product and a back wall spaced from a back end of the shelf by a gap, the product management display system comprising: a pusher assembly configured to be coupled to the shelf, the pusher assembly including a floor including a front end and a back wall defining a back end of the floor opposite the front end, a track extending between the front end of the floor and the back end of the floor, and a pusher movable along the track between an initial position and an extended position, wherein the pusher is moved away from the front end of the floor and toward the back end of the floor when the pusher is moved from the initial position toward the extended position, wherein a portion of the pusher extends beyond the back end of the floor in the extended position, wherein the back wall includes stop surfaces that limit movement of the pusher to the extended position.

[0086] Clause 18. The system of clause 17, wherein the portion of the pusher extends into the gap in the extended position.

[0087] Clause 19. The system of clause 17, wherein the pusher includes a body portion and a paddle portion, wherein the body portion defines a back end of the pusher, and wherein the back end of the pusher extends 0.25 to 2.0 inches beyond the back end of the floor when the pusher is in the extended position.

[0088] Clause 20. The system of clause 17, wherein the pusher includes a body portion having an upper surface and product may rest on the upper surface, wherein a length of the body portion defines an initial product space when the pusher is in the initial position, and wherein the initial product space has a length between 2 inches and 8 inches.

[0089] Various features of the disclosure are set forth in the following claims. When used in this specification and claims, the terms "comprises" and "comprising" and variations thereof mean that the specified features, steps or integers are included. The terms are not to be interpreted to exclude the presence of other features, steps or components.

Claims

1. A product management display system for a shelf assembly including a shelf for supporting a product, the product management display system comprising:

- a pusher assembly configured to be coupled to the shelf, the pusher assembly including a floor including a front end, a back end of the floor opposite the front end, and a first attachment receptacle,
- a track extending between the front end of the floor and the back end of the floor,
- an extension removably coupled to the floor, the extension including a front end, a back end, and a track portion configured to extend a length of the track when the extension is coupled to the floor, the extension including a second attachment receptacle,
- a pusher movable along the track between an initial position and an extended position, wherein the pusher is moved away from the front end of the floor and toward the back end of the floor when the pusher is moved from the initial position toward the extended position, and
- an extension adapter couplable to the first attachment receptacle when the extension is removed from the floor and couplable to the second extension attachment receptacle when the extension is coupled to the floor,
- wherein the extension adapter is configured to move between a first position in which a back end of the extension adapter is located at the back end of the floor or the back end of the extension, and a second position in which the back end of the extension adapter is offset from the back end of the floor or the back end of the extension such that at least a portion of the extension adapter is cantilevered from the floor or the extension in the second position.
2. The product management display system of claim 1, wherein the track includes a pair of track rails, and wherein the pusher includes guide rails, each of the guide rails wrapped around a corresponding one of the track rails.
 3. The product management display system of claim 2, wherein the each of the pair of track rails defines an outer edge of the floor.
 4. The product management display system of claim 1 or 2, wherein the floor defines a channel that extends longitudinally between the front end and the back end of the floor, and wherein the extension adapter includes a tongue portion that is at least partially receivable within the channel.
 5. The product management display system of claim 4, wherein the floor includes alignment flanges that extend into the channel, and wherein the tongue portion includes a tongue ridge that is configured to slide between the alignment flanges as the extension adapter moves between the first position and the second position.
 6. The product management display system of any preceding claim, wherein each of the first attachment receptacle and the second attachment receptacle includes a protrusion, and wherein the extension adapter includes a tab ridge that engages the protrusion in the second position to inhibit the extension adapter from sliding out of the first attachment receptacle or the second attachment receptacle.
 7. The product management display system of claim 1, wherein the floor defines a channel that extends longitudinally between the front end and the back end of the floor, wherein the extension defines an extension channel that is aligned with the channel when the extension is coupled to the floor, and wherein the extension adapter includes a tongue portion that extends through both the channel and the extension channel to hold the extension together with the floor.
 8. The product management display system of any preceding claim, wherein the extension is a first extension and the track portion is a first track portion, wherein the pusher assembly further includes a second extension that is removably coupled to the first extension, the second extension including a second track portion that further extends the length of the track when the first extension and the second extension are coupled to the floor.
 9. The product management display system of claim 1, wherein the floor defines a channel in the floor that extends longitudinally between the front end and the back end of the floor, and wherein the pusher assembly further includes a divider wall configured to be received in the channel, the divider wall having a bottom flange, a top flange, and a wall extending from the top flange such that the wall defines two rows of product space above the floor when the divider wall is received in the channel.
 10. The product management display system of claim 9, wherein the floor includes alignment flanges that extend into the channel, and wherein the alignment flanges are received between the bottom flange and the top flange of the divider wall.
 11. A product management display system for a shelf assembly including a shelf for supporting a product, the product management display system comprising:

a pusher assembly configured to be coupled to the shelf, the pusher assembly including

a floor having a front end and a back end opposite the front end,

a track extending between the front end and the back end,
 a channel defined in the floor and extending longitudinally between the front end and the back end of the floor,
 a mating interface at the back end of the floor, and
 a pusher movable along the track between an initial position and an extended position, wherein the pusher is moved away from the front end of the floor and toward the back end of the floor when the pusher is moved from the initial position toward the extended position,
 wherein both the channel and the mating interface are configured to receive an attachment that extends a length of the track beyond the back end of the floor.

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12. The product management display system of claim 11, wherein the channel is configured to receive a first attachment and the mating interface is configured to receive a second attachment, and wherein the first attachment and the second attachment are different.

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13. The product management display system of claim 11, wherein the floor includes an extension adapter receptacle that is configured to receive an attachment that extends the length of the track beyond the back end of the floor.

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14. The product management display system of any one of claims 11-13, wherein the track includes a pair of track rails, and wherein the pusher includes guide rails, each of the guide rails wrapped around a corresponding one of the track rails,
 and, optionally,
 wherein the each of the pair of track rails defines an outer edge of the floor.

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15. A product management display system for a shelf assembly including a shelf for supporting a product and a back wall spaced from a back end of the shelf by a gap, the product management display system comprising:

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a pusher assembly configured to be coupled to the shelf, the pusher assembly including

a floor including a front end and a back wall defining a back end of the floor opposite the front end,
 a track extending between the front end of the floor and the back end of the floor, and
 a pusher movable along the track between an initial position and an extended position, wherein the pusher is moved away from the front end of the floor and toward the back

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end of the floor when the pusher is moved from the initial position toward the extended position,

wherein a portion of the pusher extends beyond the back end of the floor in the extended position, wherein the back wall includes stop surfaces that limit movement of the pusher to the extended position.

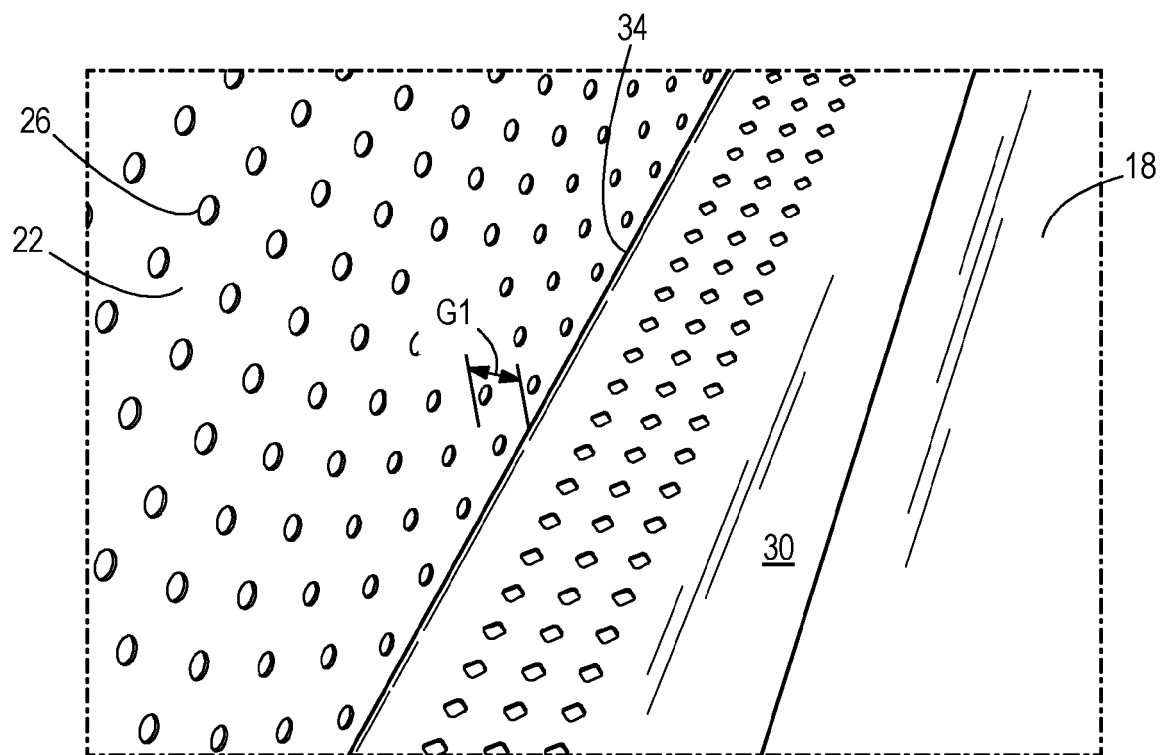
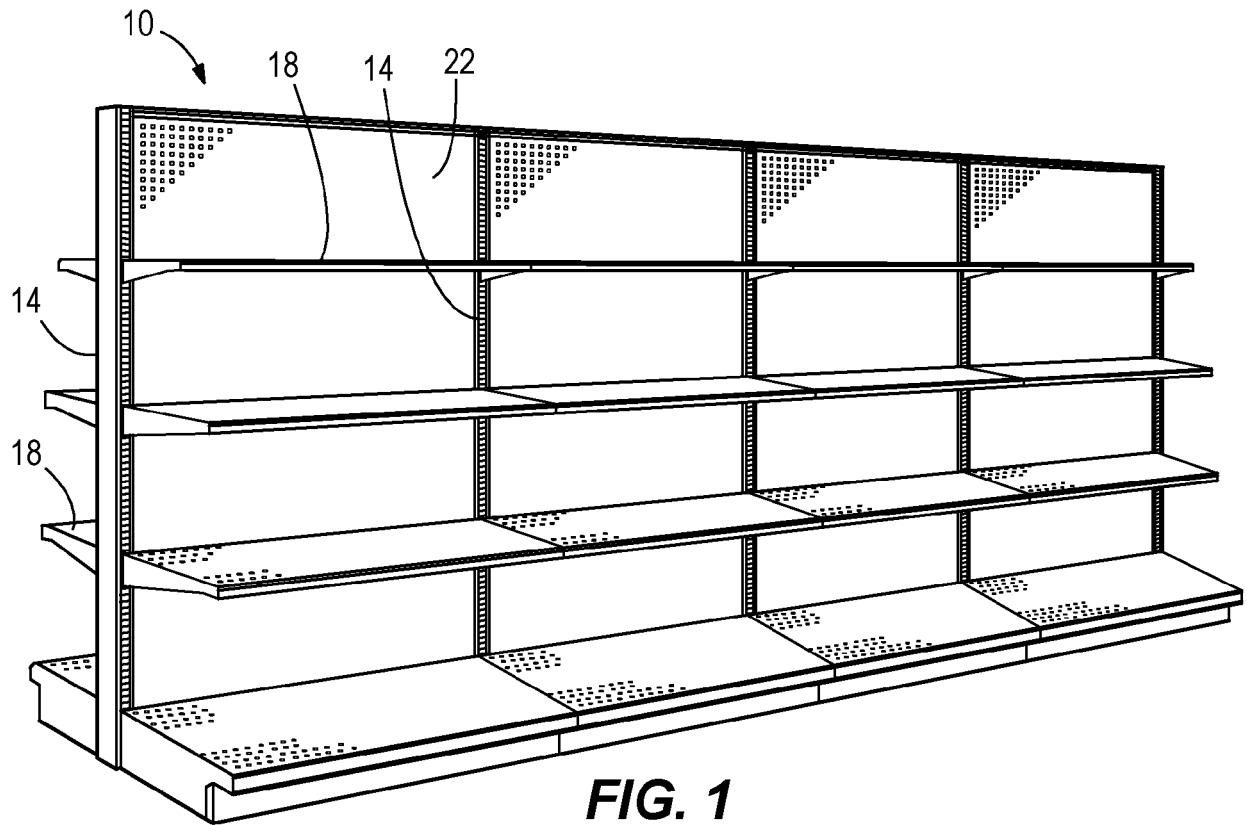


FIG. 2

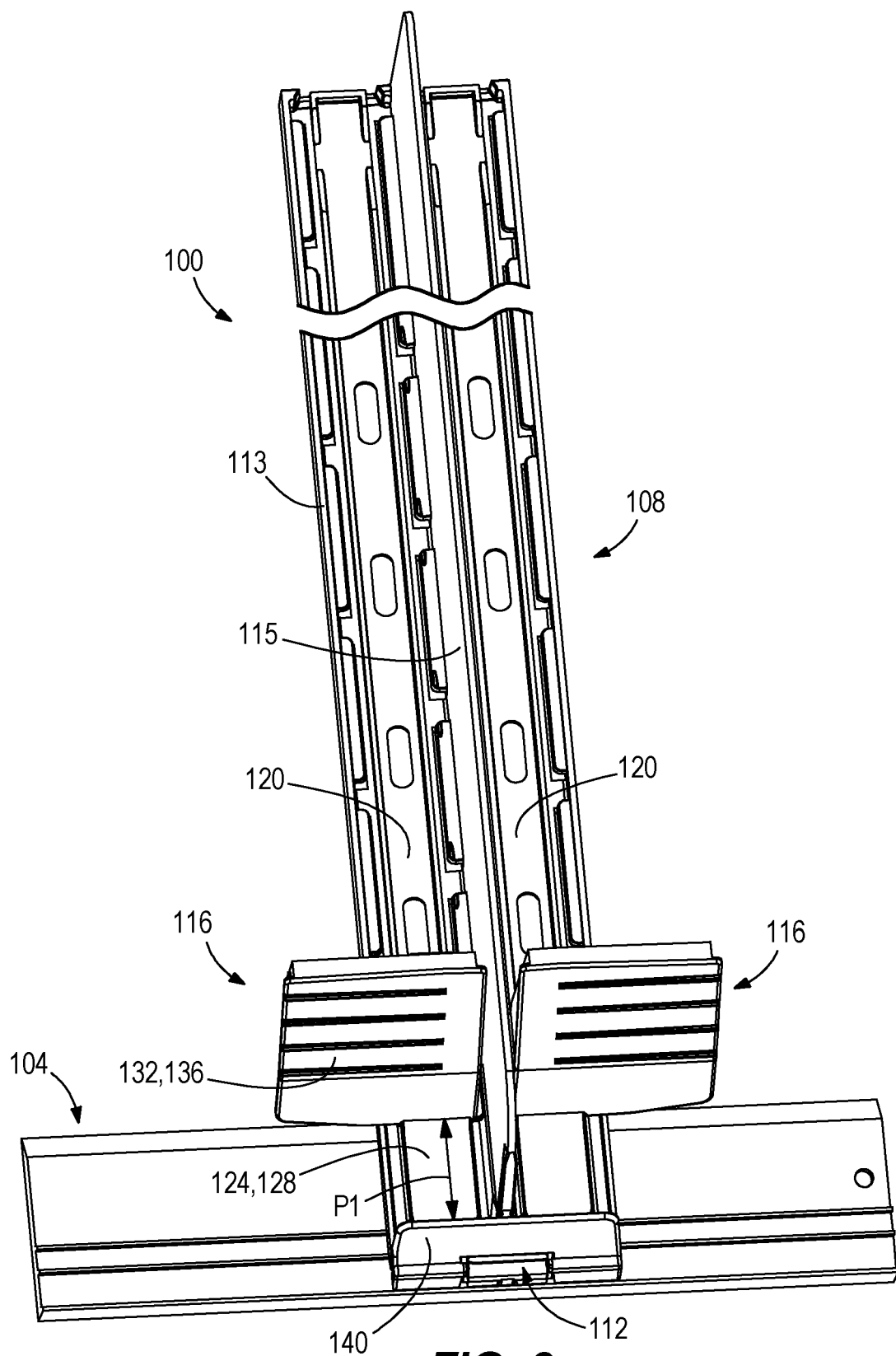


FIG. 3

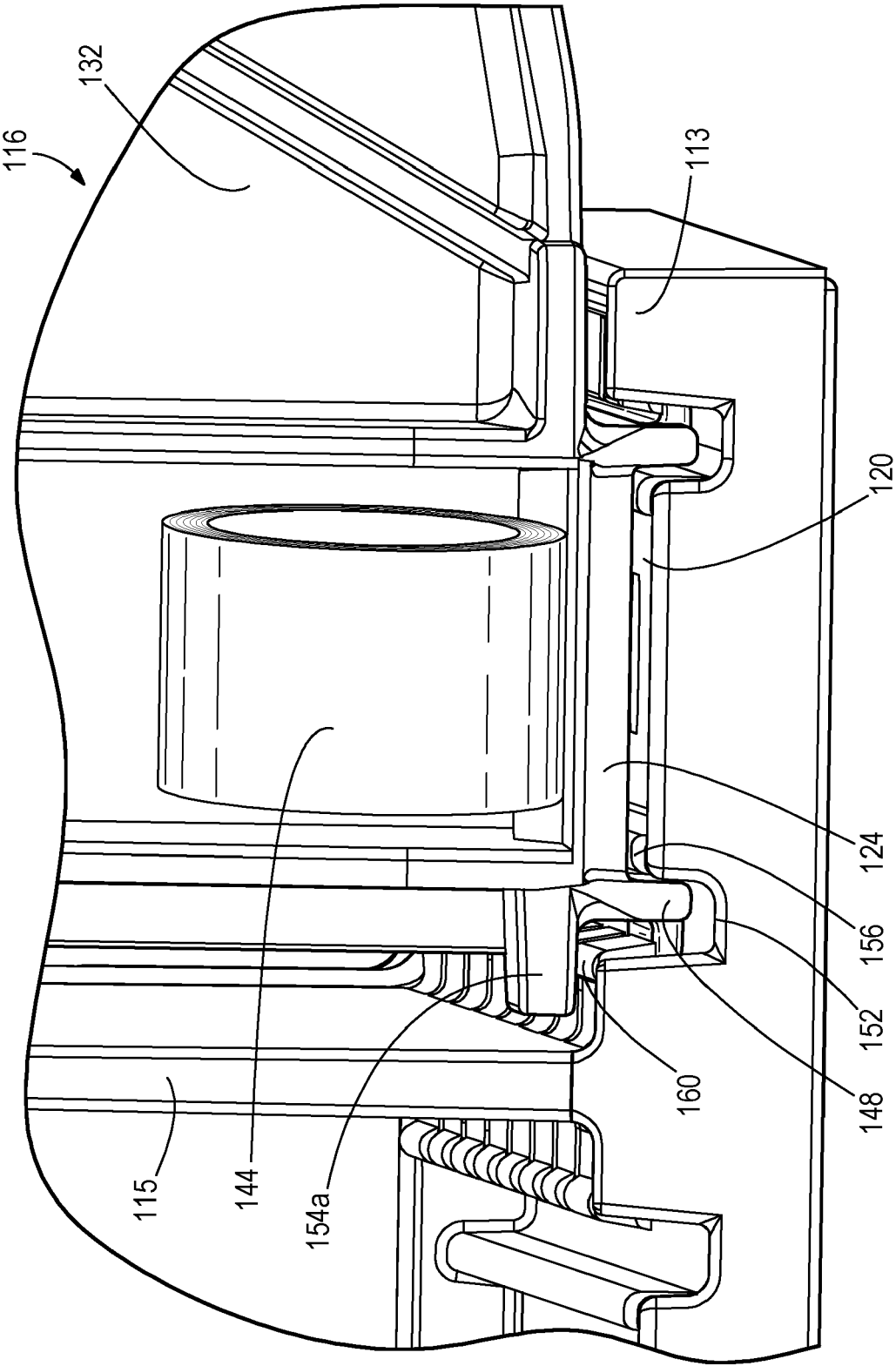


FIG. 4

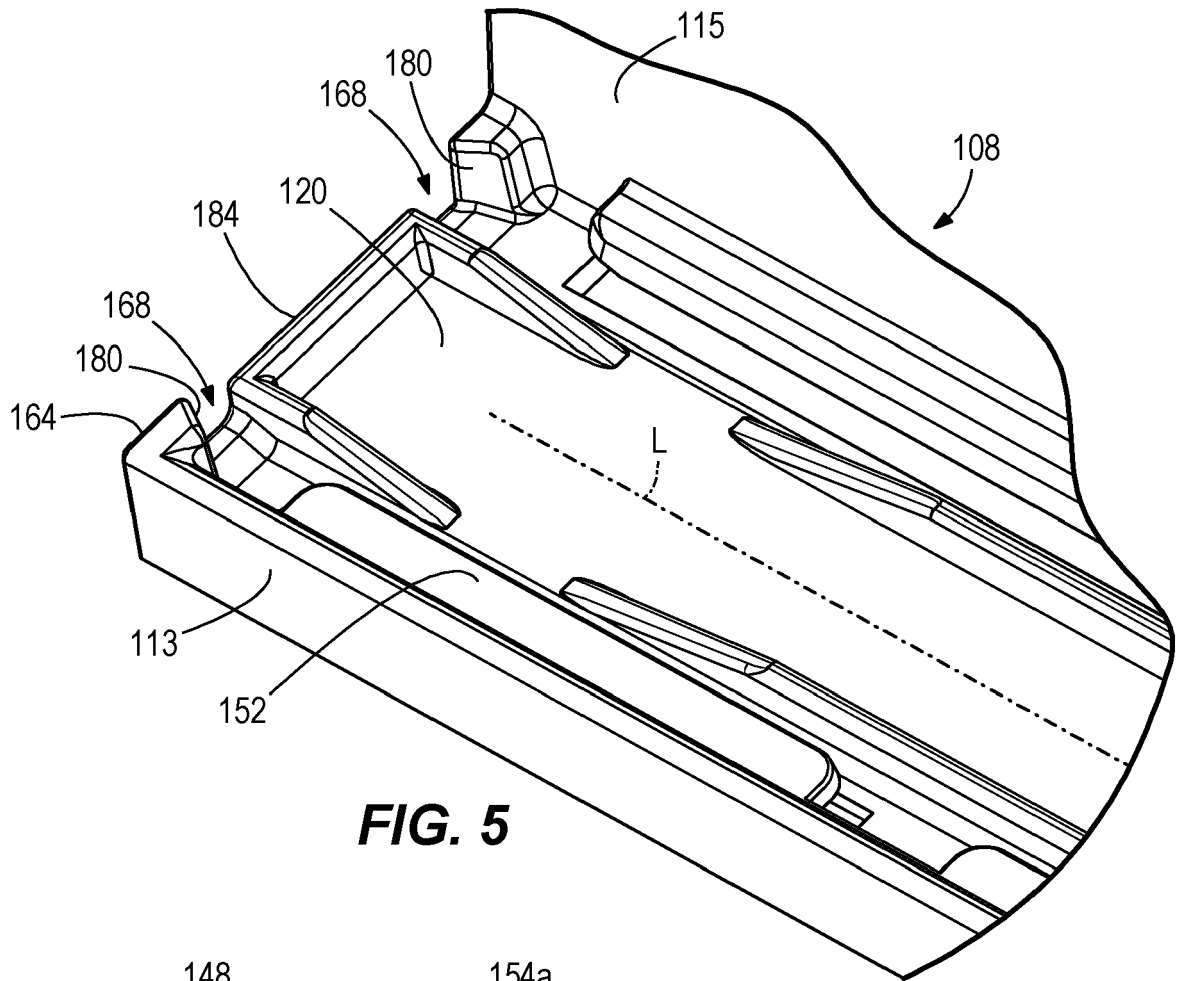


FIG. 5

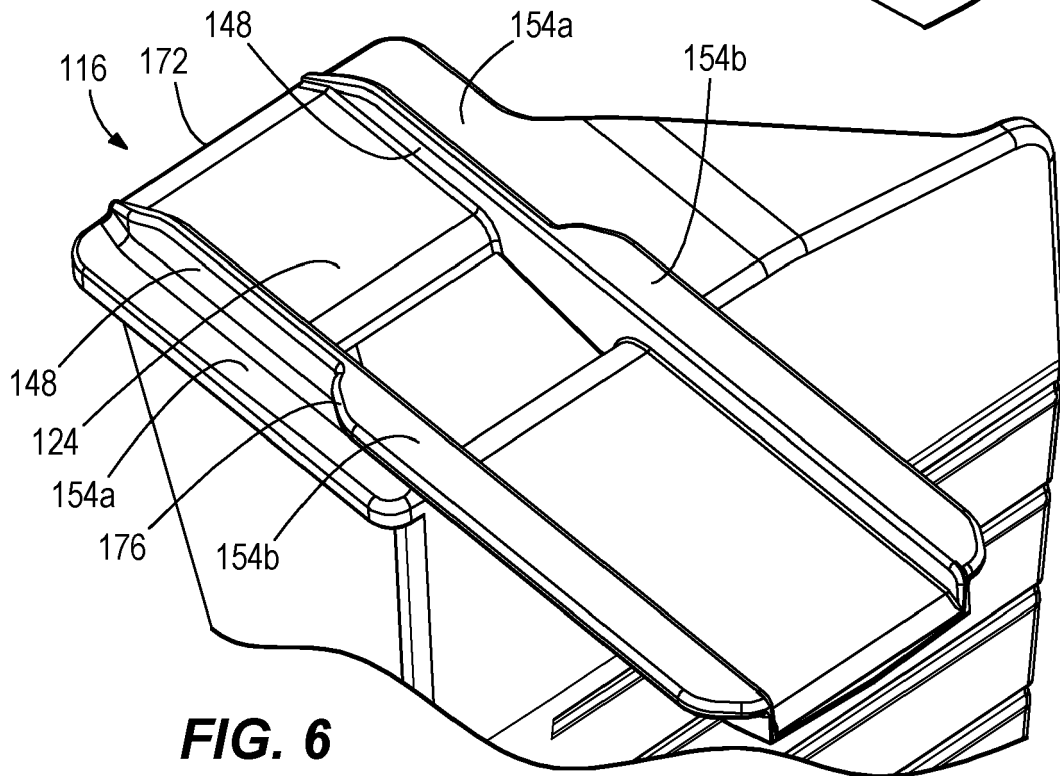


FIG. 6

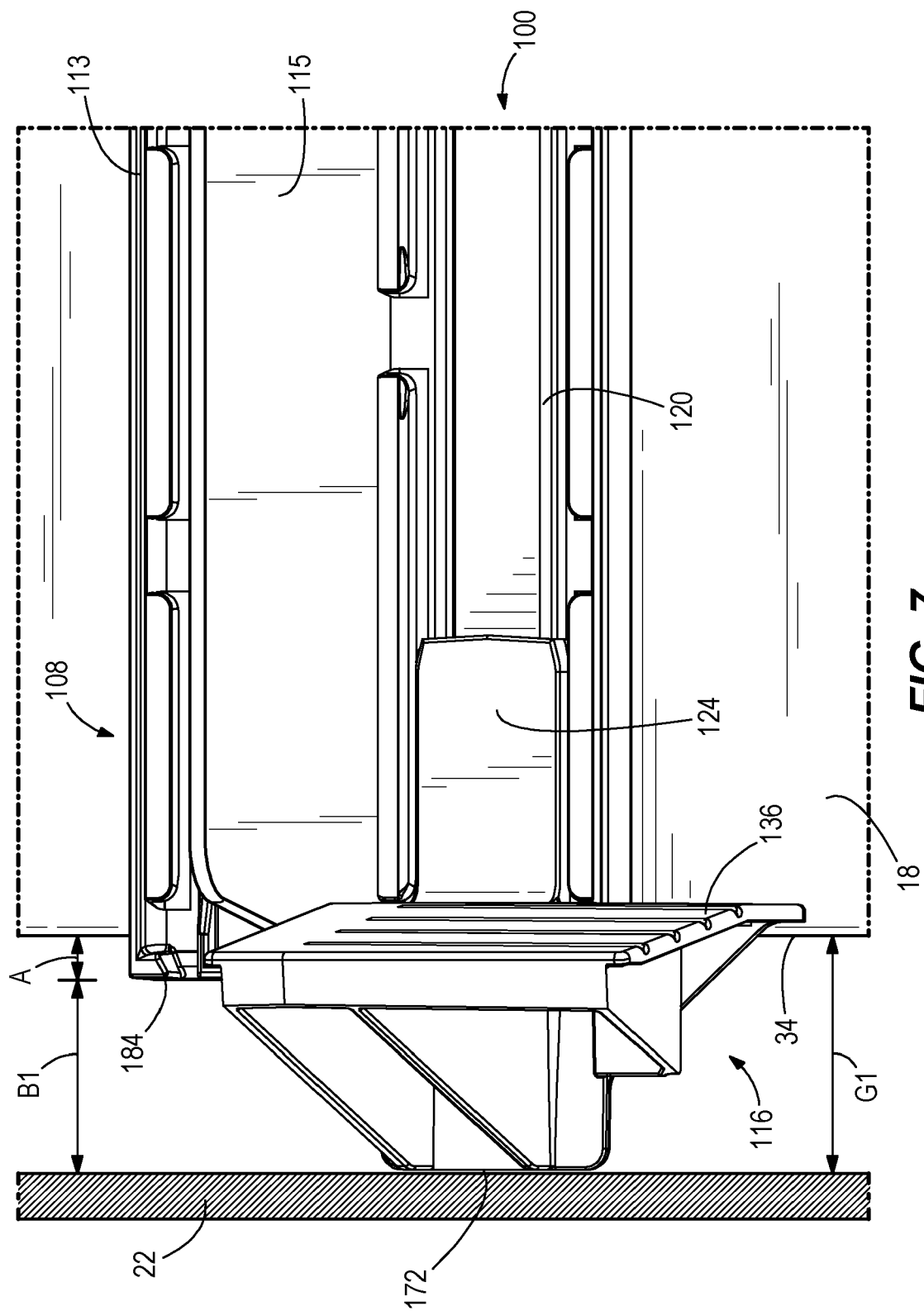
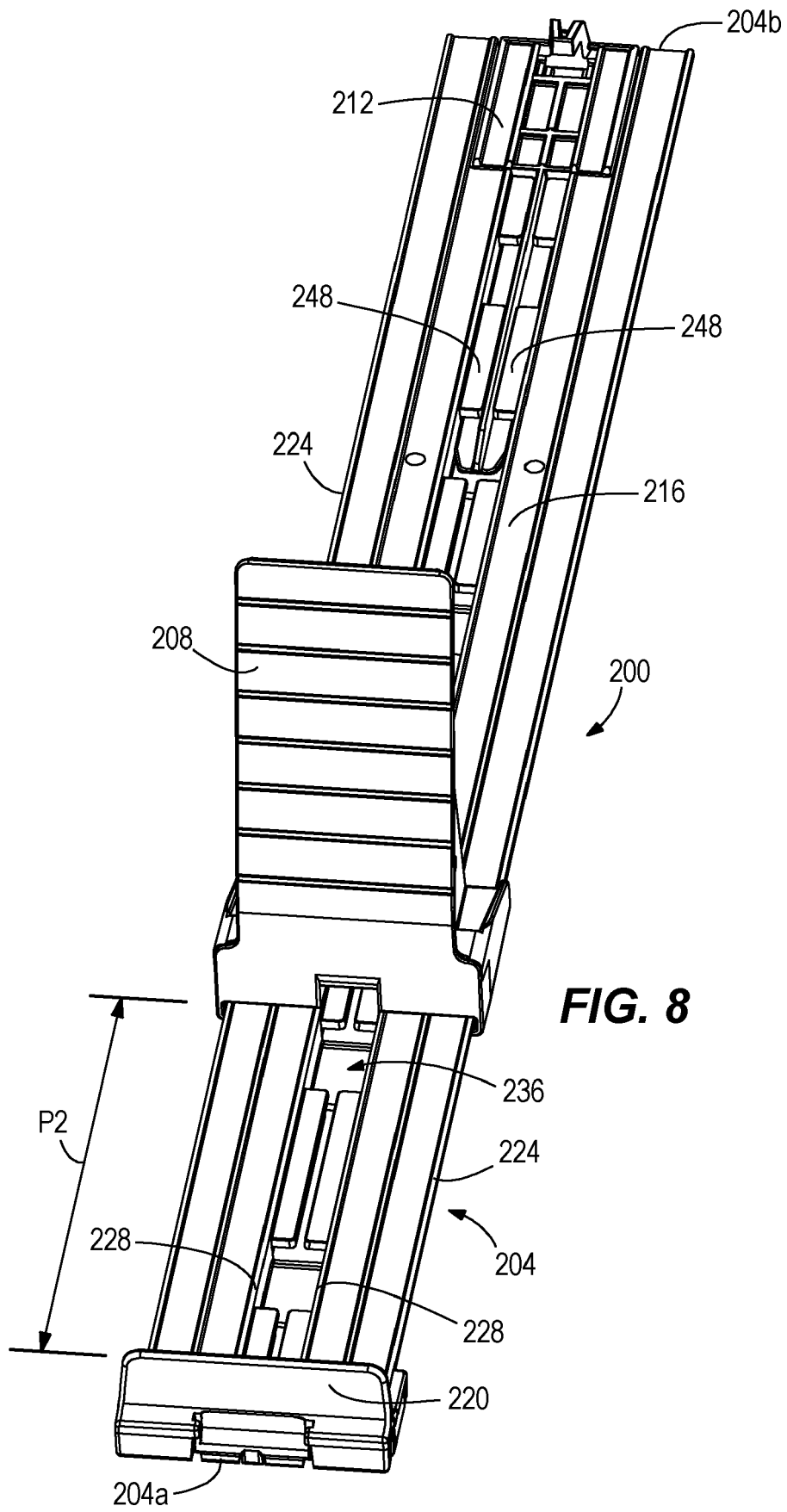
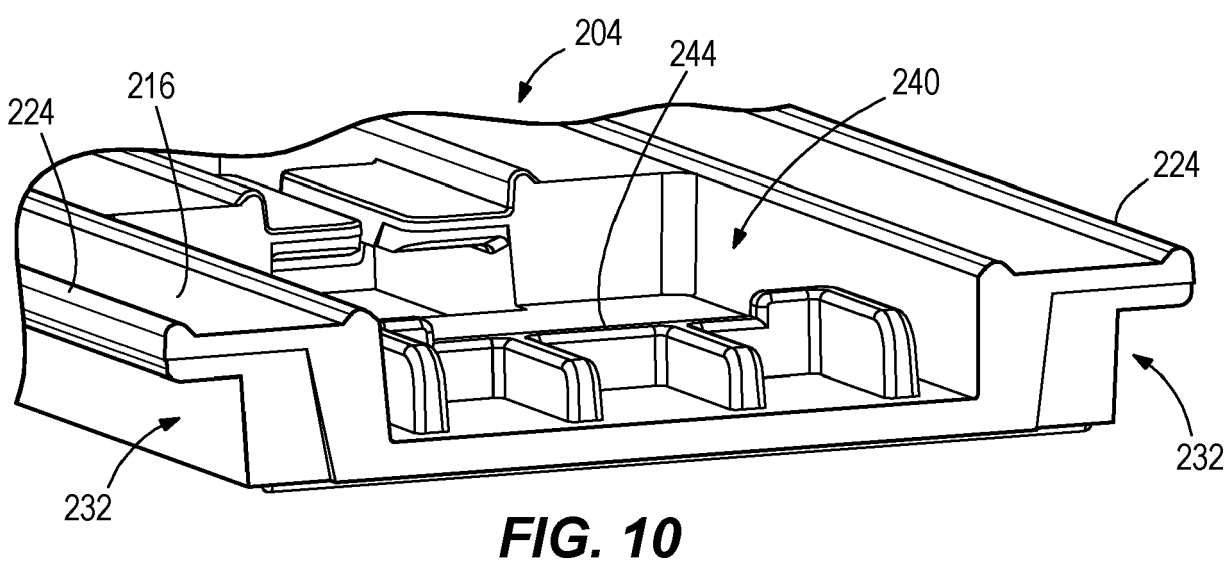
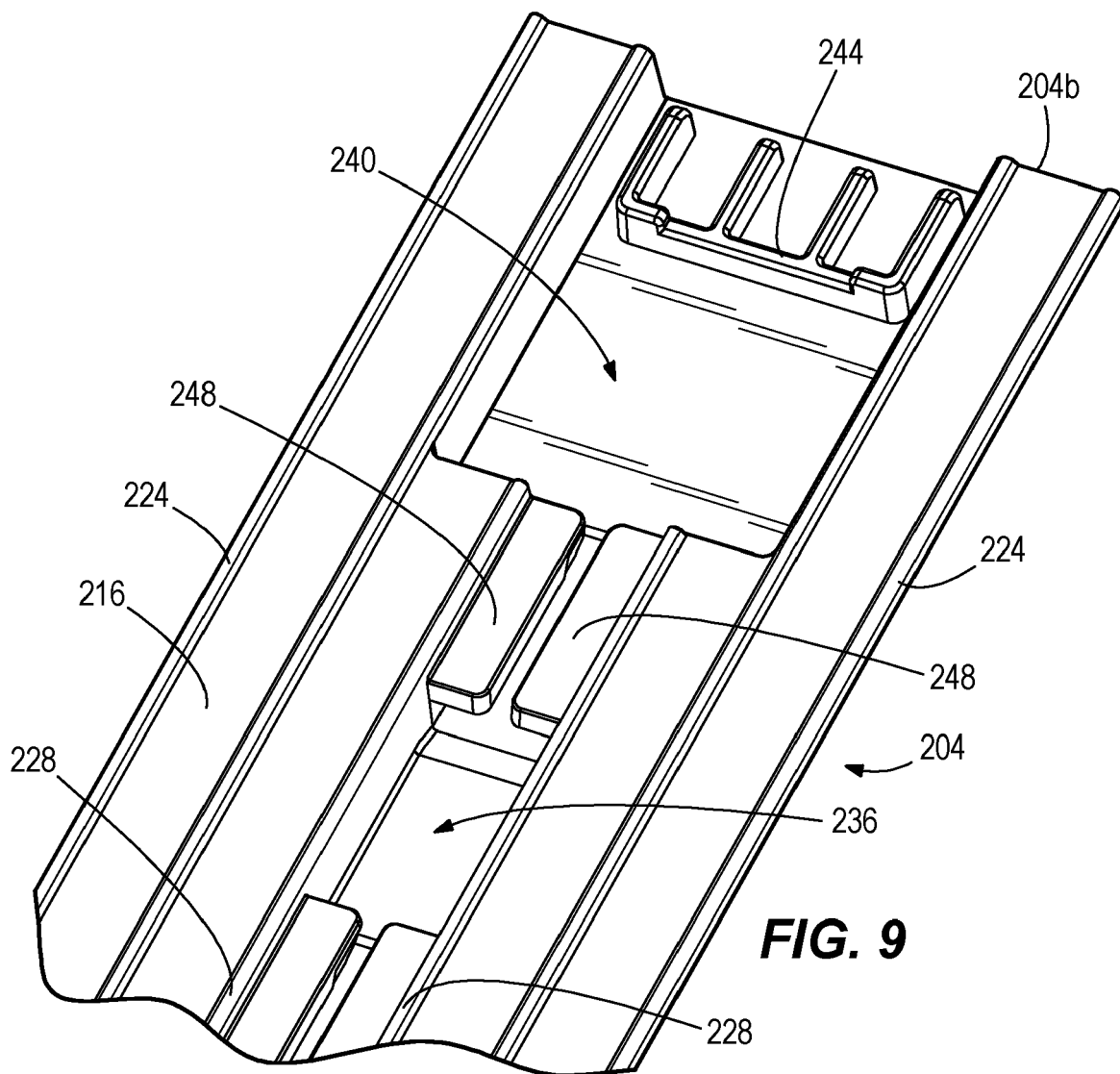


FIG. 7





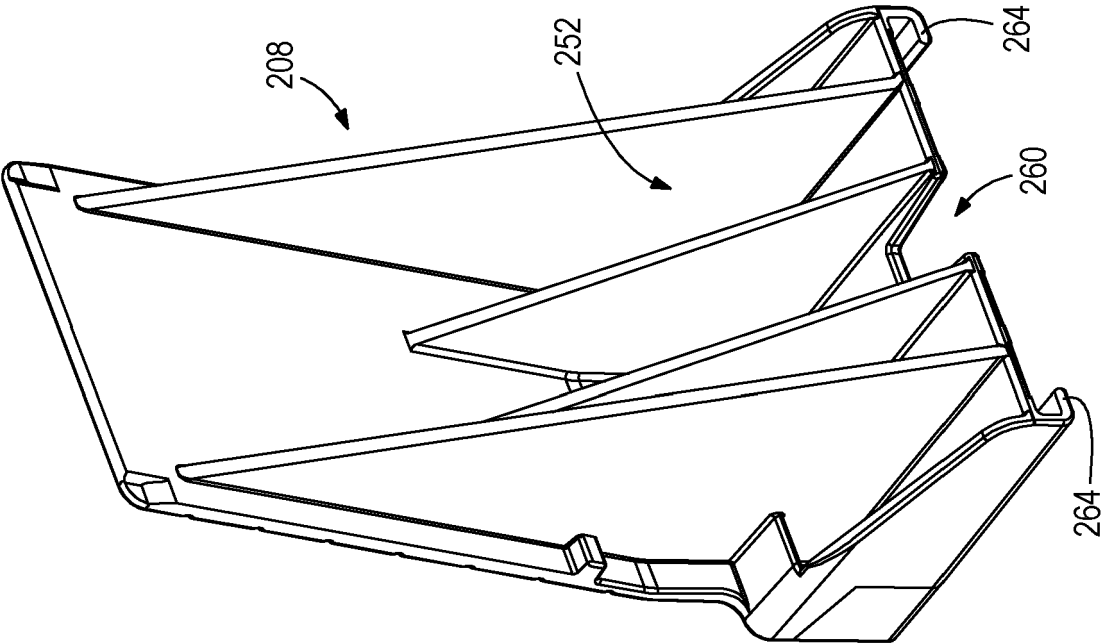


FIG. 11B

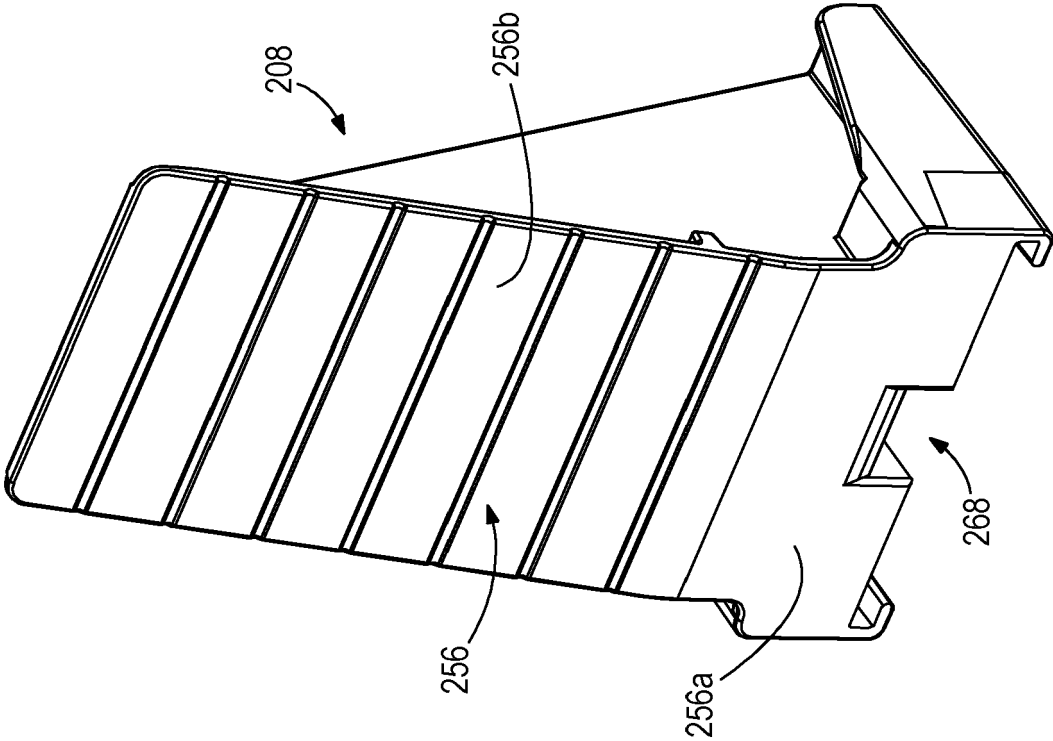
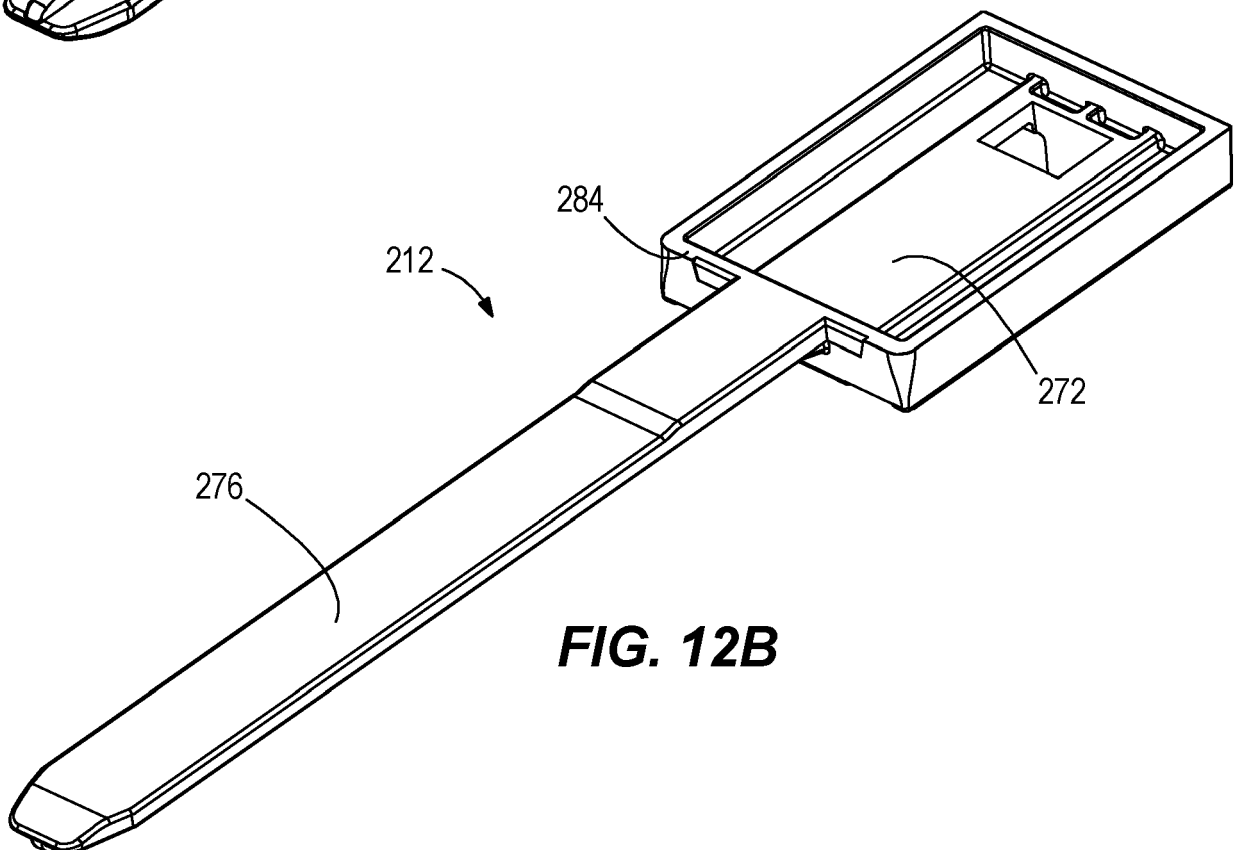
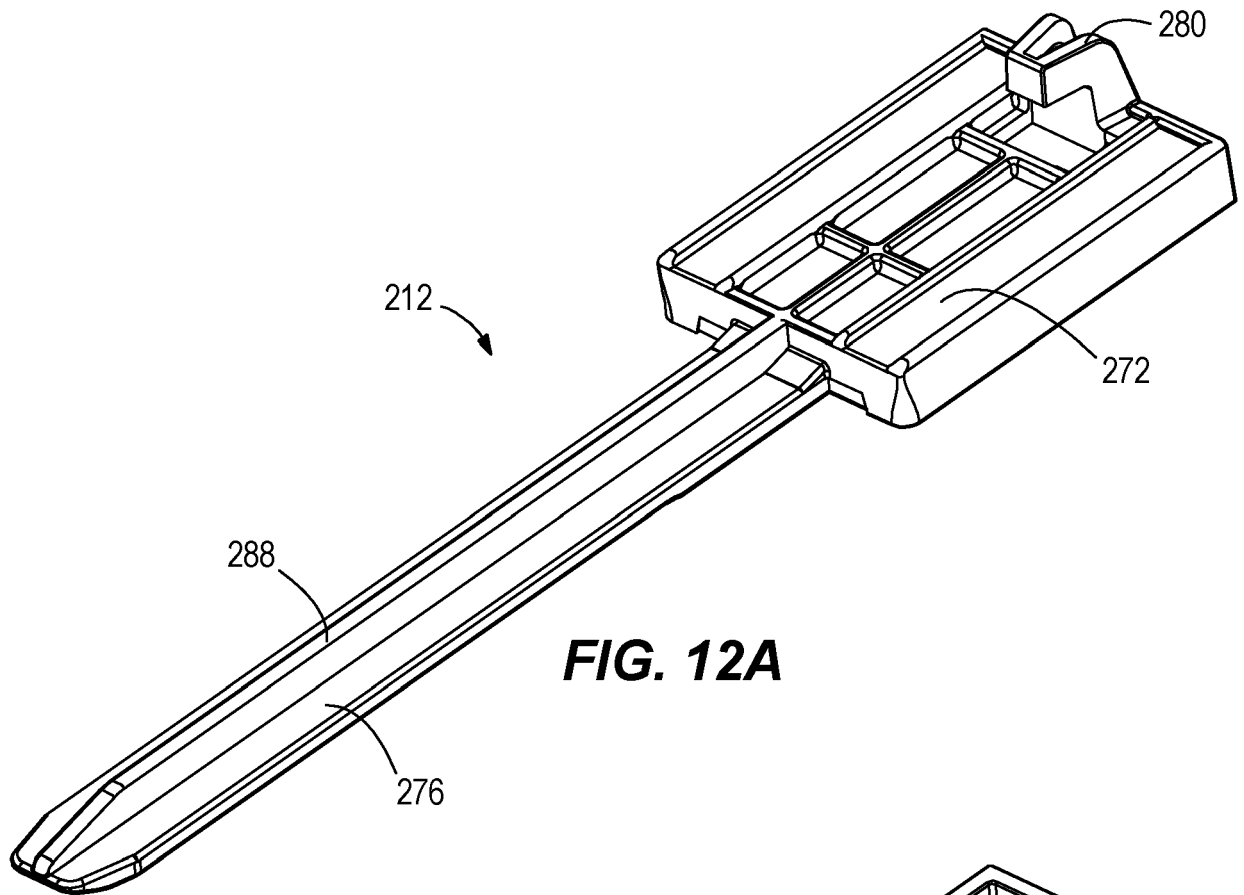
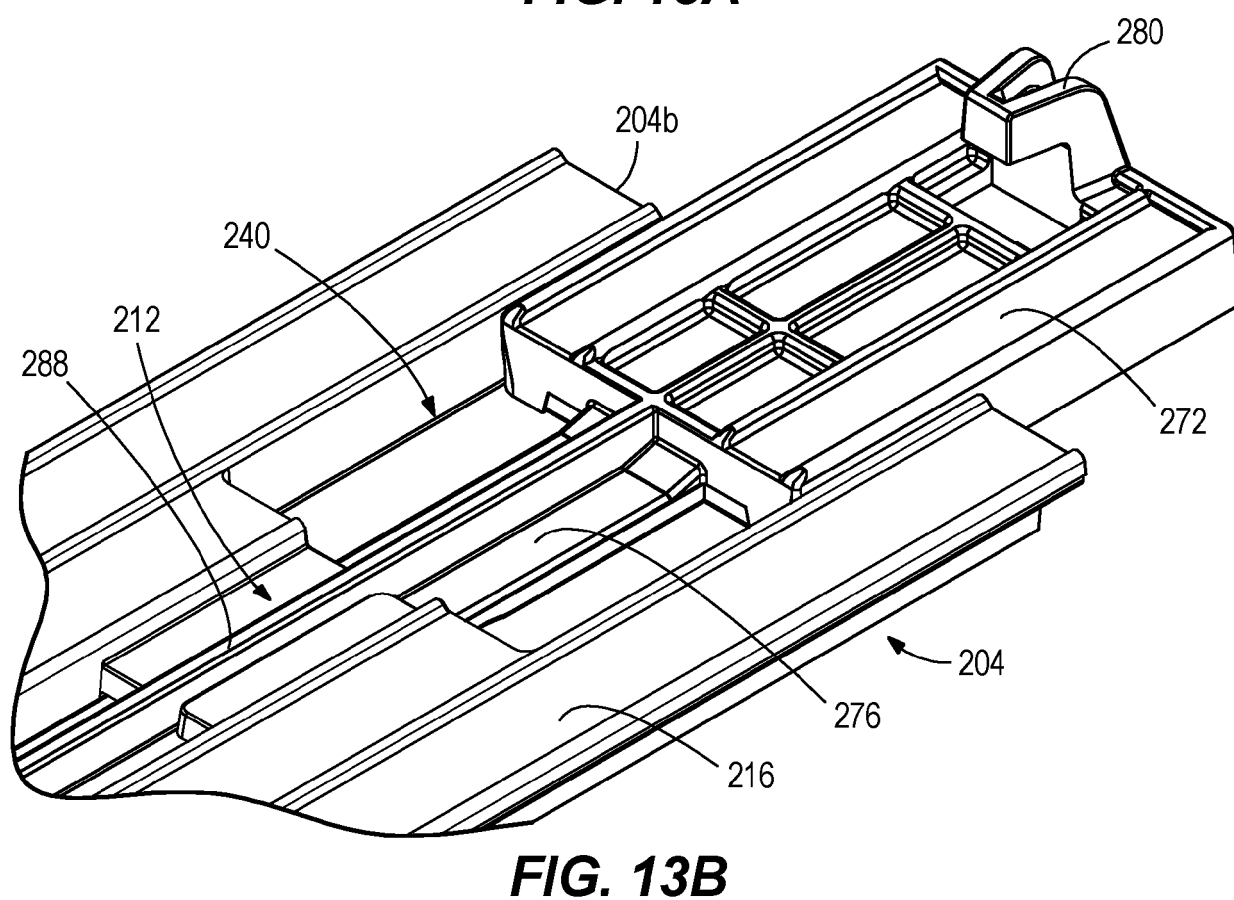
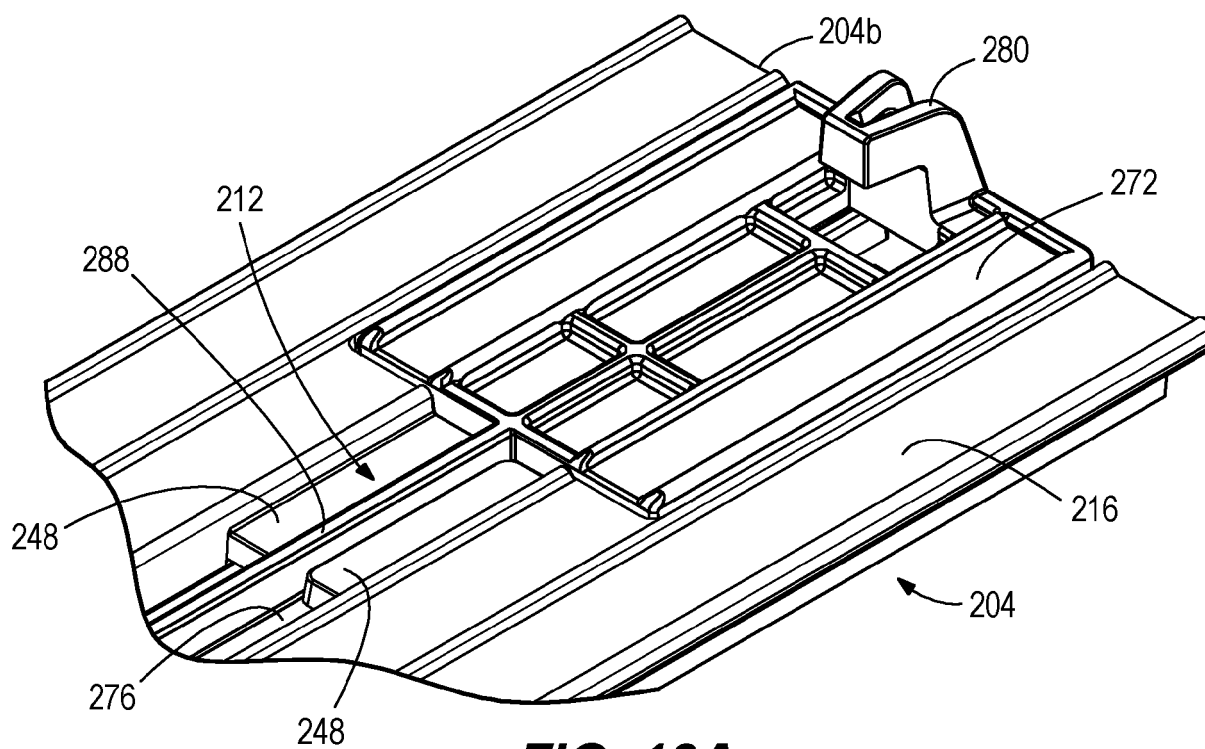


FIG. 11A





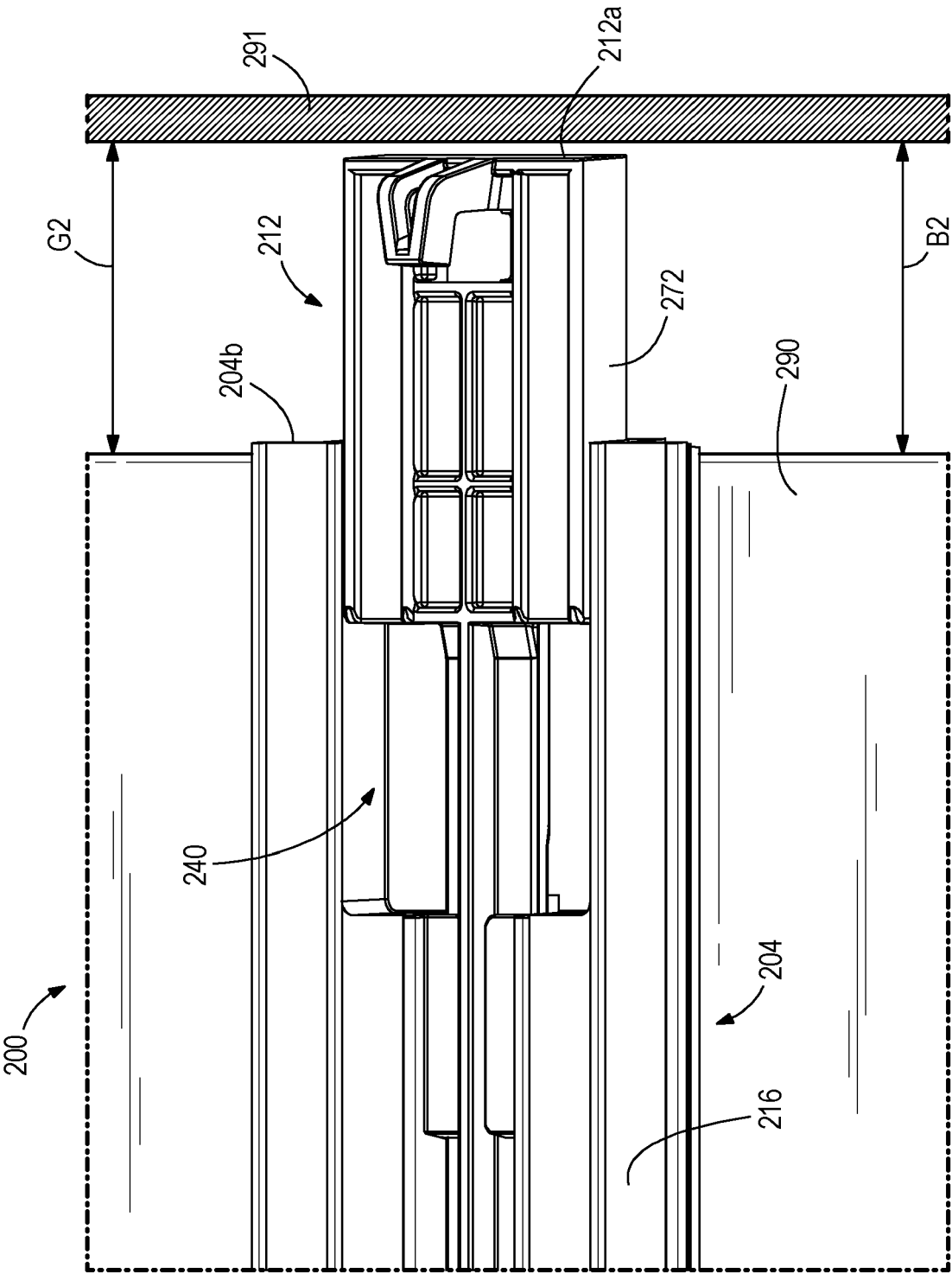


FIG. 14

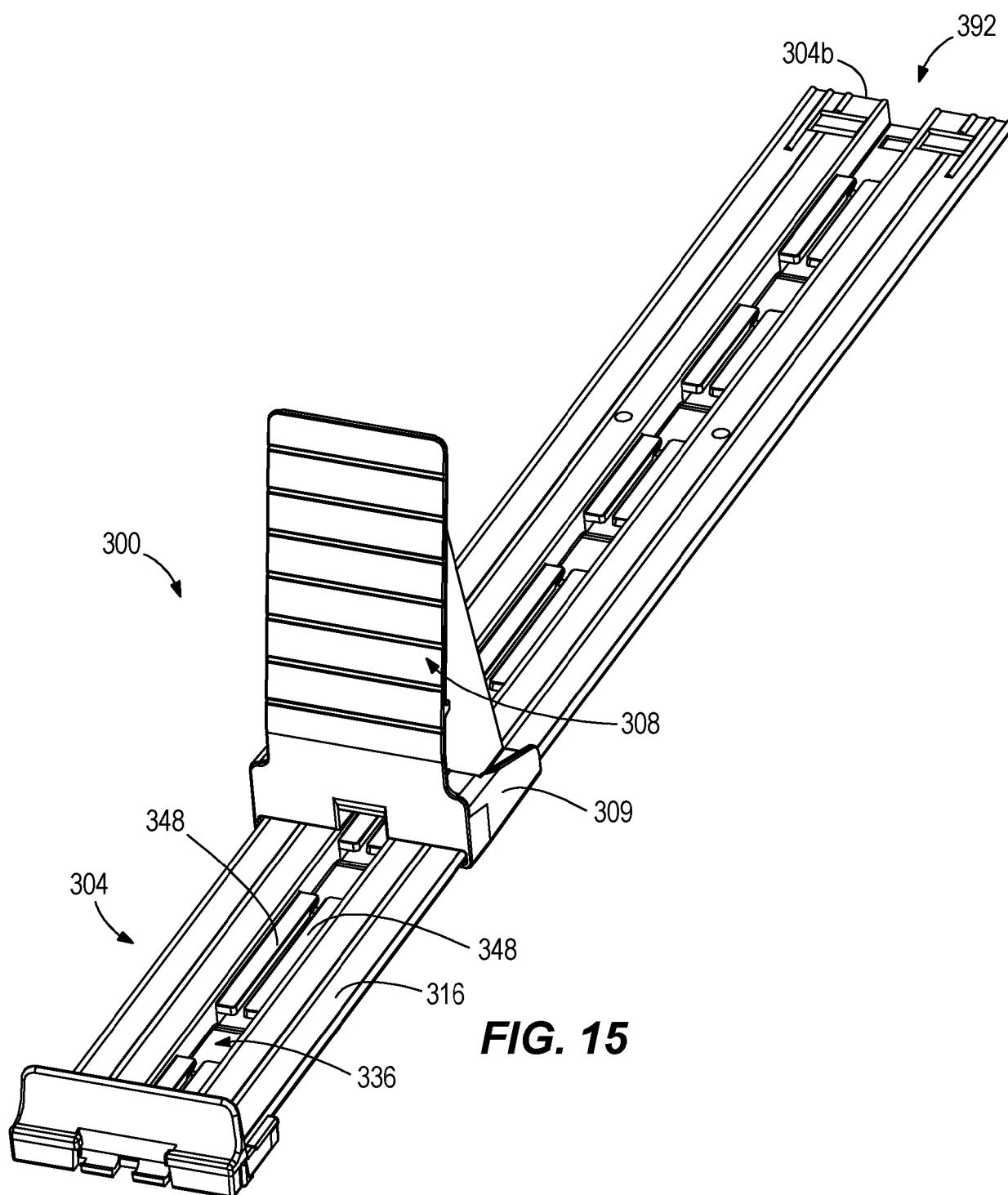


FIG. 15

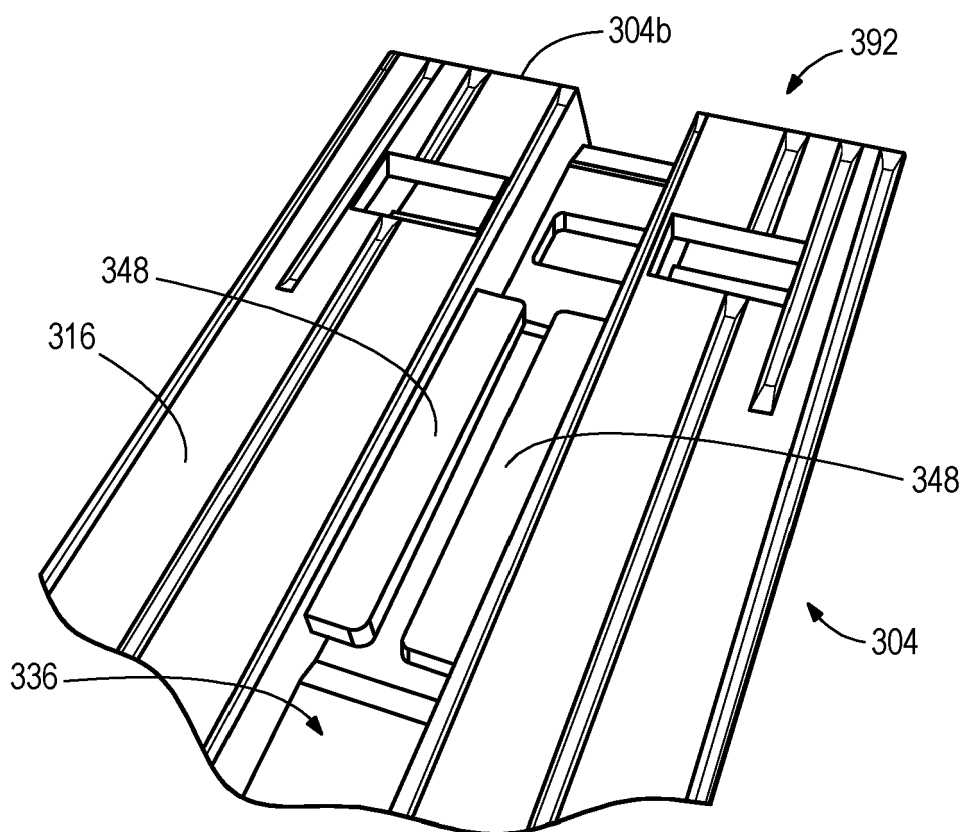


FIG. 16A

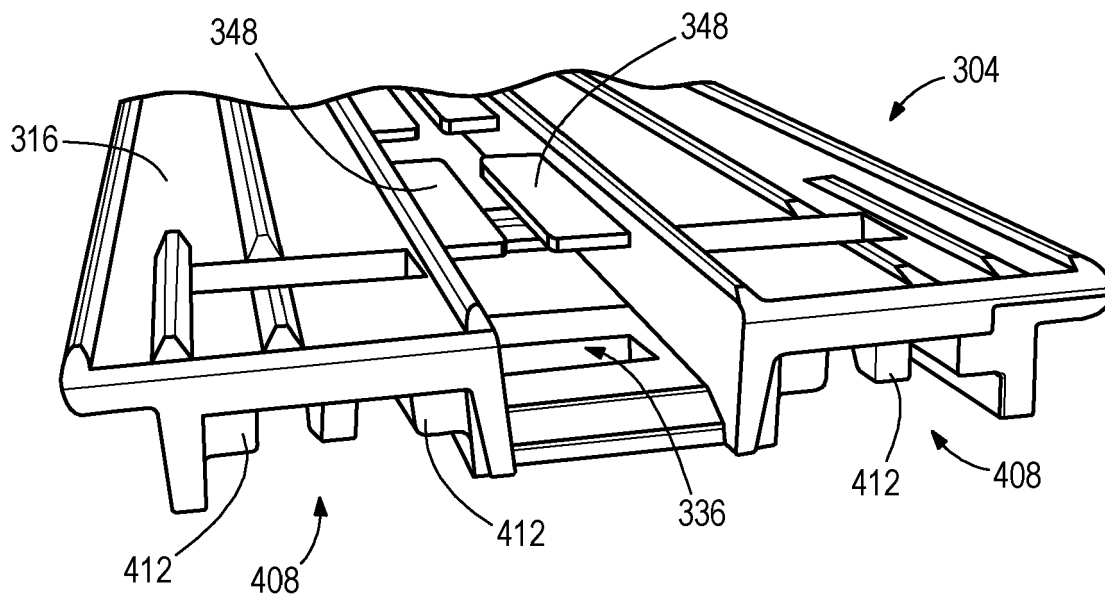
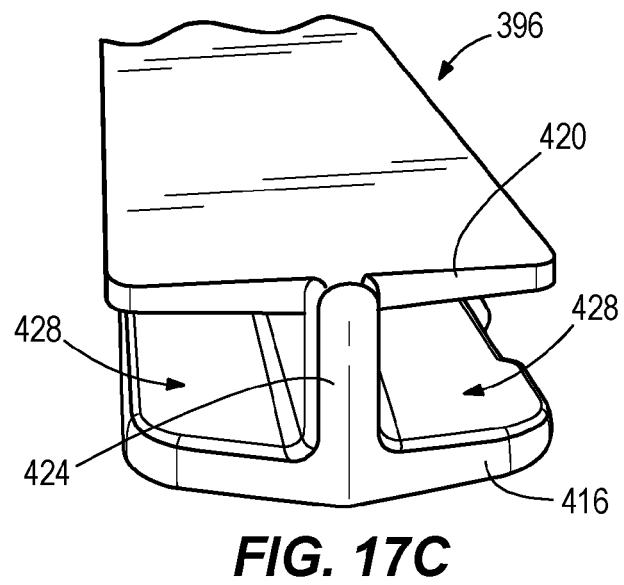
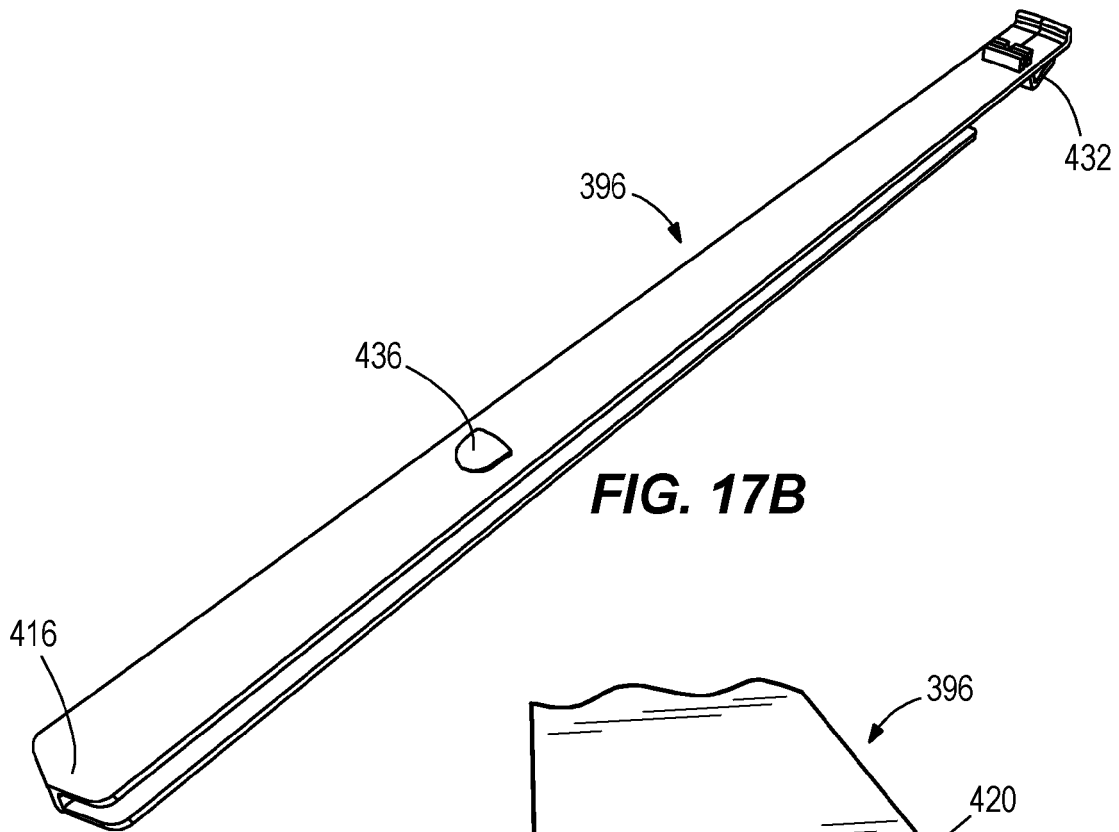
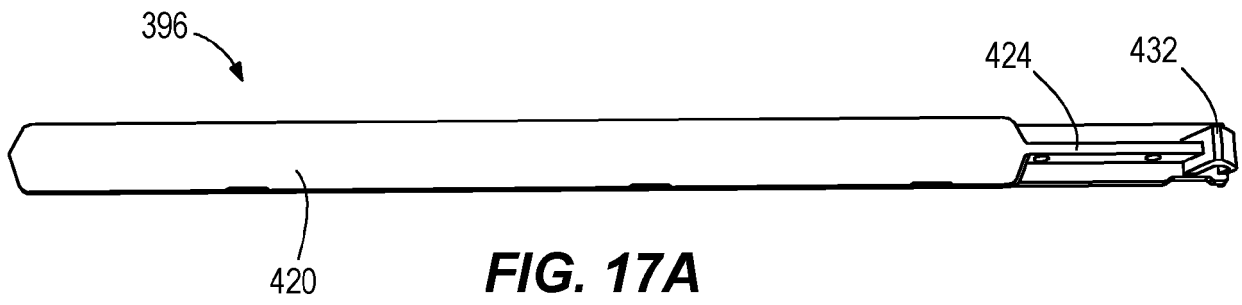
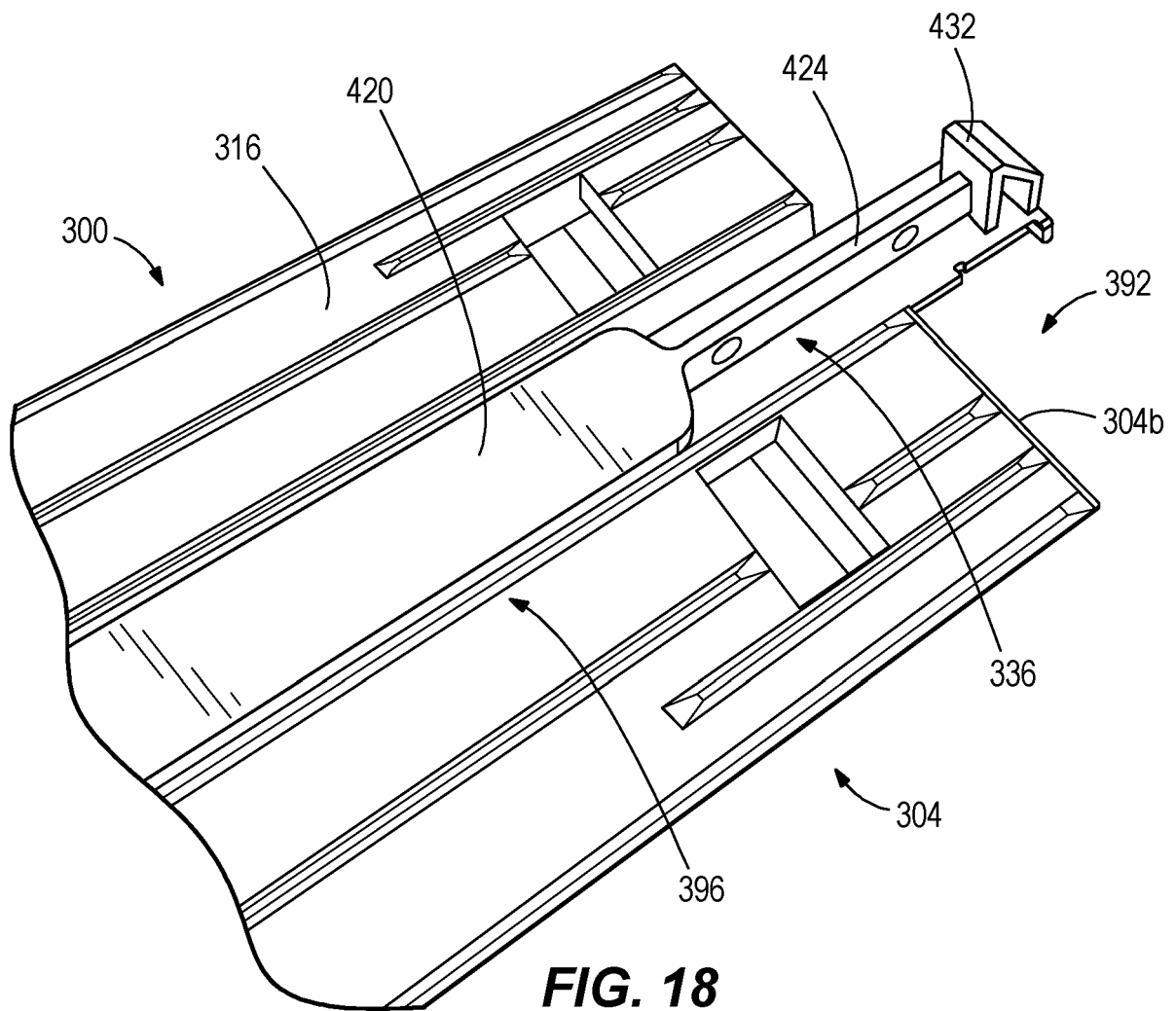


FIG. 16B





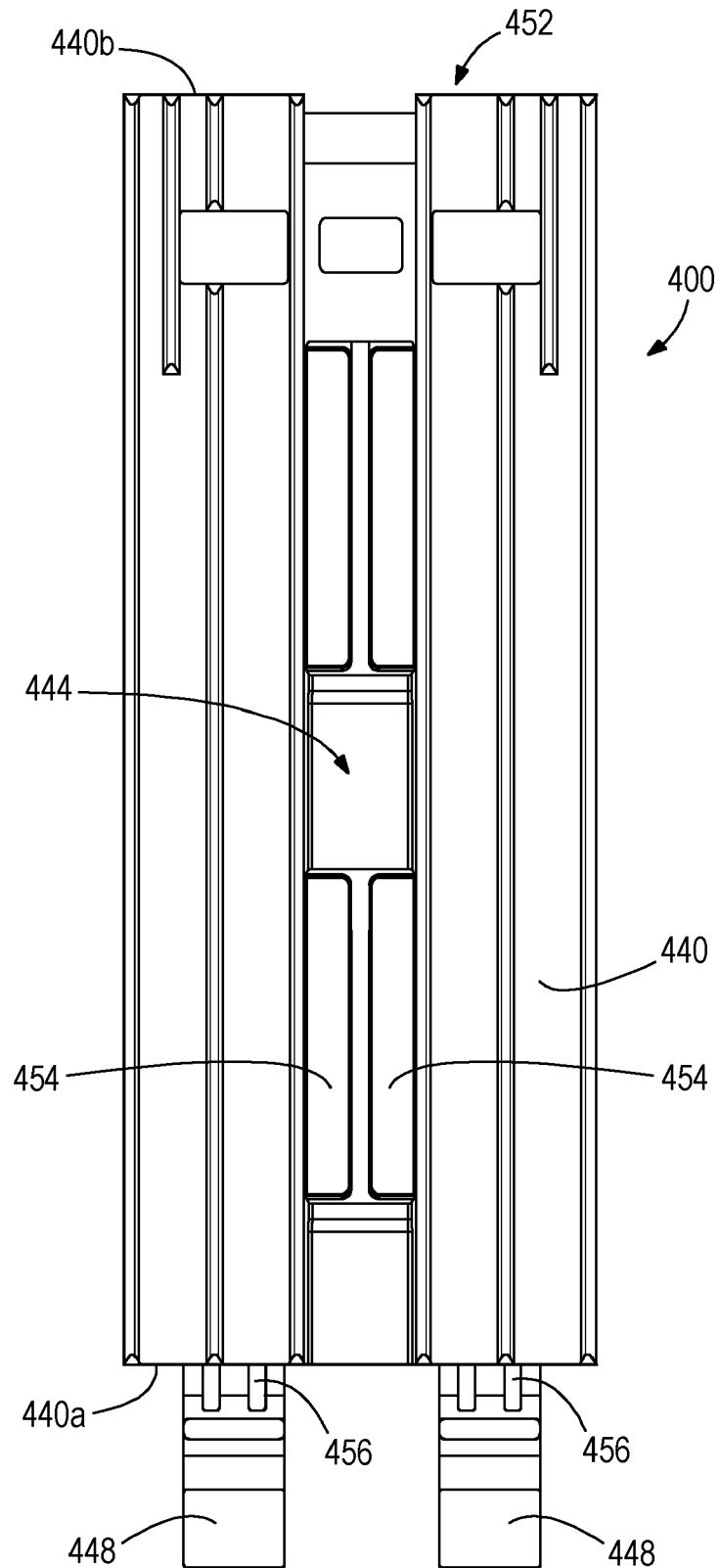
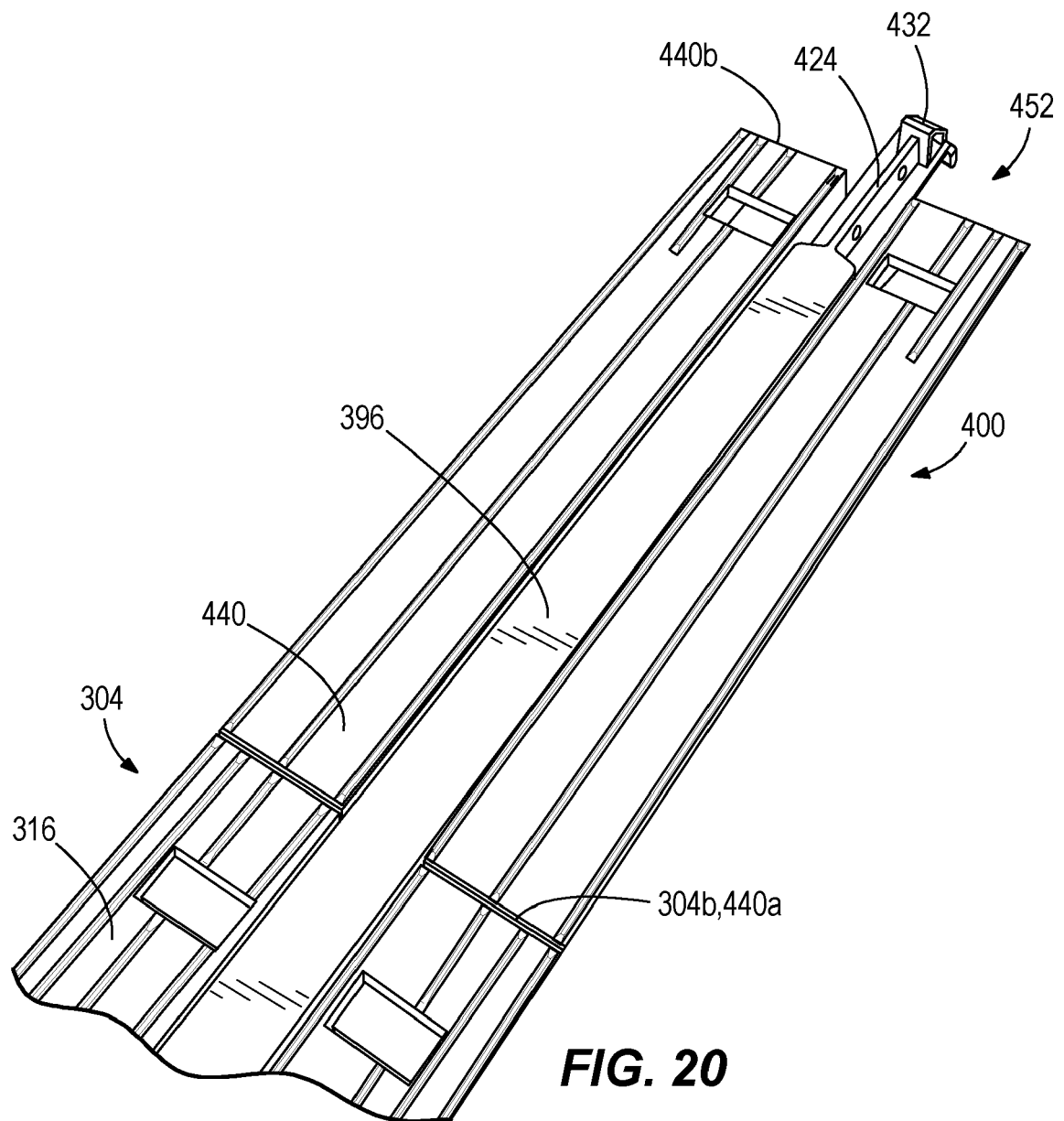


FIG. 19



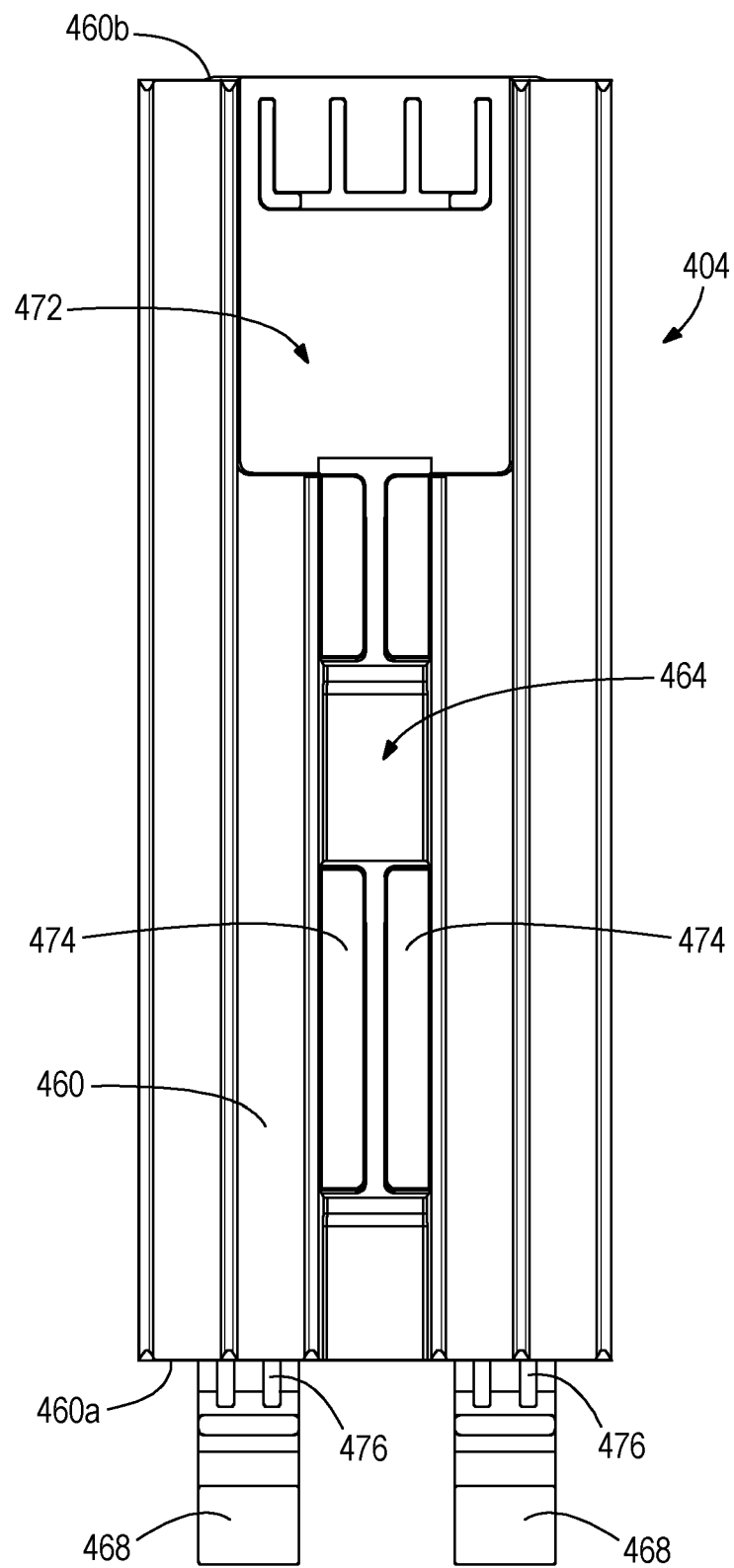


FIG. 21

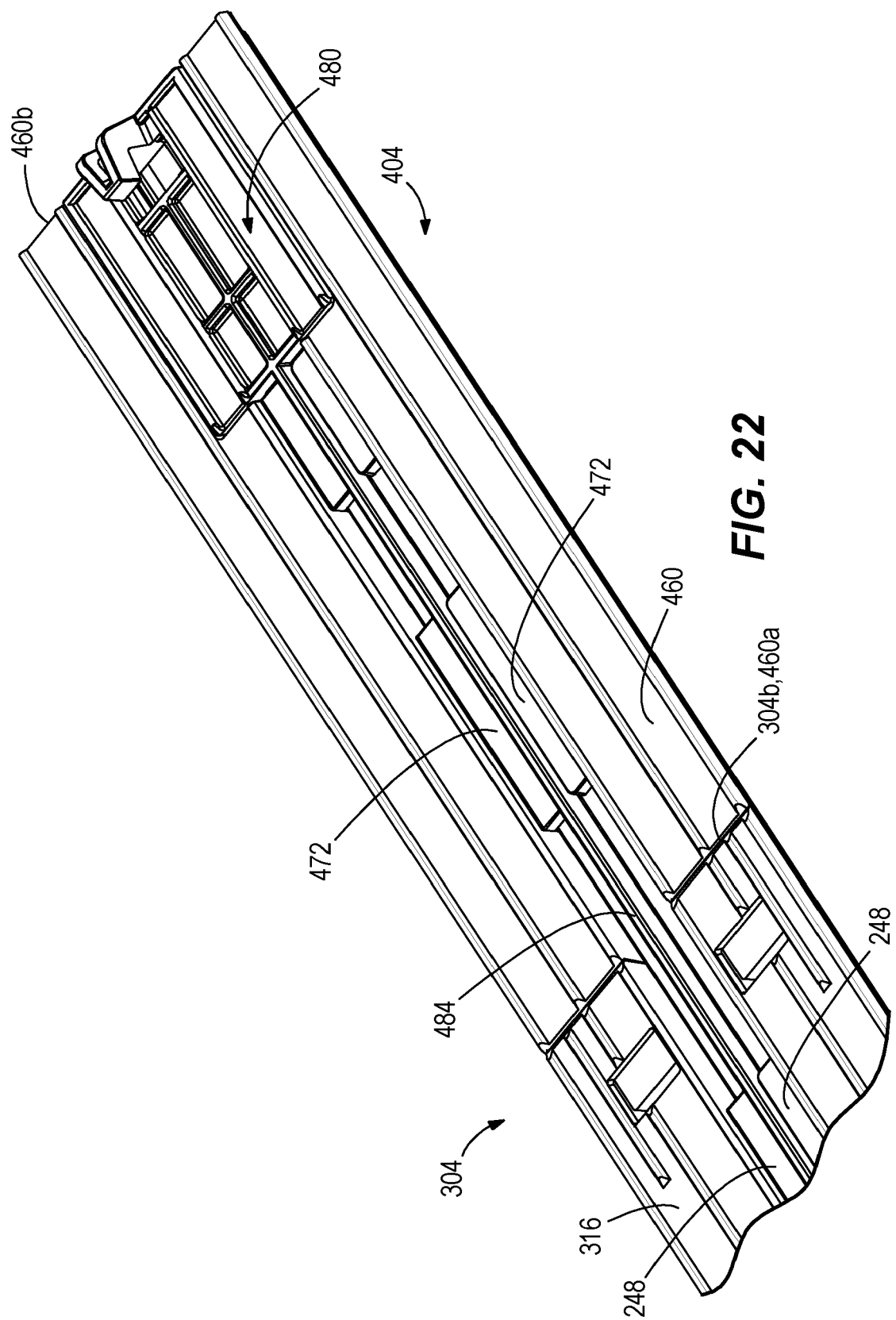
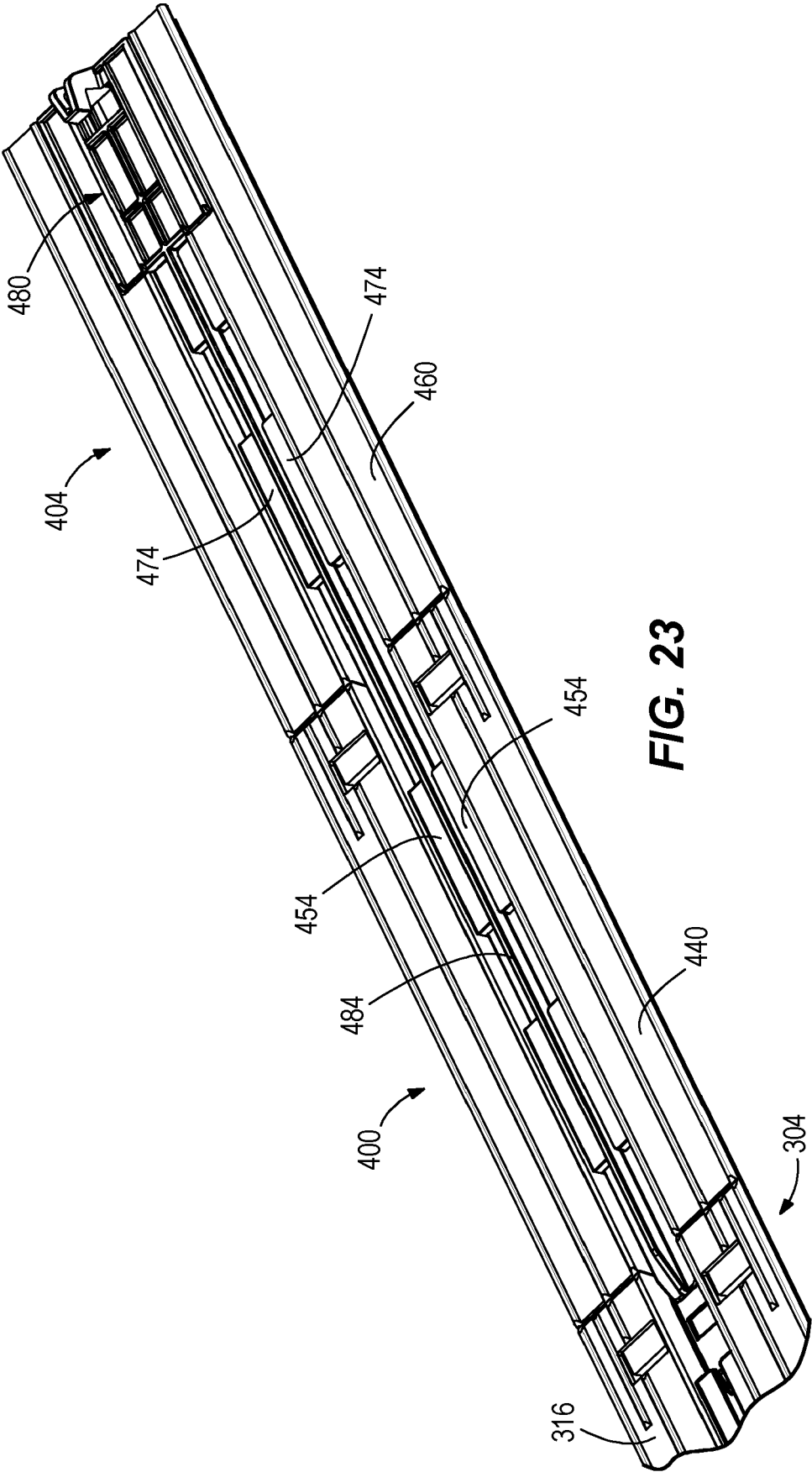
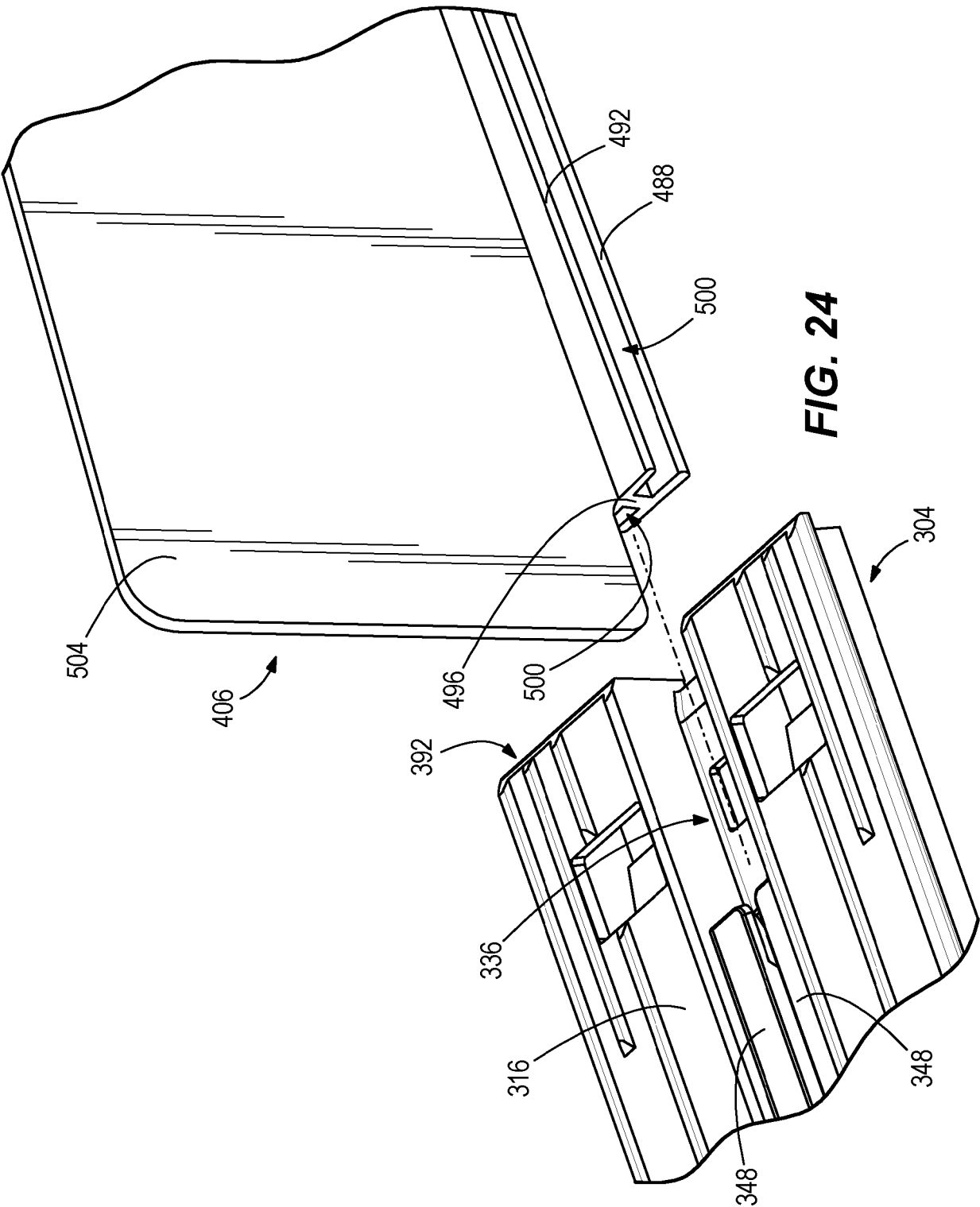


FIG. 22





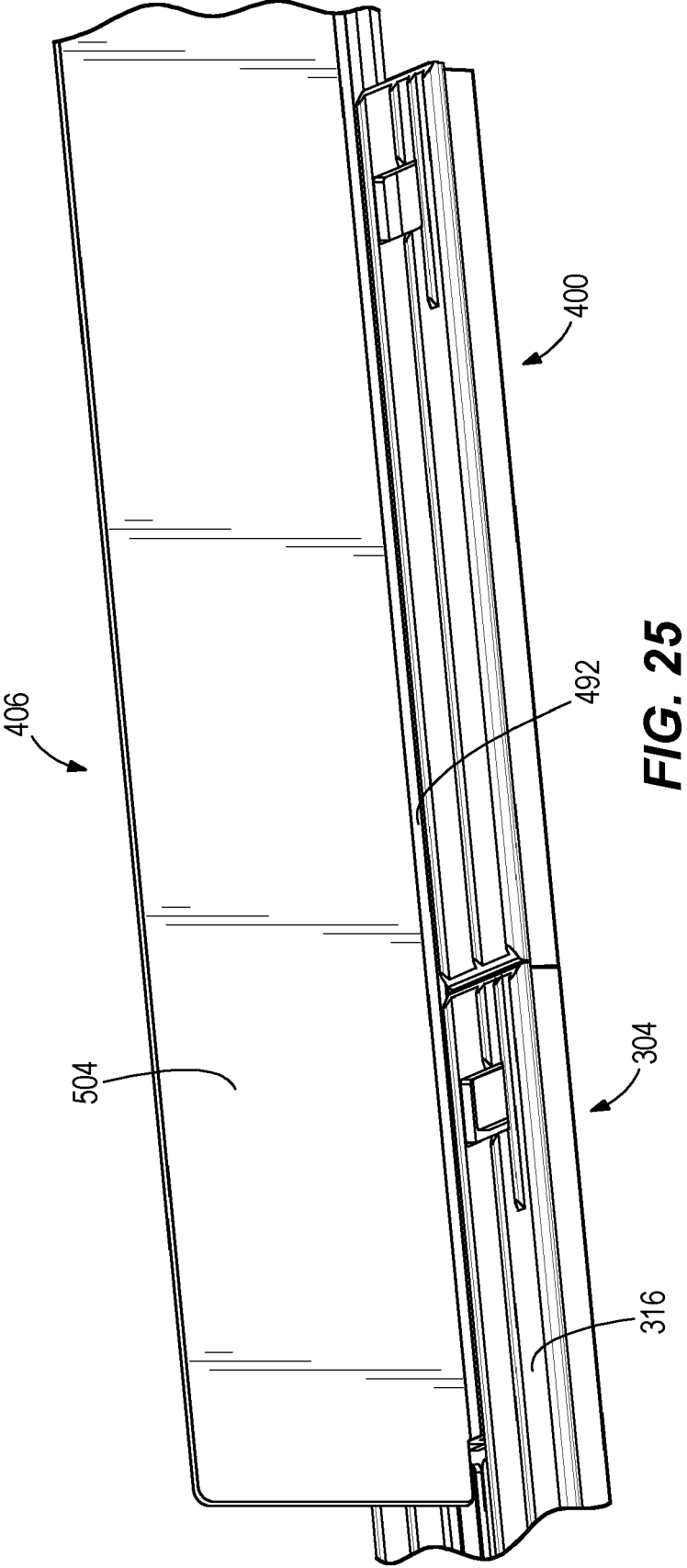


FIG. 25

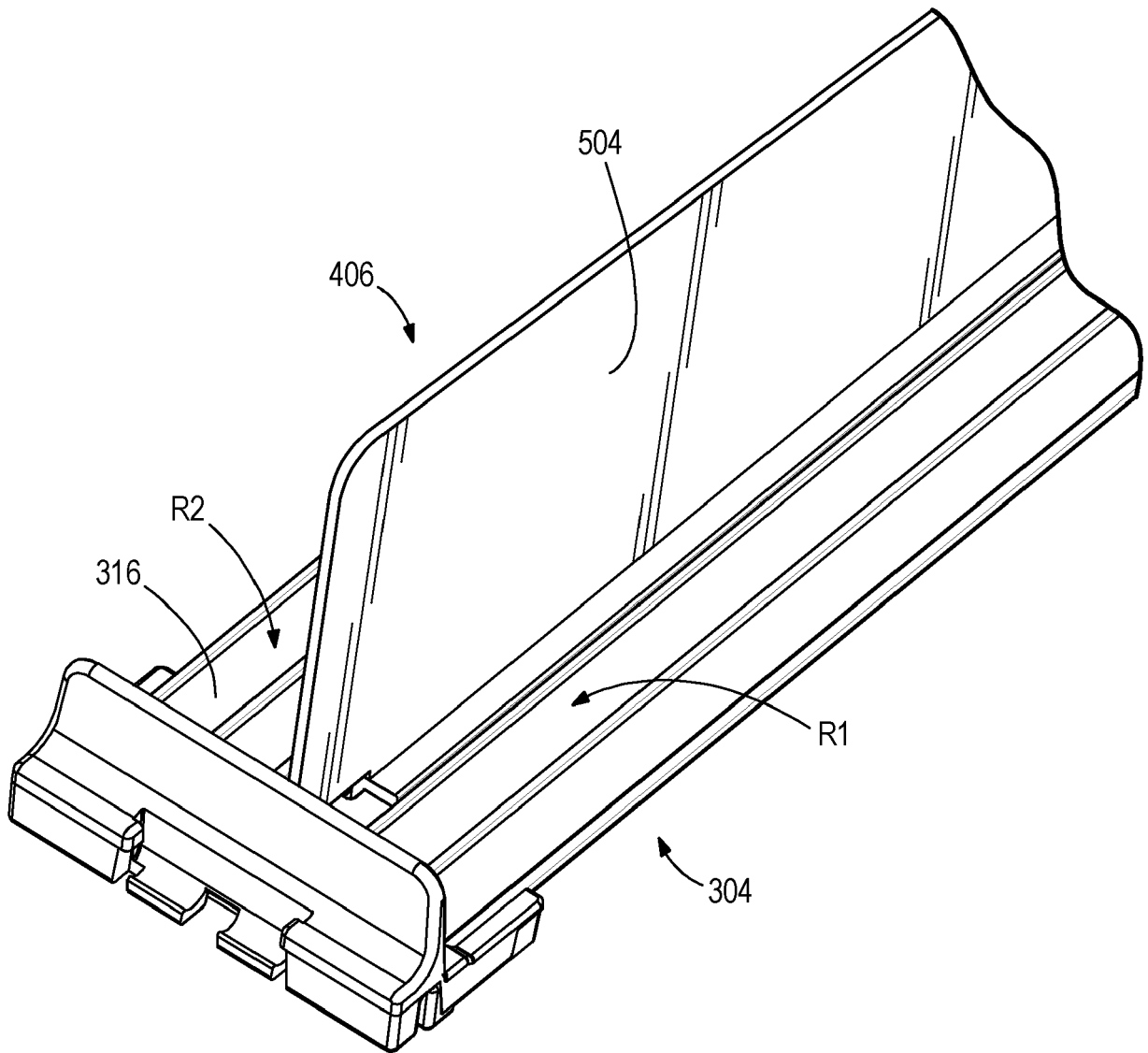


FIG. 26



EUROPEAN SEARCH REPORT

Application Number

EP 24 18 0380

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EPO FORM 1503 03.82 (P04C01)

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2008/156752 A1 (BRYSON M SCOTT [US] ET AL) 3 July 2008 (2008-07-03)	1-8, 11-14	INV.
A	* figures 7,9a,9b *	9,10	A47F1/12
X	US 2005/077260 A1 (MUELLER PAUL A [US] ET AL) 14 April 2005 (2005-04-14)	15	
A	* figure 9 *		
X	US 5 111 942 A (BERNARDIN DIDIER [FR]) 12 May 1992 (1992-05-12)	1,12	
A	* figure 6 *		
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			A47F
Place of search		Date of completion of the search	Examiner
The Hague		27 September 2024	Martinez Valero, J
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27 - 09 - 2024

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