

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
28 April 2005 (28.04.2005)

PCT

(10) International Publication Number
WO 2005/037027 A1

(51) International Patent Classification⁷: **A47F 5/00**

(21) International Application Number:
PCT/US2004/033030

(22) International Filing Date: 6 October 2004 (06.10.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/686,096 14 October 2003 (14.10.2003) US
10/854,991 27 May 2004 (27.05.2004) US

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

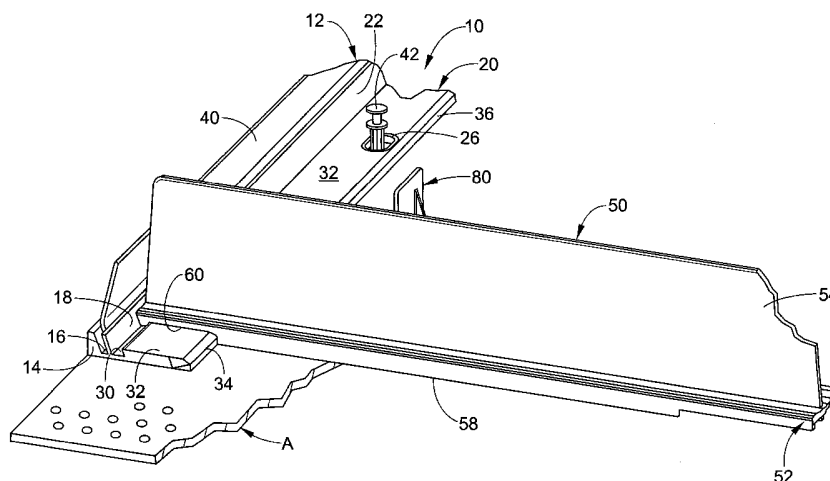
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

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(54) Title: ADJUSTABLE SHELVING SYSTEM



(57) Abstract: A shelving system includes an elongated mounting member (10, 190, 230, 280, 310, 340, 360, 380, 410, 440, 470, 490, 510, 610) operationally securable to an associated shelf A. The mounting member includes an approximately vertically oriented wall (12, 192, 232, 282, 312, 342, 362, 382, 412, 442, 472, 492, 512, 612), and an approximately horizontally oriented wall (20, 196, 236, 286, 316, 346, 366, 386, 416, 446, 474, 494, 514, 620). A track (676) is received on said mounting member in a sliding manner. The track extends approximately transversely to a longitudinal axis of the associated shelf. The track includes an elongated rail (677, 678) extending longitudinally along the track, and a pusher (692) slidably mounted in relation to the rail. A divider (50, 210, 250, 650, 840) is received on the mounting member in a non-sliding manner, wherein the divider extends approximately transversely to the longitudinal axis of the associated shelf. The divider is spaced from the track. In another embodiment, a combination divider and track (50, 210, 2,50, 840) is received in a non-sliding manner on the mounting member.



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

ADJUSTABLE SHELVING SYSTEM

[0001] FIELD OF THE INVENTION

[0002] The present invention generally relates to adjustable shelving systems. More particularly, the present invention relates to adjustable forward feeding display shelving system for storing and displaying merchandise of a variety of shapes and sizes and urging such merchandise towards the front of a shelf. The shelving system is configured to organize merchandise on the shelf into rows.

[0003] BACKGROUND OF THE INVENTION

[0004] Shelving is used extensively for stocking and storing products or merchandise in a variety of stores. Most stores simply employ shelves on which merchandise is stocked. In such stores if the shelves are not at eye level, it is difficult for the customer to see the items being displayed unless they are located adjacent the front edge of the shelf. Such conventional shelves also make it difficult to rotate the product on the shelves, which involves moving the older stock to the front of the shelf and positioning new stock behind the older stock. This has to be done manually by an employee. Thus, for a number of important merchandising considerations, it is desirable that the merchandise be displayed at the front of a shelf so that the customer can see the merchandise and be induced to purchase such merchandise. For example, if goods are perishable or are subject to becoming stale (e.g. cigarettes, fruit juices, dairy products or any item with an expiration date or a freshness date) it is important that the articles be removed in a first in first out basis to maintain freshness. As mentioned, if the merchandise is not displayed at the front of the shelf, it may not catch the shopper's eye, which may cost the merchant sales.

[0005] In order to automatically move an item forward as the one before it is removed, numerous forward feed devices have been proposed. These devices generally fall into three categories. The first category is inclined tracks, which rely on gravity to feed, slide or roll products forward. Gravity feeding is somewhat unpredictable in that various materials slide easier than others because of different weights and frictional interfaces between the products and the track. A second category employs conveyor belts, which still use gravity to effect forward movement. These devices are typically cumbersome, expensive and complicated due to the

need to properly tension and track the conveyor belts. A third category uses spring biased paddles in a pusher system to feed the product forward. Such pusher systems have been found useful for certain merchandise.

[0006] Forward feed devices are usually associated with divider walls. Normally, a divider wall is located on either side of, for example, a pusher system. Both the pusher system and the divider wall are mounted to at least a front rail or front mounting member in order to allow a spacing of the pusher systems and divider walls on a shelf. In some known systems, the divider walls are separate from the pusher systems. In others, the divider walls and pusher systems are of one piece. In either case, the divider walls and pusher systems can be slidably mounted on the front rail or mounting member. This, however, has some disadvantages. Such disadvantages have to do with the fact that as the merchandise is being urged forward by the pusher, the merchandise may urge the dividers to slide laterally away from each other along the mounting member thus interfering with adjacent rows of merchandise, possibly making such merchandise more difficult to retrieve. This is particularly true with cans and other merchandise having rounded sides, since with such merchandise one item can rotate in relation to another as it is being pushed forward.

[0007] Certain merchandising systems employ a design in which the divider wall and the pusher are locked to a front rail or mounting member so as to prevent a sideward sliding thereof. However, with these known designs, the dividers and the pusher systems have to be physically removed from contact with the front rail in order to provide lateral adjustability thereto. The known systems also have other disadvantages.

[0008] Accordingly, it has been considered desirable to develop a new improved shelf divider system which would overcome the foregoing difficulties and others while providing better and more advantageous overall results.

[0009] SUMMARY OF THE INVENTION

[0010] According to one aspect of the present invention, a shelving system comprises an elongated mounting member selectively securable to a front portion of an associated shelf. The mounting member comprises an approximately horizontally

oriented wall. A raised area is located on the horizontally oriented wall. The raised area includes a front face which is oriented at an acute angle relative to a horizontal plane. A track is received on the mounting member in a sliding manner, wherein the track extends rearwardly over the associated shelf. A flange protrudes from and extends transversely along a bottom face of said track, wherein said flange frictionally engages the front face to retard sideward sliding motion of the track in relation to the mounting member.

[0011] According to a further aspect of the present invention, a shelving system comprises an elongated mounting member operationally securable to an associated shelf, the mounting member comprising an approximately vertically oriented wall and an approximately horizontally oriented wall. A track is received on the mounting member in a sliding manner, wherein the track extends approximately transversely to a longitudinal axis of the associated shelf. The track comprises an elongated rail extending longitudinally along the track and a pusher slidably mounted in relation to the rail. A divider is received on the mounting member in a non-sliding manner, wherein the divider extends approximately transversely to the longitudinal axis of the associated shelf. The divider is spaced from the track.

[0012] According to yet another aspect of the present invention, a shelving system comprises an elongated mounting member operationally securable to a front portion of an associated shelf, the mounting member comprising an approximately vertically oriented wall and an approximately horizontally oriented wall. A track is received on the mounting member in a sliding manner, wherein the track extends rearwardly over the associated shelf. An elongated rail extends longitudinally along the track. A spring urged pusher is slidably mounted in relation to the rail. A divider is received on the mounting member in a non-sliding manner, wherein the divider extends rearwardly over the associated shelf. The divider is spaced from the track. A slot extends transversely along the bottom face of the divider. A first set of teeth extend at least partially from a face of the mounting member and a second set of teeth extend from the divider adjacent the slot. The second set of teeth engage the first set of teeth to retard a sideward sliding motion of the divider in relation to the mounting member.

[0013] According to a yet further aspect of the present invention, a merchandising system comprises an elongated mounting member operationally securable to the front portion of an associated shelf and extending along a longitudinal axis thereof. The mounting member comprises an approximately vertically oriented wall, an approximately horizontally oriented wall, and a first set of teeth extending at least partially from a face of said mounting member approximately horizontally oriented wall. A plurality of spaced tracks are received on the mounting member in a sliding manner wherein the tracks extend rearwardly over the associated shelf, each of the tracks including a pusher slidably mounted thereon. A plurality of spaced dividers are received on the mounting member in a non-sliding manner, each of the dividers including a second set of teeth extending from the divider. The second set of teeth engage the first set of teeth to retard a sideward sliding motion of each divider in relation to the mounting member.

[0014] Still other aspects of the present invention will become apparent to those of average skill in the art upon a reading and understanding of the following detailed specification.

[0015] DETAILED DESCRIPTION OF THE DRAWINGS

[0016] The present invention may take physical form in certain parts and arrangements of parts, several embodiments of which will be described in detail in this specification and illustrated in the accompanying drawings, which form a part hereof and wherein:

[0017] FIGURE 1 is a perspective view of a shelving system including a shelf divider mounted on a front rail or mounting member in a non-slidable manner according to a first embodiment of the present invention;

[0018] FIGURE 2 is a reverse side elevational view of the system of FIGURE 1;

[0019] FIGURE 3 is an enlarged cross-sectional view of the system of FIGURE 2 along line 3-3;

[0020] FIGURE 4 is an enlarged cross-sectional view of the system of FIGURE 2 along line 4-4;

[0021] FIGURE 5 is an enlarged cross-sectional view of the system of

FIGURE 2 along line 5-5;

[0022] FIGURE 6 is a greatly enlarged reverse cross-sectional view, partially broken away, of a portion of the shelf divider of FIGURE 1;

[0023] FIGURE 7 is a greatly enlarged reverse cross-sectional view of the front rail or mounting member of FIGURE 1;

[0024] FIGURE 8 is an enlarged reverse view of a front portion of the system of FIGURE 1 with the shelf divider in the process of becoming locked into place on the front rail or mounting member;

[0025] FIGURE 9 is an enlarged perspective view of a rear end of the shelf divider of FIGURE 1 with a paddle thereof being shown in a fully retracted position;

[0026] FIGURE 10 is a perspective view of an end divider mounted to the front rail of FIGURE 1;

[0027] FIGURE 11 is an enlarged perspective view of a mounting foot of the end divider of FIGURE 10;

[0028] FIGURE 12 is an enlarged perspective view of the end divider of FIGURE 10, without the mounting foot;

[0029] FIGURE 13 is a perspective view of a shelving system with a shelf divider and a mounting member or rail according to a second embodiment of the present invention;

[0030] FIGURE 14 is a side elevational view of the system of FIGURE 13;

[0031] FIGURE 15 is a perspective view of a shelf divider system employing a rear mounting member or rail and a shelf divider according to a third embodiment of the present invention;

[0032] FIGURE 16 is an enlarged reverse side elevational view of the system of FIGURE 15;

[0033] FIGURE 17 is a perspective view of a rail or mounting member according to a fourth embodiment of the present invention;

[0034] FIGURE 18 is a top plan view of a mounting member according to a fifth embodiment of the present invention;

[0035] FIGURE 19 is a reduced side elevational view of the rail of FIGURE 17;

[0036] FIGURE 20 is a side elevational view of a mounting member according

to a sixth embodiment of present invention;

[0037] FIGURE 21 is a side elevational view of a mounting member according to a seventh embodiment of the present invention;

[0038] FIGURE 22 is a reduced side elevational view of the mounting member rail of FIGURE 18;

[0039] FIGURE 23 is a perspective view of a mounting member according to a ninth embodiment of the present invention;

[0040] FIGURE 24 is a perspective view of a mounting member according to a tenth embodiment of the present invention;

[0041] FIGURE 25 is a side elevational view of a mounting member according to an eleventh embodiment of the present invention;

[0042] FIGURE 26 is a side elevational view of a mounting member according to a twelfth embodiment of the present invention;

[0043] FIGURE 27 is a side elevational view of a mounting member according to a thirteenth embodiment of the present invention;

[0044] FIGURE 28 is a front perspective view of a shelving system including a shelf divider mounted on the mounting member and a separate slidable track with a paddle or pusher thereon according to a fourteenth embodiment of the present invention;

[0045] FIGURE 29 is an enlarged rear perspective view of the system of FIGURE 28;

[0046] FIGURE 30 is an enlarged side elevational view, partially in cross-section, of a front portion of the system of FIGURE 28 along a first plane;

[0047] FIGURE 31 is an enlarged side elevational view, partially in cross-section, of a front portion of the system of FIGURE 28 along a second plane;

[0048] FIGURE 32 is a top perspective view of a track of FIGURE 28;

[0049] FIGURE 33 is a bottom perspective view of the track of FIGURE 32;

[0050] FIGURE 34 is an enlarged rear perspective view of a paddle of FIGURE 28;

[0051] FIGURE 35 is an enlarged front perspective view of the paddle of FIGURE 34;

[0052] FIGURE 36 is a front perspective view of a shelf divider of FIGURE 28;

[0053] FIGURE 37 is a bottom perspective view of the shelf divider of FIGURE 36;

[0054] FIGURE 38 is an enlarged rear view of the track, the paddle, and the mounting member of FIGURE 28, partially in cross-section;

[0055] FIGURE 39 is an enlarged side elevational view, in cross-section, of the track and the paddle of FIGURE 28 with the paddle in the retracted and retained position;

[0056] FIGURE 40 is a perspective view of a left end shelf divider mounted to an associated shelf according to a fifteenth embodiment of the present invention;

[0057] FIGURE 41 is a perspective view of a mounting member according to a sixteenth embodiment of the present invention;

[0058] FIGURE 42 is a perspective view of a left end shelf divider according to a seventeenth embodiment of the present invention;

[0059] FIGURE 43 is a perspective view of a right end shelf divider according to an eighteenth embodiment of the present invention;

[0060] FIGURE 44 is a front perspective view of a right end shelf divider including a pusher or paddle mounted on a divider wall according to a nineteenth embodiment of the present invention; and,

[0061] FIGURE 45 is a rear perspective view of the shelf divider and pusher of FIGURE 44 showing a spring for biasing the pusher.

[0062] DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0063] Referring now to the drawings, wherein the showings are for purposes of illustrating several preferred embodiments of the invention and not for purposes of limiting the same, FIGURE 1 illustrates a first embodiment of a shelf divider system according to the present invention. In this embodiment, a mounting member or front rail 10 includes a vertically oriented wall 12. With reference also to FIGURE 7, the vertically oriented wall 12 includes a first section 14, a first groove 16 and a second section 18. Also provided on the mounting member 10 is a horizontally oriented wall 20. Disposed between the horizontally oriented wall section and the vertical wall section 12 is a second groove 22. There is a recessed portion 26 with an opening

28 located in the horizontal wall 20. The wall 20 includes a front face 30, a top face 32 and a back face 34. Defined at the intersection of the top face 32 and the back face 34 is a first row or set of teeth 36.

[0064] Mounted in the first groove 16 is a front fence 40, as can be seen in FIGURES 1 and 8. As shown in FIGURE 1, a suitable conventional fastener 42 can extend through the opening 28 in the horizontal wall 20 of the mounting member 10 so as to secure the mounting member in place on a subjacent shelf A, which has suitable apertures for this purpose. It should be appreciated that a plurality of such openings 28 may be provided on the front rail 10. It should also be appreciated that the fastener 42 is located in the recessed portion 26 of the horizontal wall so as to not interfere with shelf dividers or pusher tracks secured to the front rail. It can be appreciated from FIGURE 1 that the mounting member 10 can be somewhat L-shaped in side view. Of course, the mounting member could also have other shapes, if so desired.

[0065] In this embodiment, a shelf divider and pusher track, which is of one piece, is disclosed. However, it should be appreciated that separate shelf divider walls and pusher tracks can also be employed with the mounting member or front rail 10 disclosed herein.

[0066] With continued reference to FIGURE 1, a shelf divider 50 is mounted on the mounting member or front rail 10. The shelf divider includes a horizontally oriented base wall 52 and a vertically oriented divider wall 54. Located on a bottom face 58 the base 52 is a transversely extending slot 60. With reference now again to FIGURE 6, the slot 60 includes a front face 62, a roof 64 and a rear face 66. Extending forwardly from the rear face are a set of rear protrusions 68. Defined on such protrusions is a second row or set of teeth 70.

[0067] With reference now to FIGURE 3, the shelf divider base wall 52 has a first section 72 and a second section 74. Defined on the second section is a flange or rail 76. Positioned adjacent the flange is a channel or groove 78. A pusher member 80 is slidably mounted on the base wall second section 74. With reference now to FIGURE 4, the pusher member 80 includes a vertically extending pusher wall 82 and a base wall 84. Connecting the pusher wall and the base wall are first and

second brace walls or gussets 86 and 88.

[0068] Depending from the base wall 84 is a foot 90. In this embodiment, a first portion 92 of the foot can be aligned with the first brace wall 86, as best shown in FIGURE 4. A second portion or flange 94 of the foot can be oriented approximately normal to the first portion 92 and can be parallel to a plane of the base wall 84. Thus, a somewhat U-shaped section is formed for accommodating the flange or rail 76 extending from the base wall second section 74. Protruding from a lower surface 96 of the base wall 84 is a rib or protrusion 98. The protrusion includes a pair of side walls 100 and 102. It should be apparent from FIGURES 4 and 5 that the second side wall 102 is spaced a considerable distance from a first side wall 104 of the channel or groove 78 but that the protrusion first side wall 100 is located adjacent the groove second side wall 106. Located on the base wall second section 74 are top rails 108 and bottom rails 110, as illustrated in FIGURES 4 and 5.

[0069] With reference again to FIGURE 3, a coil spring 120 can be housed on the pusher member 80. More particularly, the coil spring is supported on the base wall 84 between the pair of brace walls. A section 122 of the coil spring extends through a slot 124 in the pusher wall 82. A front end (not illustrated) of the coil spring can be secured to a front portion of the shelf divider. In use, as the pusher 80 reciprocates on the track formed by a flange 76, the channel 78 and the rails 108 and 110, the pusher base 84 and foot 90 ride on the top and bottom rails 108 and 110 such that the lower surface 96 of the base wall contacts at least one of the top rails 108 while the second portion 94 of the foot or guide contacts the bottom rail 110. Due to the cooperation of the foot 90 and the protrusion 98 with the base wall second section 74, the pusher 80 can not be lifted away from the track. Rather, the pusher must be slid to an end of the track to be subsequently removed.

[0070] With reference now to FIGURE 9, it can be seen that when the pusher 80 is fully retracted, it can at least partially extend past a rear wall 130 of the shelf divider 50. However, the pusher does not fall off the shelf divider as a rear edge 132 of the foot second portion 94 contacts a depending section 134 of the rear wall 130. Since the pusher can be retracted past the rear end of the divider member 50, a system of the present invention can be used on a shelf that is somewhat deeper than

is the length of the divider 50. Thus, the present system is capable of accommodating shelving of the varying depths. Of course, if the shelf is no deeper than the length of divider 50 then no part of the pusher will be able to retract past the end of the divider as the pusher will contact the rear surface of the shelf. In order to stiffen the two brace walls 86 and 88, stiffening ribs 136 can be employed, as is shown in FIGURE 9. Moreover, the pusher wall 82 can have an enlarged upper end 138 in order to better accommodate wider merchandise that is being urged forwardly on the track by the pusher member.

[0071] With reference again to FIGURES 6 and 7, it can be seen that the angle of the front face 30 in relation to a plane of the second groove 22 can be, for example, 71° . In contrast, the angle between the front face 62 and the roof 64 of the slot 60 located in the shelf divider 50 can be 70° . As a result, when the shelf divider is completely seated on the mounting member 10 a pinching action takes place between the front face 62 and roof 64 of the divider 50 and the front face 30 and top face 32 of the mounting member 10. Such pinching action locks the shelf divider 50 onto the mounting member to retard a sideward sliding motion of the shelf divider on the mounting member. Such pinching action is possible due to the resilient nature of the materials from which the shelf divider and the mounting member are made. If desired, these two components can be made of suitable conventional resilient materials, such as known thermoplastic materials. These will allow some relative flexing between the two as the shelf divider is mounted on or detached from the mounting member or rail. The two components can be made from the same material or from different materials. It should, of course, be appreciated that other suitable angles could be provided on the interengaging surfaces of the mounting member and the shelf divider to provide the desired pinching action or locking action.

[0072] Of course, such sideward sliding movement is also retarded by the interengaging sets of teeth 36 and 70 on the mounting member and the shelf divider respectively. To this end, the back face 34 is angled forwardly by 5° from the vertical. Similarly, the rear protrusions 68 are angled forwardly by 5° from the vertical. Thus, there is a mating engagement of the mounting member back face

with the rear protrusion 68 of the shelf divider 50. In this embodiment, the pinch point occurs only at the engagement of the mounting member front face 30 with the shelf divider front face 62. However, it should be appreciated that such pinch points could be located at other positions along the engagement surfaces of the mounting member and shelf divider.

[0073] As is best seen from FIGURE 8, the locking action of the shelf divider 50 on the mounting member 10 takes place when the shelf divider is fully lowered onto the mounting member. However, when a rear end of the shelf divider is slightly lifted, the shelf divider is rotated in relation to the mounting member. This action unlocks the shelf divider from the mounting member, disengages the two sets of teeth 36 and 70 and allows the shelf divider to be moved along the mounting member to a desired location. To this end, the shelf divider can either be slid along the mounting member or simply pulled away from the mounting member and laterally moved to the desired location and then reconnected with the mounting member.

[0074] With reference now to FIGURE 10, an end wall 150 for the shelf divider system includes a base 152 and an upright portion 154. With reference also to FIGURE 12, a transversely extending slot 156 is located adjacent a first end of the end wall 150. The slot 156 is adapted to accommodate the horizontal wall 20 of the mounting member 10. A front edge 157 of the divider is seated in the second groove 22. Also provided for the end wall 150 is a recessed area 158. Located in the recessed area are spaced first and second sockets 160 and 162. Cooperating with the end wall 150 is a flange 170, as illustrated in FIGURE 11. The flange includes a first arm 172, and, spaced therefrom, a second arm 174. Each of these arms have a tooth 176 positioned on their distal end. The arms are adapted to extend through the sockets 160 and 162 so that the teeth protrude past the far edge of the base in order to clip or lock the flange 170 into place in the end wall 150. Provided on the flange are a plurality of slots 178 and apertures 180. These are meant to accommodate suitable conventional fasteners (not shown) in order to secure the end wall in place on the associated shelf.

[0075] With reference now to FIGURE 13, a second embodiment of a shelf divider system according to the present invention is there illustrated. In this

embodiment, a rail or mounting member includes a vertically oriented wall 192 having a first groove 194 and a horizontally oriented wall 196 as well as a second groove 198. Selectively secured to the rail is a divider 210 having a base wall 212 and a vertically oriented dividing wall 214. A transverse slot 218 extends across a bottom surface of the base. The base thus has a front edge 220 which is adapted to fit into the second groove 198 while the slot extends over the horizontal wall 196, as best shown in FIGURE 14. In this embodiment, no teeth are employed. Rather, a smooth set of engaging walls is disclosed in this embodiment. Thus, the set of engaging walls can be even, free from irregularities, roughness or projections. The locking feature is achieved by suitably configuring the engaging surfaces of the slot and the mounting member horizontal wall, along the lines discussed in connection with FIGURES 6 and 7 hereinbefore.

[0076] In other words, a locking engagement can be achieved when the divider 210 is fully lowered onto the mounting member 190 because of the differing angles provided for the mating surfaces of the mounting member and the divider. Even a 1° difference in the angles of the front face 198 of the horizontal wall 190 and the front face of the slot 218 is adequate to provide the desired pinching or locking action. Such a 1° difference was disclosed in the embodiment of FIGURES 6 and 7. Of course, other suitable angular relationships between the mating faces could also be employed. In order to detach the divider 210 from the mounting member 190, an installer merely has to raise a distal end 222 of the divider 210 thereby disengaging the locking feature. At this point, the divider can then be slid in relation to the mounting member 190 along the second groove 198. Alternatively, the divider can be detached from the mounting member and then moved in relation to it. It should be appreciated that the mounting member or rail can be secured to a subjacent shelf adjacent a front edge of the shelf or adjacent a rear edge of the shelf.

[0077] With reference now to FIGURE 15, a third embodiment of a shelf divider system according to the present invention is there illustrated. In this embodiment, a rear rail 230 is employed, instead of a front rail. The rear rail or mounting member includes a vertically oriented wall 232, a groove 234, and a horizontally oriented wall 236. The horizontally oriented wall includes a top surface

238 and a front surface 240. A first set of teeth 242 is located at the intersection of the top surface and front surface of the horizontally oriented wall 236. Selectively secured to the rear rail 230 is a divider 250. The divider includes a base wall 252 and a vertically oriented divider wall 254. A transverse groove or slot 256 is defined in the base wall 252 adjacent a rear end of the divider. The location of the slot 256 is such as to accommodate a depending rear end 258 of the divider base wall.

[0078] With reference also to FIGURE 16, the divider rear end 258 is shown as being seated in the groove 234. Provided in the slot 256 of the divider is a second set of teeth 260. These engage the first set of teeth 242 on the rear rail 230 so as to lock the divider in place on the rear rail. The divider 250 also includes a track 264 on which is mounted a pusher 268. The pusher can reciprocate along the track from adjacent the rear rail 230 to a forward position on a shelf on which the system is mounted. In this embodiment, a front wall 270 is provided for the track 264. The front wall can be of one piece with the divider 250 or it can be a separate element that is suitably connected to either the divider or to the shelf on which the divider is mounted.

[0079] With reference now to FIGURE 17, a fourth embodiment of a mounting member 280 is there illustrated. In this embodiment, the mounting member includes a vertically oriented wall 282, a slot 284 and a horizontally oriented wall 286. The horizontally oriented wall includes a top surface 290 and a rear surface 292. A first set of teeth 294 is located at the intersection of the top surface and the rear surface. In this embodiment, a second set of teeth 296 is located in the slot 284. The teeth are spaced from a front surface 298 of the horizontally oriented wall and may contact a rear face 302 of the vertically oriented wall.

[0080] With reference now to FIGURE 18, a fifth embodiment of a mounting member 310 according to the present invention is there illustrated. In this embodiment, the mounting member includes a vertically oriented wall 312, a slot 314 and a horizontally oriented wall 316. The horizontally oriented wall has a top surface 320, a front surface 322 and a rear surface 324. A set or row of teeth 328 is located in the slot 314. In this embodiment, the set of teeth does not contact either the front surface 322 of the horizontally oriented wall or a rear surface 330 of the vertically

oriented wall. Rather, it is spaced from both. This can best be seen in FIGURE 22 of the drawings.

[0081] With reference now to FIGURE 19, a sixth embodiment of a mounting member 340 according to the present invention is there illustrated. In this embodiment, the mounting member includes a vertical wall 342, a slot 344 and a horizontal wall 346. The horizontal wall includes a top surface 350 and a front surface 352. A set of teeth 356 is located in the slot 344. In this embodiment, the set of teeth contact a rear surface 358 of the vertical wall 342, but do not contact the front surface 352 of the horizontal wall 346.

[0082] With reference now to FIGURE 20, a seventh embodiment of a mounting member 360 is there illustrated. In this embodiment, the mounting member includes a vertical wall 362, a slot 364 and a horizontal wall 366. The horizontal wall has a top surface 370 and a front surface 372. A set of teeth 376 extend in the slot 364. The set of teeth contact the front surface 372 of the vertically oriented wall but do not contact a rear surface 378 of the vertically oriented wall.

[0083] With reference now to FIGURE 21, an eighth embodiment of a mounting member 380 is there disclosed. In this embodiment, the mounting member comprises a vertical wall 382, a slot 384 and a horizontal wall 386. The horizontal wall includes a top surface 390 and a front surface 392. A set of teeth 396 extends along the slot 384. In this embodiment, the set of teeth extend from the horizontal wall front surface 392 to a rear surface 398 of the vertical wall. Thus, the set of teeth span the entire width of the slot 384.

[0084] With reference now to FIGURE 23, a ninth embodiment of a mounting member 410 according to the present invention is there illustrated. In this embodiment, the mounting member or rail includes a vertical wall 412, a slot 414 and a horizontal wall 416. The horizontal wall includes a top surface 420, a front surface 422 and a rear surface 424. In this embodiment, a set of teeth 428 is defined on the top surface 420 of the horizontal wall 416. No teeth are defined on either the front surface 422 or the rear surface 424 of the horizontal wall 416. Nor are there any teeth defined on the vertical wall 412.

[0085] Finally, FIGURE 24 illustrates a tenth embodiment of a mounting

member according to the present invention. In this embodiment, the mounting member includes a vertical wall 442, a slot 444 and a horizontal wall 446. The horizontal wall includes a top surface 450, a front surface 452 and a rear surface 454. In this embodiment, a first set of teeth 458 is located on the top surface 450 on the horizontal wall. A second set of teeth 460 is located at the intersection of the horizontal wall top surface 450 and rear surface 454. A third set of teeth 462 is located in the slot 444. The third set of teeth does not contact either the front surface 452 of the horizontal wall or a rear surface 464 of the vertical wall. Rather, as in the embodiment illustrated in FIGURES 18 and 22, the third set of teeth is only connected to the base of the slot 444.

[0086] It should be appreciated that the various mounting members illustrated in, e.g. FIGURES 17-24 can be positioned at either the front edge of a shelf or the rear edge of the shelf, just as the mounting member of the embodiment of FIGURE 1 is positioned adjacent a front edge of the shelf and mounting member of the embodiment of FIGURE 15 is positioned adjacent the rear edge of the shelf.

[0087] In the previous embodiments, the mounting member is shown to have a vertical wall, a horizontal wall and a slot defined between these two walls. However, it should be appreciated that other types of mounting member designs are also contemplated. For example, as disclosed in FIGURE 25, a mounting member 470 can have a somewhat different configuration as well. In this embodiment, the mounting member 470 includes a vertical wall 472 and a horizontal wall 474. In this design, there is no separate slot defined between the vertical wall and the horizontal wall. Also, in this design, there is a raised area or plateau 476 located on the horizontal wall. Mounted atop the raised area 476 is a set or row of teeth 478. As in the earlier designs, the teeth can cooperate with suitable teeth located on a divider element, a track element or a combination divider and track assembly, as previously disclosed herein. It can be appreciated that the cooperating divider, track or combination divider and track assembly would need to be suitably configured in order to be accommodated on the mounting member.

[0088] With reference now to FIGURE 26, a yet twelfth version of a mounting member 490 is there disclosed. In this embodiment, the mounting member includes

a vertical wall 492 and a horizontal wall 494. A set of teeth 496 is disposed on an upper surface 498 of the horizontal wall. In this design, the cooperating divider wall, pusher track or combination divider wall and pusher track is seated on the mounting member horizontal wall 494 and engages the teeth on the horizontal wall so as to retard a sideways sliding motion of the cooperating member. It can be appreciated that the cooperating member would need to be suitably configured for this purpose.

[0089] In FIGURE 27, there is disclosed a yet thirteenth embodiment of a mounting member 510 according to the present invention. In this embodiment, the mounting member includes a vertical wall 512 and a horizontal wall 514. The horizontal wall is provided with a raised area 516. In this embodiment, a row or set of teeth 518 are located on an upper surface 520 of the horizontal wall. The teeth are spaced both from the front surface 522 of the raised area 516 and a rear surface 524 of the vertical wall 512. For this embodiment, the cooperating divider wall, pusher track or combination divider wall and pusher track is suitably configured so as to engage the teeth 518. Thus, the cooperating member (not shown) can also have suitable teeth (somewhat like the teeth 70 illustrated in Fig. 6) but depending from the bottom surface thereof adjacent the front end of the cooperating member. In other words, such teeth could depend from the front face of the cooperating member, such as front face 62 shown in Fig. 6, to engage the teeth 518. The cooperating member can also be configured to lockingly engage the raised area front surface 522, as discussed in connection with several of the embodiments previously mentioned.

[0090] Referring now to FIGURE 28, a fourteenth embodiment of a shelf divider system according to the present invention is illustrated. In this embodiment, a mounting member or front rail 610 includes a vertically oriented wall 612. With reference also to FIGURES 29 - 31, the vertically oriented wall 612 includes a first section 614, a first groove 616 and a second section 618. Also provided on the mounting member 610 is a horizontally oriented wall 620. Disposed between the horizontally oriented wall section and the vertical wall section 612 is a second groove 622. The wall 620 includes a front face 630, a top face 632 and a back face 634. Defined at the intersection of the top face 632 and the back face 634 is a rounded

corner 635. Located on the back face 634 is a first row or set of teeth 636. In fact, the wall 620 may be termed a raised area or plateau, since its top face 632 is located at a higher elevation than is the surface of the groove 622.

[0091] Mounted in the first groove 616 is a front fence 640, as can be seen in FIGURES 30 and 31. A recessed portion with an opening can be located in the horizontal wall (not illustrated) for accommodating fasteners to secure the front rail 610 to the shelf A, as in the earlier embodiments. It can be appreciated from FIGURES 29 and 30 that the mounting member 610 can be somewhat L-shaped in side view. Of course, the mounting member 610 could also have other shapes, if so desired. In this embodiment, a shelf divider 650 and a pusher track 676, which are of two separate pieces, are disclosed.

[0092] With reference now to FIGURES 28, 29 and 31, the shelf divider 650 is mounted on the mounting member 610. The shelf divider 650 includes a horizontally oriented base wall 652 and a vertically oriented divider wall 654. Located on a bottom face 658 of the base wall 652 is a transversely extending slot 660. The slot 660 includes a roof 665 and a rear face 667. The slot 660 also includes a front face 662 which is defined by a rear edge of a flange 663. The flange 663 extends transversely along the bottom face 658 of the base wall 652. The flange 663 includes a front face 664 and a bottom face 666. Extending forwardly from the slot rear face 667 are a set of rear protrusions or teeth 668 as best shown in FIGURE 37. With reference now again to FIGURES 28 and 29, the shelf divider base wall 652 has a first side flange 671 and a second side flange 672. The side flanges 671 and 672 can include longitudinally extending rails or raised areas 673 and 674 for supporting merchandise thereon. The first side flange 671 can include an outwardly extending spacer member 675 which extends along a majority of the length of the side flange 671.

[0093] As shown in FIGURES 28-30, the separate track 676 can be slidably mounted to the mounting member 610. The track 676 includes a pair of elongated rails 677 and 678 extending longitudinally along the edges of a top surface of the track 676. A series of longitudinally extending guide sections 679 and 680 are positioned adjacent the rails 677 and 678 and define a central channel 681

therebetween. The track 676 includes a horizontally oriented base wall 682 which can rest upon the shelf. Located on a bottom face 683 of the base wall 682 is a transversely extending slot 684. With reference to FIGURE 30, the slot 684 includes a roof 686 and a rear face 687. The slot 684 also includes a front face 685 which is defined by a rear edge of a flange 688. The flange 688 extends transversely along the bottom face 683 of the base wall 682. The flange 688 includes a front face 689 and a bottom face 690.

[0094] With reference now to FIGURES 34 and 35, a pusher member 692 is shown which can be slidably mounted on the track 676 in a reciprocating manner. The pusher member 692 includes a vertically extending pusher wall 693 and a base wall 694. Connecting the pusher wall 693 and the base wall 694 are first and second brace walls or gussets 696 and 698. As described above, the two brace walls 696 and 698 can be stiffened with stiffening ribs 726. Depending from the base wall 694 is a foot 700. In this embodiment, a first portion 702 of the foot extends normally from the base wall 694 and is positioned between the gussets 696 and 698. A second portion or flange 703 of the foot can be oriented approximately normal to the first portion 702 and can be parallel to a plane of the base wall 694. Similarly, a third portion or flange 704 of the foot can be oriented approximately normal to the first portion 702 and can be parallel to the plane of the base wall 694. Thus, a pair of somewhat U-shaped sections are formed for accommodating the guide sections 679 and 680 (refer to FIGURE 38), whereby the first portion 702 is positioned in the central channel 681 and flanges 703 and 704 can slide underneath guide sections 679 and 680.

[0095] It is to be appreciated that a coil spring 720 can be housed on the pusher member 692. More particularly, the coil spring 720 can be supported on a support wall 721 extending between the pair of brace walls 696 and 698. A front end of the coil spring 720 can be secured to a front portion of the shelf divider. A central section of the coil spring 720 extends away from the pusher 692 through a slot 722 defined in the pusher wall 693. With reference now also to FIGURE 39, it can be seen that the coil spring is mounted on the support wall 721, curls around a back end thereof and then extends forwardly out through the slot 722. In use, as the pusher

692 reciprocates on the track 676 formed by the guide sections 679 and 680, the channel 681 and the rails 677 and 678, a lower surface 706 of the base wall 694 contacts and rides along the rails 677 and 678. Due to the cooperation of the foot 700 and the flanges 703 and 704 with the guide sections 679 and 680, the pusher 692 can not be lifted away from the track. Rather, the pusher 692 must be slid to an end of the track to be subsequently removed.

[0096] With reference now to FIGURES 32 and 39, track 676 includes a downward sloping section 710. It can be seen that when the pusher 692 is fully retracted, a front edge 712 of the foot 700 can be tilted downward along the sloping section 710. The front edge 712 engages a stop wall 714 located adjacent the forward end of the sloping section 710. The engagement of first portion 702 and stop wall 714 prevents movement of the pusher 692 along the track 676. In this manner, the pusher 692 can remain stationary to facilitate the stocking of sale items on the shelf system. To once again allow sliding of pusher 692, the pusher wall 693 is tilted backward to align the foot 700 with the track 676. The pusher 692 does not fall off the track as a rear edge 718 of the foot 700 contacts a depending section 715 of a rear wall 717 of the track 676. In order to connect the two rails 677 and 678, connecting ribs 713 can be employed, as is shown in FIGURES 33 and 39. It is a rearmost one of the connecting ribs which can serve as the stop wall 714. Moreover, the pusher wall 693 can have an enlarged upper end 728 in order to better accommodate wider merchandise that is being urged forwardly on the track 676 by the pusher member 692.

[0097] With reference again to FIGURE 31, it can be seen that the angle of the front face 630 of the wall 620 in relation to a plane of the second groove 622 can be, for example, 52° . The angle between the shelf divider front face 662 in relation to a plane of the roof 665 in the slot 660 can be slightly less than 52° (ie. 51°). As a result, when the shelf divider 650 is seated on the mounting member 610, a pinching action takes place between the front face 662 of the slot 660 and the front face 630 of the horizontal wall 620. Such pinching action engages the shelf divider 650 to the mounting member 610 to retard a sideward sliding motion of the shelf divider 650 on the mounting member 610. Such pinching action is possible due to the resilient

nature of the materials from which the shelf divider and the mounting member are made. If desired, these two components can be made of suitable conventional resilient materials, such as known thermoplastic materials. These will allow some relative flexing between the two as the shelf divider 650 is mounted on or detached from the mounting member 610. The two components can be made from the same material or from different materials. It should, of course, be appreciated that other suitable angles could be provided on the interengaging surfaces of the mounting member and the shelf divider to provide the desired pinching action or locking action. In this embodiment, the pinch point occurs at the engagement of the horizontal wall 620 front face 630 with the slot front face 662. However, it should be appreciated that such pinch points could be located at other positions along the engagement surfaces of the mounting member and shelf divider.

[0098] Of course, such sideward sliding movement is also retarded by the interengaging sets of teeth 636 and 668 on the mounting member 610 and the shelf divider 650 respectively. To this end, the back face 634 can be angled forwardly by 5° from the vertical. Similarly, the rear face 667 can be angled forwardly by 5° from the vertical. Thus, there is a mating engagement of the mounting member back face with the rear face 667 of the shelf divider 650.

[0099] As is best seen from FIGURE 29, the locking action of the shelf divider 650 on the mounting member 610 takes place when the shelf divider is fully lowered onto the mounting member. However, when a rear end of the shelf divider is slightly lifted, the shelf divider is rotated in relation to the mounting member. This action unlocks the shelf divider from the mounting member, disengages the two sets of teeth 636 and 670 and allows the shelf divider to be moved along the mounting member 610 to a desired location. To this end, the shelf divider can either be slid along the mounting member 610 or simply pulled away from the mounting member 610 and laterally moved to the desired location and then reconnected with the mounting member 610.

[00100] With reference again to FIGURE 30, the angle between a track front face 685 in relation to a plane of the slot roof 686 located in the track 676 can be slightly less than 52° (ie. 51°). As a result, when the track 676 is completely seated

on the mounting member 610 a pinching action takes place between the front face 685 and roof 686 of the track 676 and the front face 630 and top face 632 of the horizontal wall 620. Such pinching action retains the track 676 onto the mounting member 610 to retard a sideward sliding motion of the track 676 on the mounting member, as previously discussed in connection with other embodiments of the present invention.

[00101] As is best seen from FIGURES 29 and 30, the pinching action of the track 676 on the horizontal wall 620 only takes place when the track 676 is fully lowered onto the mounting member 610. However, when a rear end of the track is slightly lifted, the track is rotated in relation to the mounting member. This action releases the track 676 from the mounting member and allows the track 676 to be moved sideways in relation to the mounting member to a desired location. To this end, the track 676 can either be slid along the mounting member or simply pulled away from the mounting member and laterally moved to the desired location and then reconnected with the mounting member.

[00102] With reference now to FIGURE 40, an end wall 750, which can be used with the shelf divider system of FIGURES 28-39, includes a base 752 and an upright portion 754. A transversely extending slot 756 is located adjacent a forward end of the end wall 750. The end wall illustrated is used on the left end of the shelf A. With reference now to FIGURE 41, another embodiment of a mounting member is there illustrated. In this embodiment, like components are identified by like numerals with a primed (') suffix and new components are identified by new numerals. The slot 756 is adapted to accommodate a groove 758 through a horizontal wall 620' in a mounting member 610'. Provided on the base 752, proximal to a front edge 753, are a plurality of apertures 780. Mounting member 610' can also include a slot 781. The apertures 780 and slot 781 are meant to accommodate suitable conventional fasteners 784 in order to secure the end wall 750 and mounting member 610', respectively, in place on the associated shelf.

[00103] With reference now to FIGURE 42, an end wall 800 according to yet another embodiment of the invention for the shelf divider system includes a base 802 and an upright portion 804. A transversely extending slot 806 is located adjacent a

first end of the end wall 800. Similar to the description above, the slot is defined by a flange at a front end, and a back wall with teeth at a rear end. The slot 806 is adapted to accommodate, and engage with, the horizontal walls 620 and 620' of mounting members 610 and 610'. A front edge 807 of the divider can be positioned in the second groove 622 and 622'. Cooperating with the end wall 800 is a flange 810. Provided on the flange 810 is a slot 812 and an aperture 814. These are meant to accommodate suitable conventional fasteners (not shown) in order to secure the end wall 800 in place on the associated shelf. In contrast to the embodiment of FIGURE 40 wherein a front section of the end wall is secured to the shelf, in the embodiment of FIGURE 42, a rear section of the end wall is fastened to the subjacent shelf. As shown in FIGURE 42, the base 802 extends to the right of the upright portion 804, thus providing a left end wall, but it is to be appreciated that the base 802 could be reconfigured to extend to the left of the upright portion (not illustrated) to provide a right end wall.

[00104] With reference now to FIGURE 43, an end wall 820 according to another embodiment of the invention for the shelf divider system includes a base 822 and an upright portion 824. A transversely extending slot 826 is located adjacent a first end of the end wall 820. Similar to the description above, the slot is defined by a flange at a front end, and a back wall with teeth at a rear end. The slot 826 is adapted to accommodate, and engage with, the horizontal walls 620 and 620' of the mounting members 610 and 610'. A front edge 827 of the divider can be positioned in the second groove 622 and 622'. Cooperating with the base 822 of the end wall 820 is a longitudinally extending flange 830. The flange 830 assists in maintaining alignment and spacing of a separate track 676 between a divider and the end wall 820. As shown in FIGURE 43, the base 822 extends to the left of the upright portion 824 thus providing a right end wall, but it is to be appreciated that the base 822 could be reconfigured to extend to the right of the upright portion (not illustrated) to provide a left end wall.

[00105] With reference now to FIGURES 44 and 45, a different type of right end wall 840 according to yet another embodiment of the invention is there illustrated. This version of the end wall includes a base 842 and an upright portion

844. A transversely extending slot 846 is located adjacent a first end of the end wall 840. Similar to the description above, the slot is defined by a flange at a front end, and a back wall with teeth at a rear end. The slot 846 is adapted to accommodate, and engage with, the horizontal walls 620 and 620' of the mounting member 610 and 610'. A front edge 847 of the divider can be positioned in the second groove 622 and 622'. Cooperating with the base 842 of the end wall 840 is a longitudinally extending flange 850. The flange 850 assists in maintaining alignment and spacing of a separate track between a divider and the end wall 840. The upright portion 844 includes a pair of longitudinally extending slots 854 and 856. Slot 854 is adjacent an upper edge 855 of the upright portion 844. Slot 856 is adjacent a lower edge 857 of the upright portion 844. The slots 854 and 856 define a track 860 therebetween. Thus, a vertically oriented track is disclosed. End wall 840 includes a side mounted pusher 864. The pusher includes an arm 866. The ends of the arm 866 are slidingly retained in slots 854 and 856 and reciprocate along passage 860 wherein the pusher 864 is mounted to a side of the upright wall 844. The pusher 864 can be spring biased by, for example, a coil spring 870 (refer to FIGURE 45). In use, merchandise is supported, at least partially, on a pair of longitudinally extending rails 874 and 876 along an upper surface 878 of the base 842. The merchandise can be moved toward the front of the shelf by the spring biased pusher 864 along rails 874 and 876.

[00106] In the embodiments discussed hereinbefore, either a front mounting member/rail or a rear mounting member/rail was employed. However, it should be recognized that both a front rail and a rear rail can be utilized as mounting members for mounting a combination shelf divider and pusher track or separate shelf dividers and pusher tracks. The use of two rail designs in general is known in the art. Therefore, it can be appreciated that two rails or mounting members can be employed in the adjustable shelving system of the present invention.

[00107] In the various embodiments disclosed herein, the contact surface located on the divider member or track or member which cooperates with the mounting member or front rail is disclosed as being located in the slot. However, it should be appreciated that the contact surface, which can be a set of teeth, can also be located near the slot, adjoining the slot, in proximity to the slot, in the vicinity of

the slot and the like. Thus, the second contact surface does not necessarily have to lie within the slot or be contiguous with or abutting, touching or in juxtaposition with the slot. Rather, it can be in the neighborhood of the slot. The location of the second contact surface, which can be a second set of teeth, is determined by the location of the first contact surface, which can be a first set of teeth, on the mounting member or track. All that is necessary is that the two engage each other and cooperate with each other in order to retard a sideward sliding motion of the divider track or cooperating member in relation to the elongated mounting member or rail.

[00108] While the embodiments disclosed herein illustrate the use of a slot, i.e., a transverse groove or opening, it should be appreciated that other types of openings could be provided along the bottom face of the cooperating member, track or divider assembly disclosed herein. Thus, any type of suitable aperture, way, path, channel, passage or other suitable gap could be employed. For example, a set of notches could be provided along the bottom face instead of a single slot if the mounting member or rail were suitably configured. Thus, the term "slot" as used herein is intended to include all such openings, apertures, holes, orifices, passages, grooves, troughs, channels, indentations and the like.

[00109] The invention has been described with reference to preferred embodiments. Obviously, modifications and alterations will occur to others upon the reading and understanding of this specification. It is intended to include all such modifications and alterations insofar as they come within the scope of the appended claims or the equivalents thereof.

[00110] Having thus described the preferred embodiments, the invention is claimed as follows:

1. A shelving system comprising:

an elongated mounting member (10, 190, 230, 280, 310, 340, 360, 380, 410, 440, 470, 490, 510, 610) selectively securable to a front portion of an associated shelf, said mounting member comprising an approximately horizontally oriented wall (20, 196, 236, 286, 316, 346, 366, 386, 416, 446, 474, 494, 514, 620);

a raised area located on said horizontally oriented wall, said raised area including a front face (30, 298, 322, 352, 372, 392, 422, 452, 522, 630) which is oriented at an acute angle relative to a horizontal plane;

a track (676) received on said mounting member in a sliding manner, wherein said track extends rearwardly over the associated shelf; and,

a flange (688) protruding from and extending transversely along a bottom face of said track, wherein said flange frictionally engages said front face to retard sideward sliding motion of said track in relation to said mounting member.

2. The shelving system of claim 1 further including a divider wall (50, 210, 250, 650, 840) received on said mounting member in a non-sliding manner, wherein said divider wall extends rearwardly over the associated shelf.

3. The shelving system of claim 2 further including a slot (60, 218, 256, 660, 846) extending transversely along a bottom face of said divider wall;

a first set of teeth (36, 242, 294, 460, 636) extending at least partially from a rear face of said mounting member approximately horizontally oriented wall; and,

a second set of teeth (70, 260, 668) extending from said divider wall adjacent said slot, said second set of teeth engaging said first set of teeth to retard a sideward sliding motion of said divider wall in relation to said mounting member.

4. The shelving system of claim 3 wherein said divider wall further comprises a front edge (220, 847), wherein said slot is located rearwardly of said front edge.

5. The shelving system of claim 1 further including an elongated rail (677, 678) extending longitudinally along said track; and,
a spring urged pusher (692) slidably mounted in relation to said rail.

6. The shelving system of claim 5 wherein said pusher includes:
a foot (700) extending therefrom and cooperating with said rail, wherein said foot includes a front edge (712); and,
a slot (681) extending transversely along a top face of said track whereby said foot front edge is selectively engagable with said slot for retaining said pusher in a retracted position.

7. The shelving system of claim 1 wherein said mounting member further includes a first approximately vertically oriented wall (14, 192, 614, 614') and a second approximately vertically oriented wall (16, 618, 618'), said first approximately vertically oriented wall and said second approximately vertically oriented wall defining a groove (16, 194, 616, 616') therebetween for receiving a front fence (40, 640).

8. The shelving system of claim 1 further comprising a spring (120, 720) having one end mounted to said track and another end located on said pusher for biasing said pusher forwardly on said track.

9. The shelving system of claim 1 wherein at least one of said mounting member and said track comprises a resilient material to allow a relative flexing between said mounting member and said track.

10. A shelving system comprising:

an elongated mounting member (10, 190, 230, 280, 310, 340, 360, 380, 410, 440, 470, 490, 510, 610) operationally securable to an associated shelf, said mounting member comprising:

an approximately vertically oriented wall (12, 192, 232, 282, 312, 342, 362, 382, 412, 442, 472, 492, 512, 612), and

an approximately horizontally oriented wall (20, 196, 236, 286, 316, 346, 366, 386, 416, 446, 474, 494, 514, 620);

a track (676) received on said mounting member in a sliding manner, wherein said track extends approximately transversely to a longitudinal axis of the associated shelf, said track comprising:

an elongated rail (677, 678) extending longitudinally along said track, and

a pusher (692) slidably mounted in relation to said rail;
and,

a divider (50, 210, 250, 650, 840) received on said mounting member in a non-sliding manner, wherein said divider extends approximately transversely to said longitudinal axis of the associated shelf, said divider being spaced from said track.

11. The shelving system of claim 10 wherein said track further comprises a front edge, and a groove (684) located rearwardly of said front edge.

12. The shelving system of claim 11 wherein said mounting member comprises a first longitudinally extending groove (22, 198, 234, 284, 314, 344, 364, 384, 414, 444, 622), said track front edge being accommodated in said mounting member first groove.

13. The shelving system of claim 12 wherein said mounting member comprises a first tooth (36, 242, 294, 460, 636) and said divider comprises a second tooth (70, 260, 668), said first tooth engaging said second tooth to retard a sliding motion of said divider on said mounting member.

14. The shelving system of claim 10 wherein said pusher comprises a foot (700) extending from a base member (694), said foot cooperating with said rail.

15. The shelving system of claim 14 wherein said pusher further comprises a front wall (693) extending upwardly from said base member.

16. The shelving system of claim 10 further comprising a spring (720) having one end mounted to said track and another end located on said pusher for biasing said pusher forwardly on said track.

17. The shelving system of claim 10 wherein at least one of said mounting member and said track comprises a resilient material to allow a relative flexing between said mounting member and said track.

18. The shelving system of claim 10 wherein said mounting member further comprises a second longitudinally extending groove (16, 616).

19. The shelving system of claim 18 further comprising a fence (40, 640) selectively mounted in said second groove.

20. A shelving system comprising:
an elongated mounting member (10, 190, 230, 280, 310, 340, 360, 380, 410, 440, 470, 490, 510, 610) operationally securable to an associated shelf, said mounting member comprising:
an approximately vertically oriented wall (12, 192, 232, 282, 312, 342, 362, 382, 412, 442, 472, 492, 512, 612), and
an approximately horizontally oriented wall (20, 196, 236, 286, 316, 346, 366, 386, 416, 446, 474, 494, 514, 620);

a track (78, 264, 676, 860) received on said mounting member in a non-sliding manner, wherein said track extends transversely to a longitudinal axis of the associated shelf;

an elongated rail (76, 677, 678, 874, 876) extending longitudinally along said track;

a spring urged pusher (80, 268, 692, 864) slidably mounted in relation to said rail;

a slot (22, 60, 218, 256, 684, 846) extending transversely along a bottom face of said track;

a first smooth contact surface (62, 298, 322, 352, 372, 392, 422, 452, 522, 662) located on said mounting member approximately horizontally oriented wall; and,

a second smooth contact surface (30, 630) located on said track in or near said slot, said second contact surface engaging said first contact surface to retard a sideward sliding motion of said track in relation to said mounting member.

21. The shelving system of claim 20 wherein said track further comprises a front edge (220, 847), wherein said groove is located rearwardly of said front edge.

22. The shelving system of claim 21 wherein said mounting member comprises a first longitudinally extending groove (22, 198, 234, 284, 314, 344, 364, 384, 414, 444, 622), said track front edge being accommodated in said mounting member first groove.

23. The shelving system of claim 22 further comprising a third contact surface on said elongated mounting member, which comprises a first tooth (36, 242, 294, 460, 636), and a fourth contact surface on said track, which comprises a second tooth (70, 260).

24. The shelving system of claim 20 wherein said shelf divider further comprises a foot (90, 700) extending from said pusher member, said foot cooperating with said rail.

25. The shelving system of claim 24 wherein said track further comprises a divider wall (50, 250, 650, 840) located on one side of said rail.

26. The shelving system of claim 20 wherein said second contact surface (66) is located in said slot (60).

27. The shelving system of claim 20 wherein at least one of said mounting member and said track comprises a resilient material to allow a relative flexing between said mounting member and said track.

28. The shelving system of claim 20 wherein said mounting member further comprises a second longitudinally extending groove (16, 616), spaced from said first groove.

29. The shelving system of claim 28 further comprising a fence (40, 640) selectively mounted in said second groove.

30. A shelving system comprising:
an elongated first mounting member (10, 190, 280, 310, 340, 360, 380, 410, 440, 470, 490, 510, 610) operationally securable to a front portion of an associated shelf, said first mounting member comprising:
an approximately vertically oriented wall (12, 192, 282, 312, 342, 362, 382, 412, 442, 472, 492, 512, 612), and
an approximately horizontally oriented wall (20, 196, 286, 316, 346, 366, 386, 416, 446, 474, 494, 514, 620);

a track (78, 676, 860) received on said first mounting member in a non-sliding manner, wherein said track extends rearwardly over the associated shelf;

an elongated rail (76, 677, 678, 874, 876) extending longitudinally along said track;

a spring urged pusher (80, 268, 692, 864) slidably mounted in relation to said rail;

a slot (60, 218, 684, 846) extending transversely along a bottom face of said track;

a first set of teeth (36, 294, 460, 636) extending at least partially from a rear face (34, 292, 454, 634) of said first mounting member approximately horizontally oriented wall; and,

a second set of teeth (70) extending from said track adjacent said slot, said second set of teeth engaging said first set of teeth to retard a sideward sliding motion of said track in relation to said first mounting member.

31. The shelving system of claim 30 wherein said track further comprises a front edge, wherein said slot is located rearwardly of said front edge.

32. The shelving system of claim 31 wherein said first mounting member comprises a first longitudinally extending groove (22, 234, 284, 314, 344, 364, 384, 414, 444, 622), said track front edge being accommodated in said first mounting member first groove.

33. The shelving system of claim 32 wherein said track comprises a third set of teeth located adjacent said track front edge, said first mounting member further comprising a fourth set of teeth (296, 328, 356, 376, 396, 462) extending from said first groove, wherein said third set of teeth engages said fourth set of teeth.

34. The shelving system of claim 30 wherein said track further comprises a foot (90, 700) extending from said pusher member, said foot cooperating with said rail.

35. The shelving system of claim 34 wherein said track further comprises a side wall (106) located on one side of said rail.

36. The shelving system of claim 30 wherein said second set of teeth (284, 328, 356, 376, 384, 428, 462, 518) is located in said slot.

37. The shelving system of claim 30 wherein at least one of said track and said first mounting member comprises a resilient material to allow a relative flexing between said first mounting member and said track.

38. The shelving system of claim 30 further comprising a second mounting member (170) operationally securable to a rear portion of the associated shelf.

39. The shelving system of claim 38 further comprising a recessed area (158) extending transversely along said bottom face of said track in a spaced manner from said slot.

40. The shelving system of claim 39 wherein said recessed area accommodates said second mounting member.

41. The shelving system of claim 30 wherein said spring urged pusher comprises a coil spring (120, 720) having a first end mounted to one of said track and said first mounting member and a second end located on said pusher.

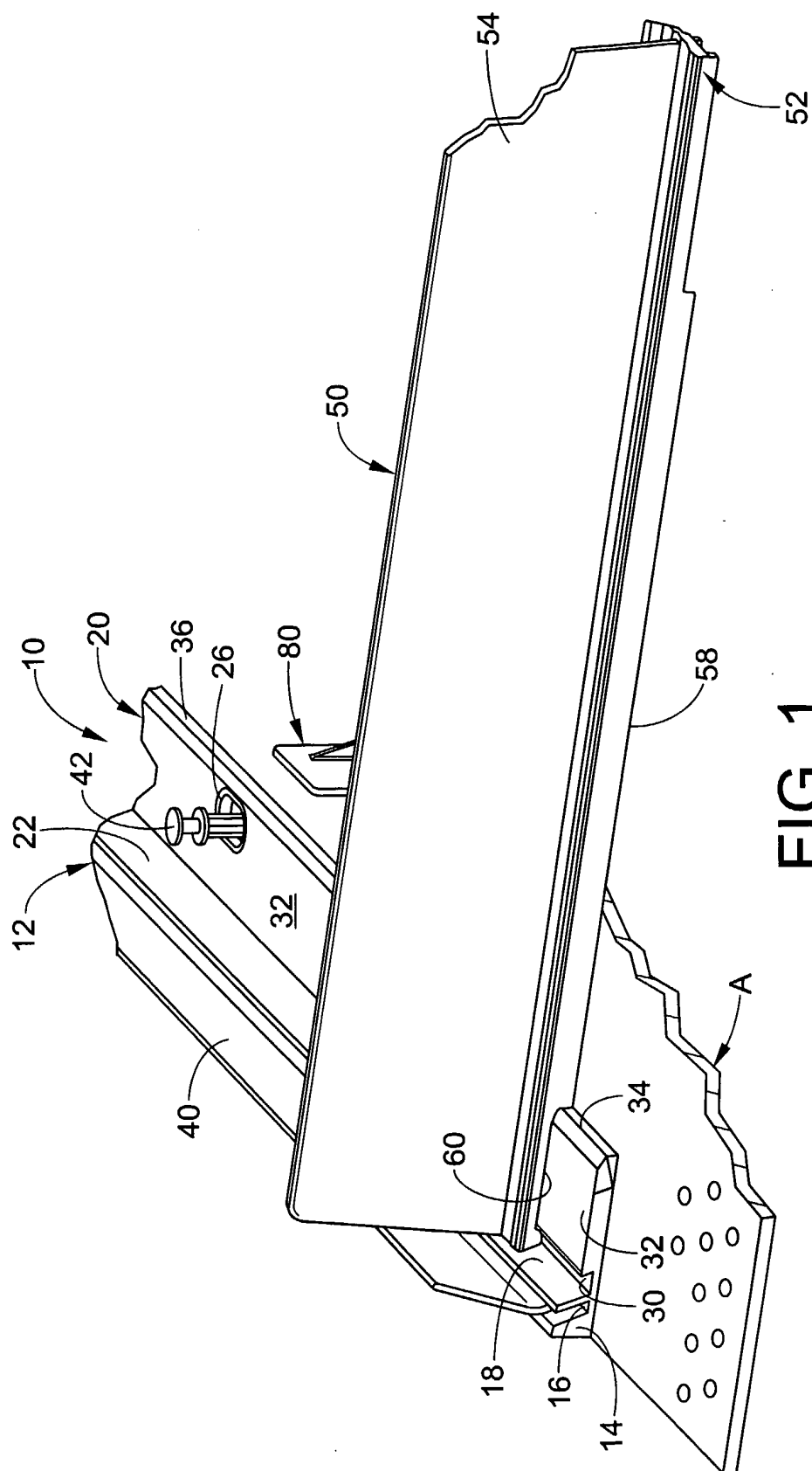


FIG. 1

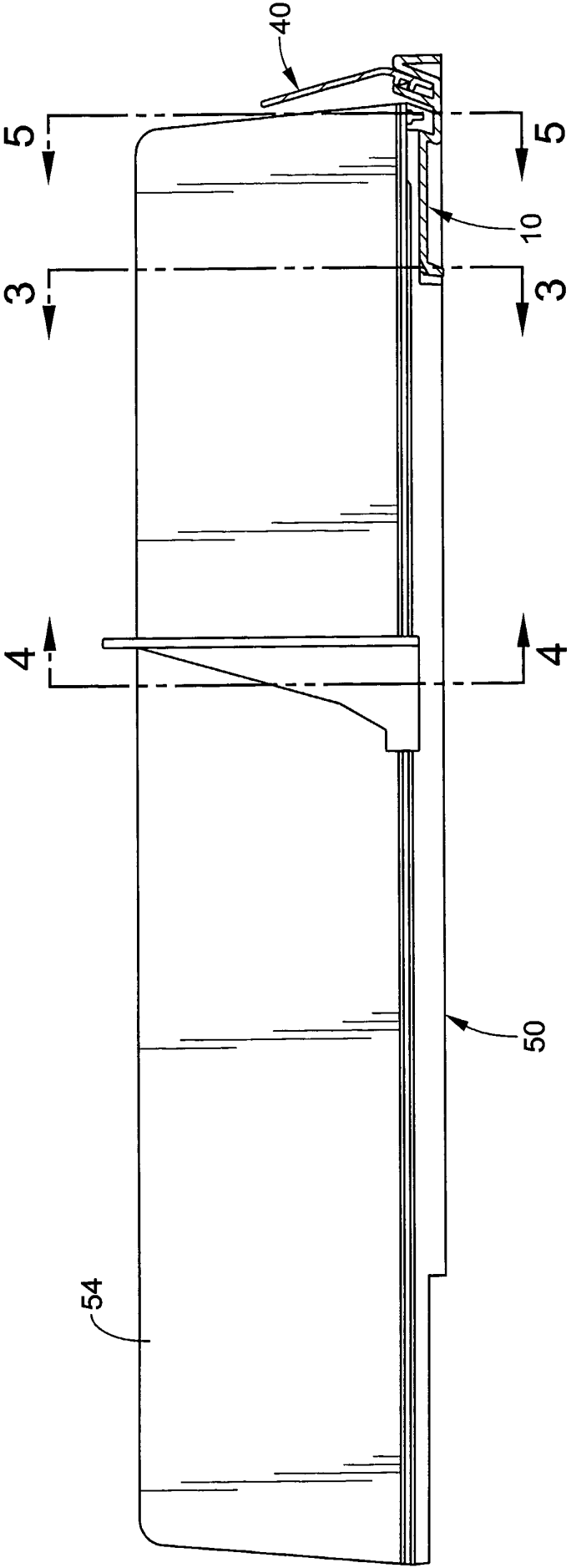


FIG. 2

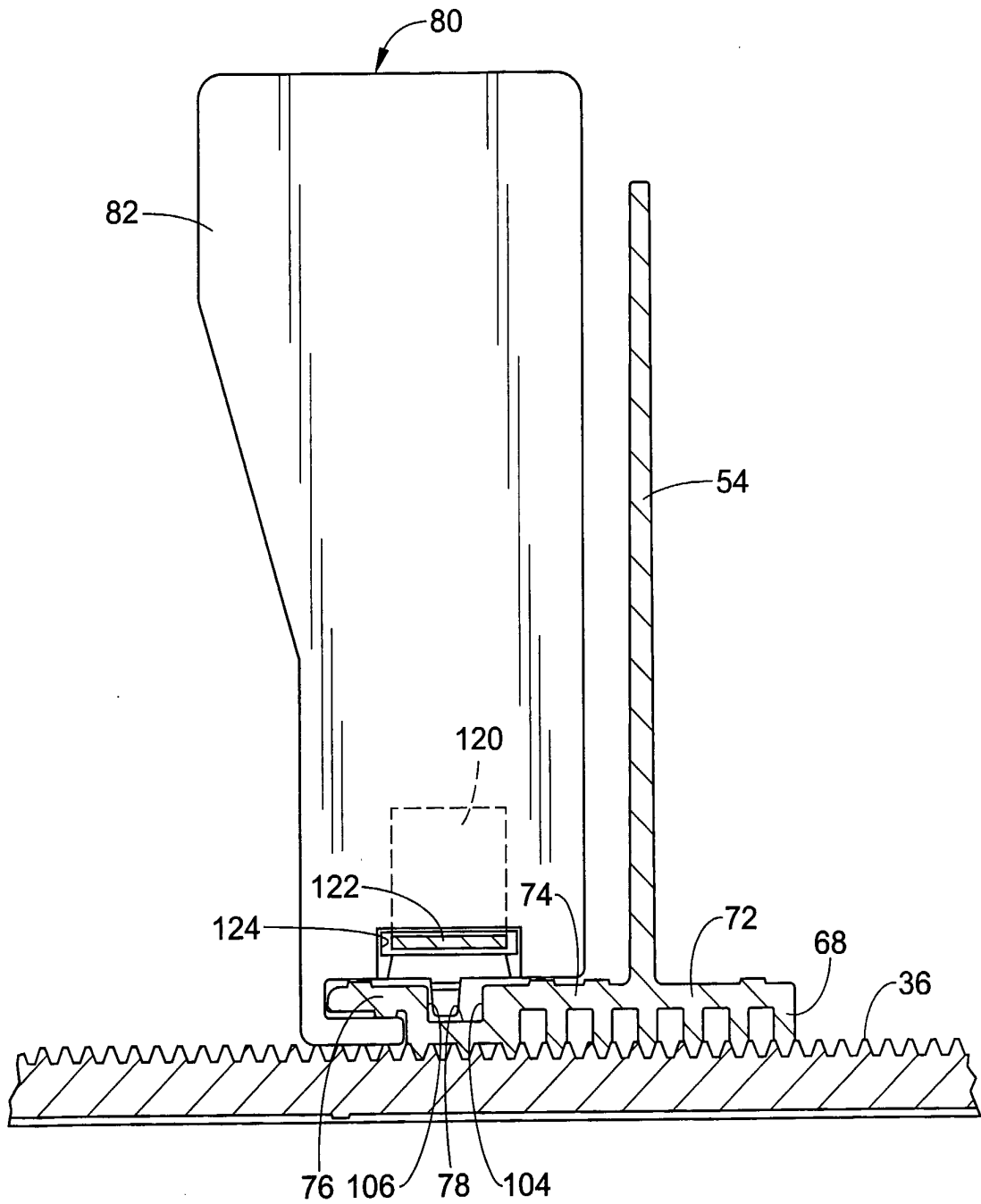


FIG. 3

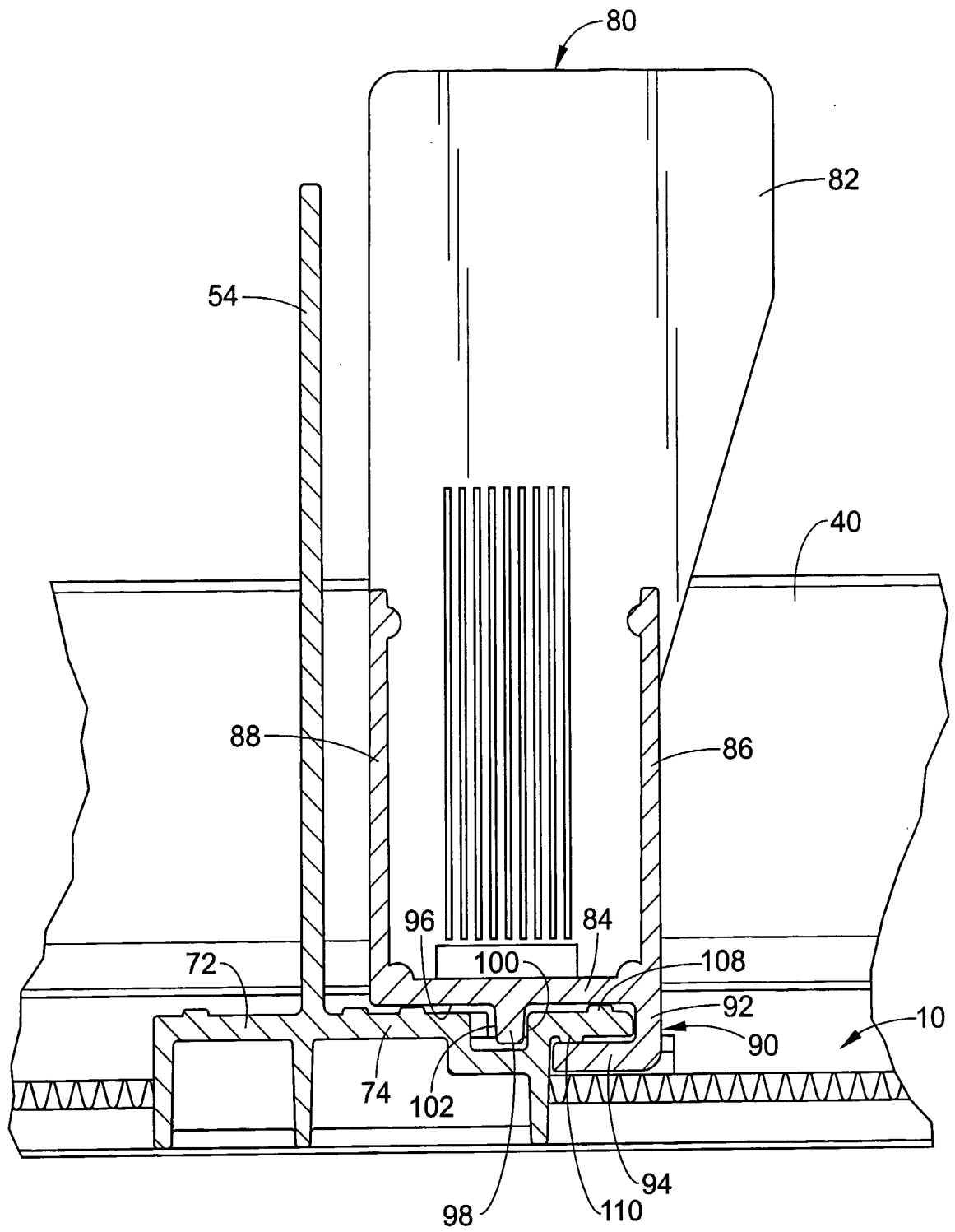


FIG. 4

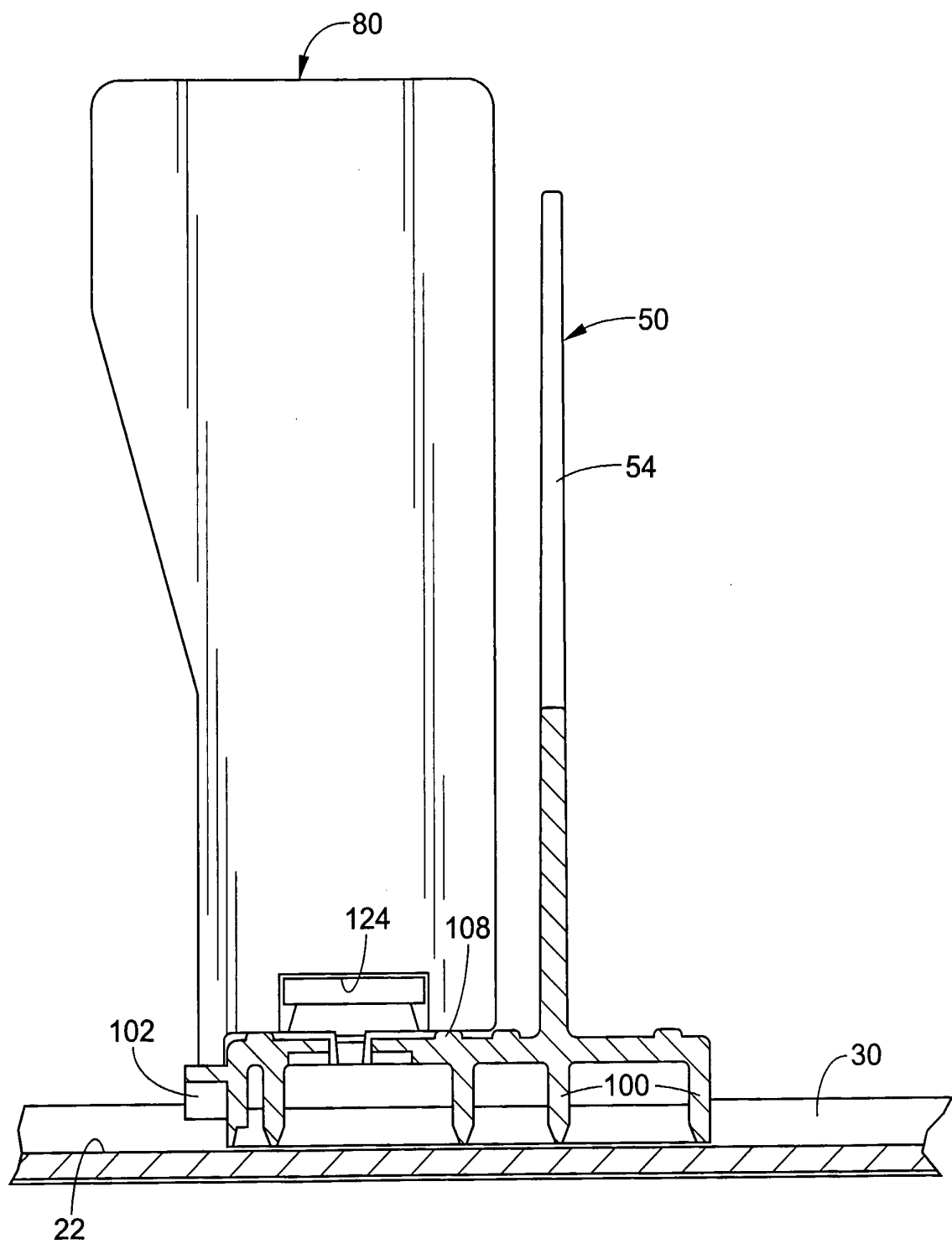
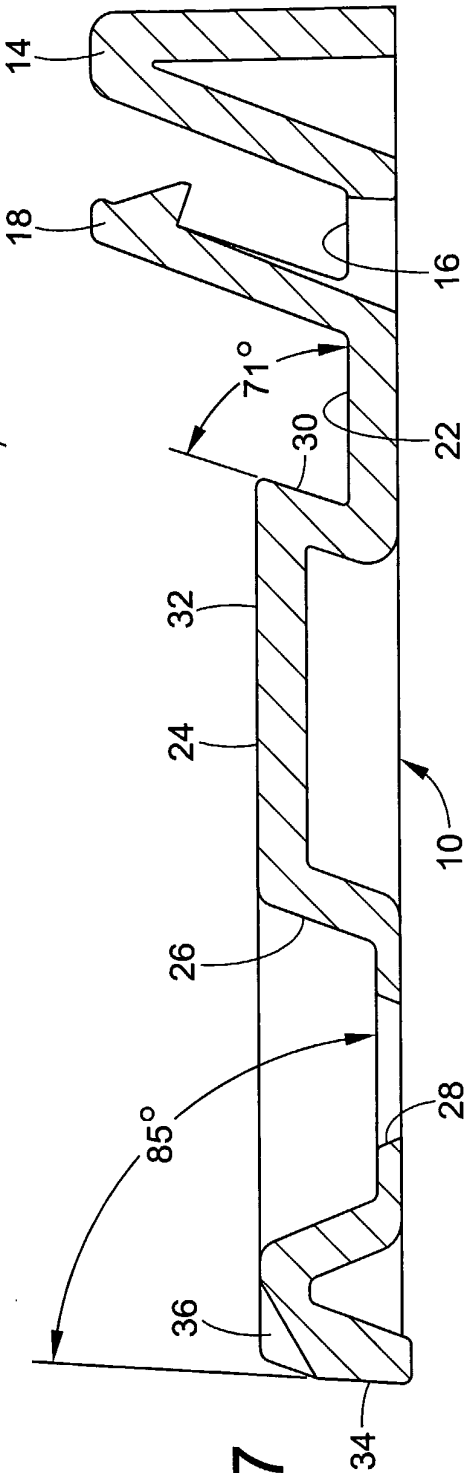
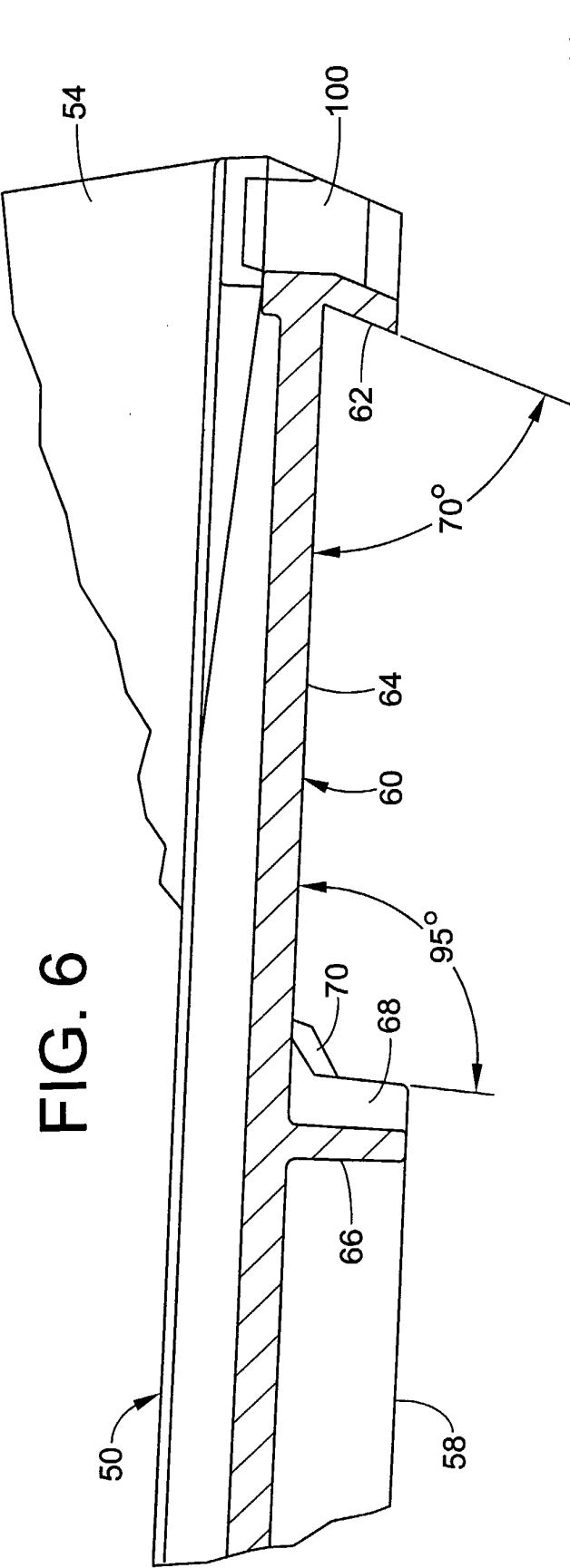
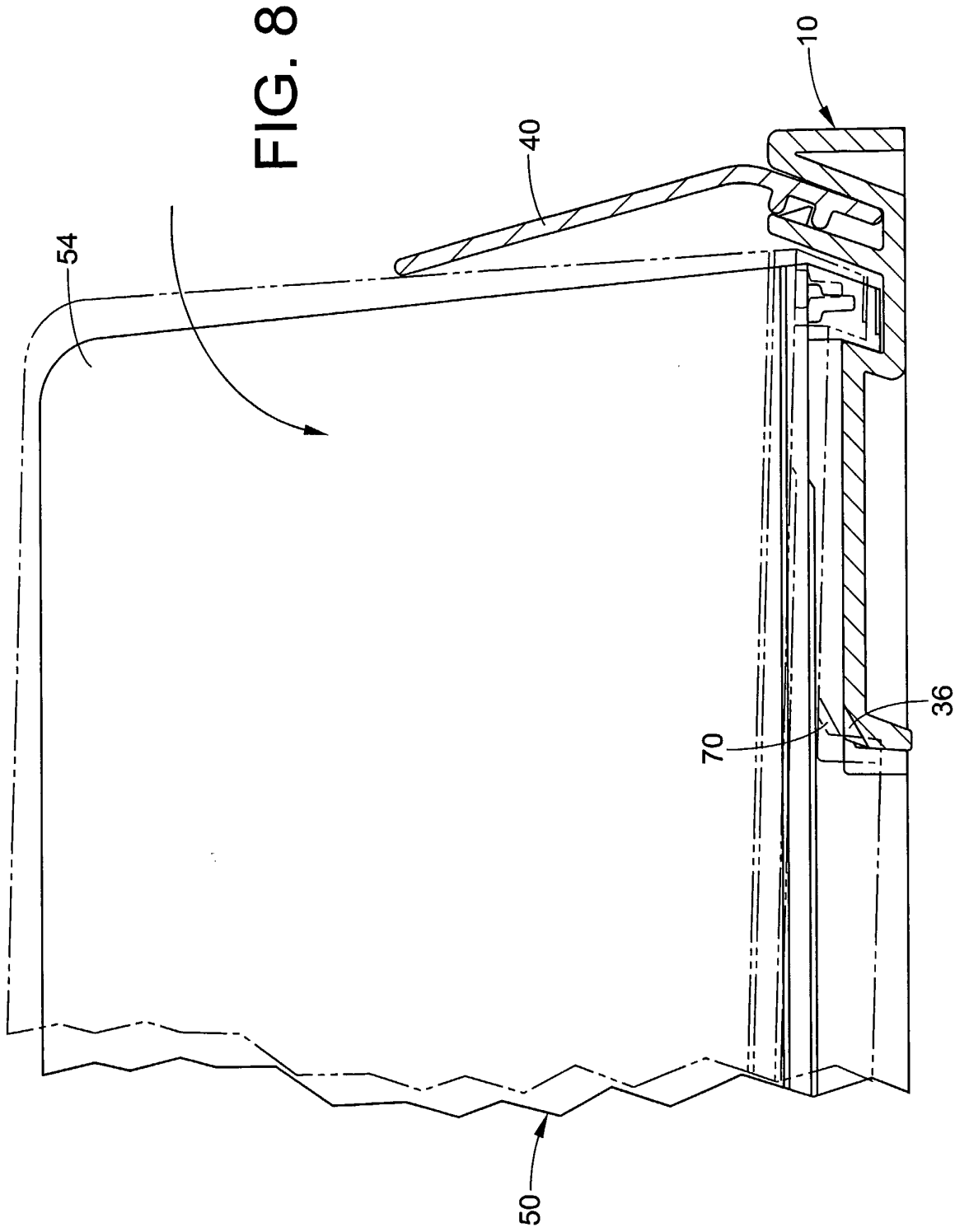
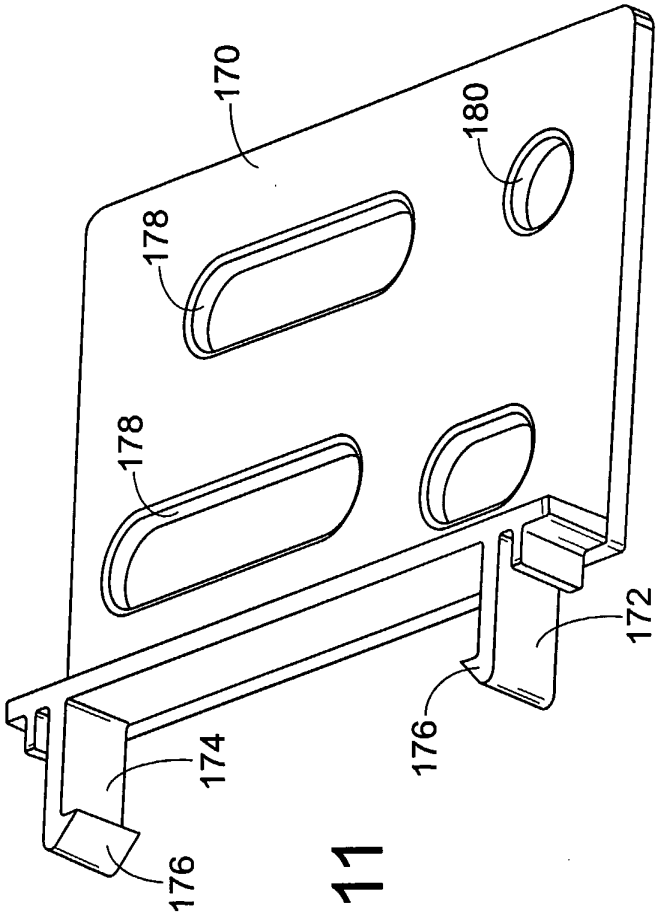
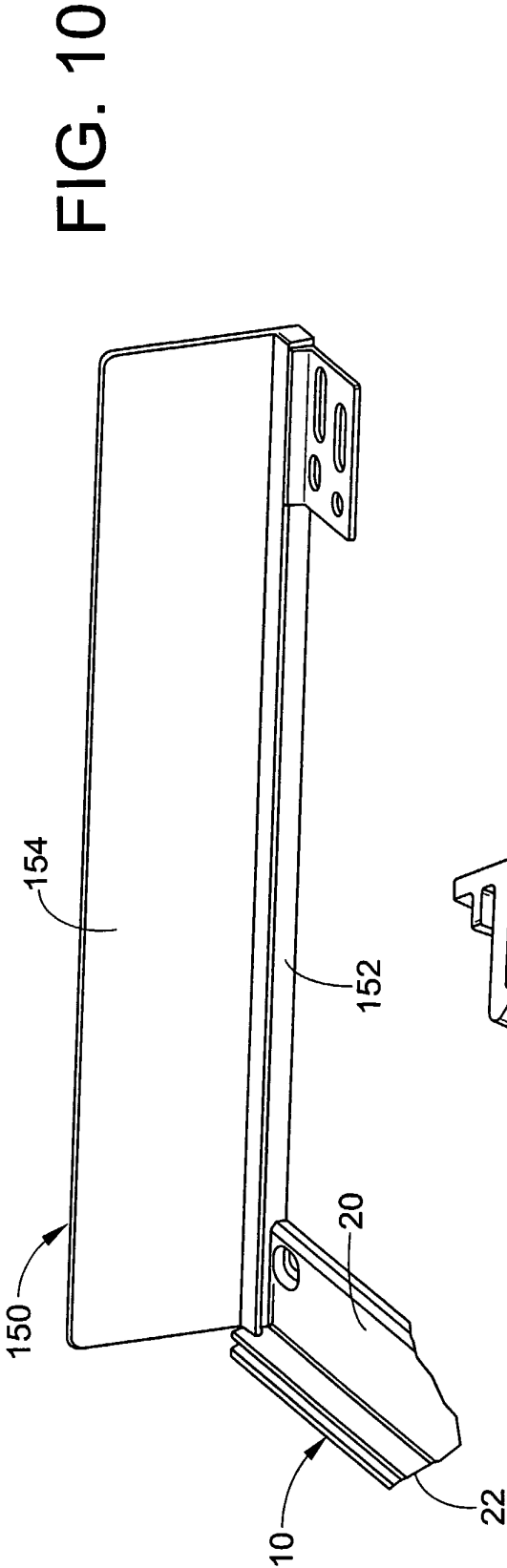


FIG. 5







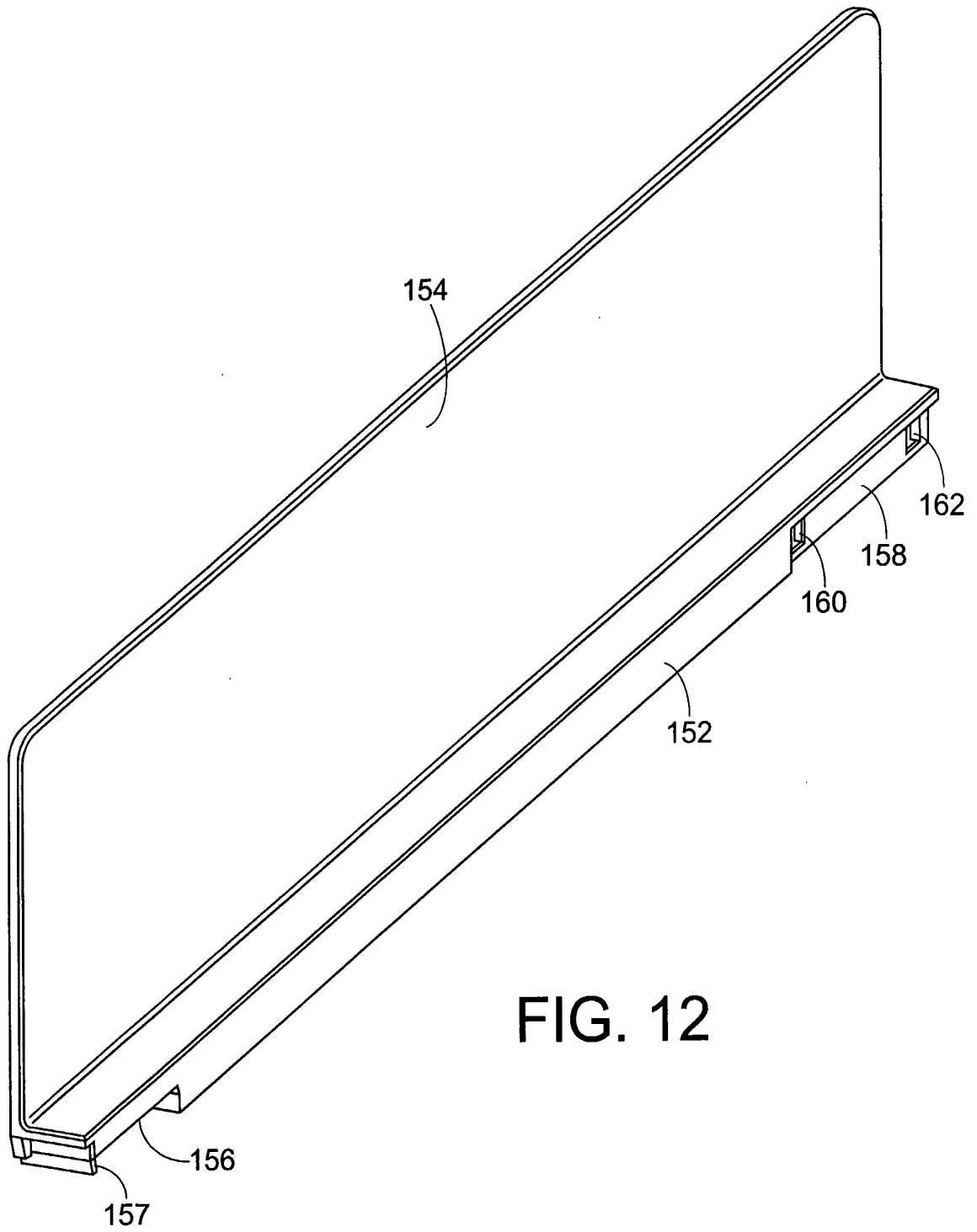


FIG. 12

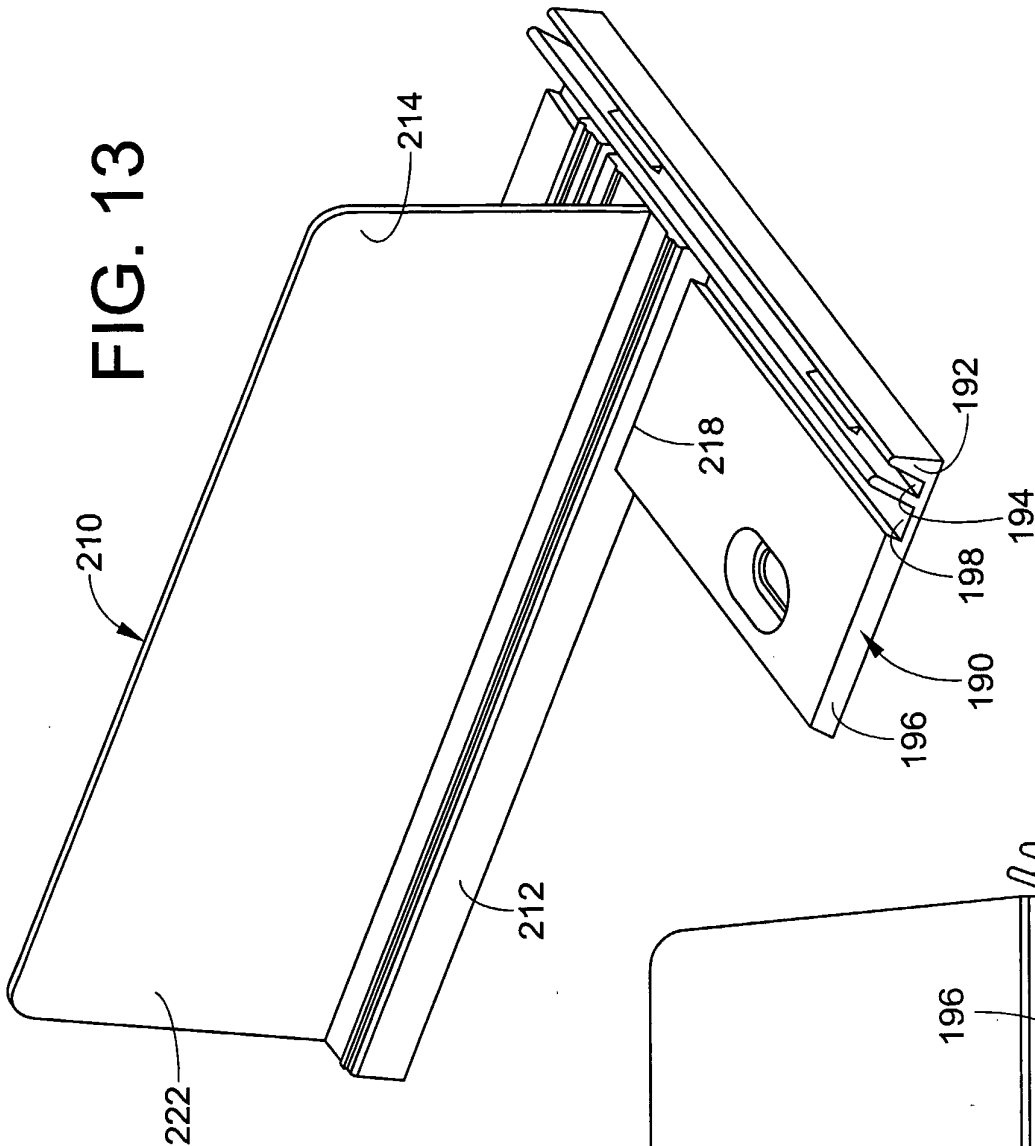


FIG. 14

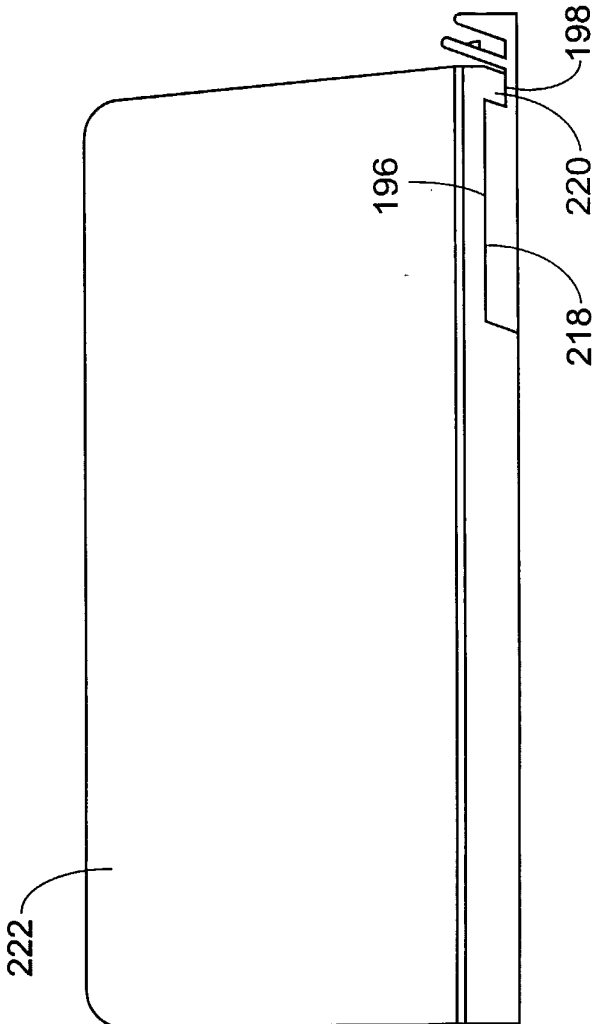


FIG. 15

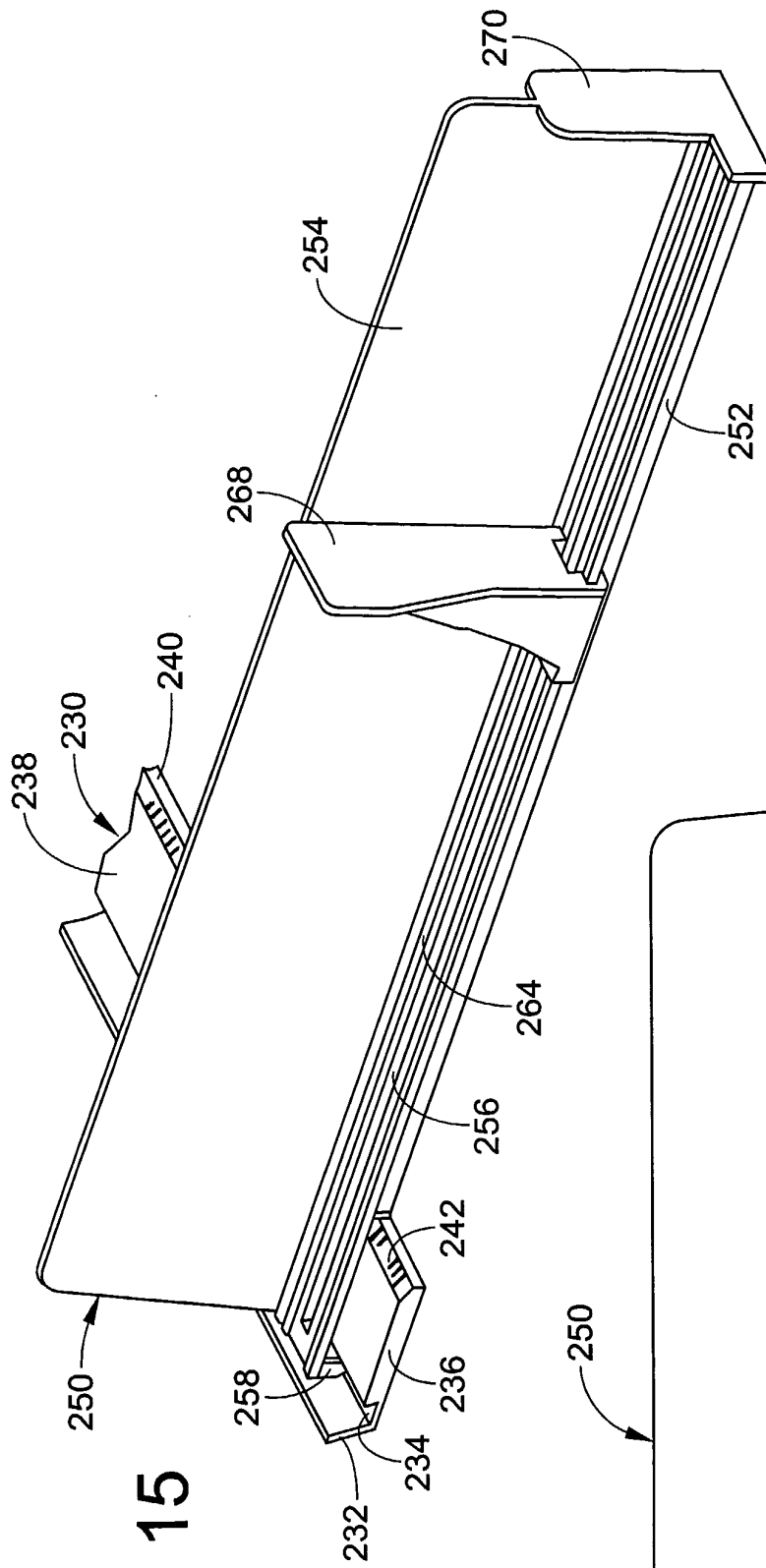


FIG. 16

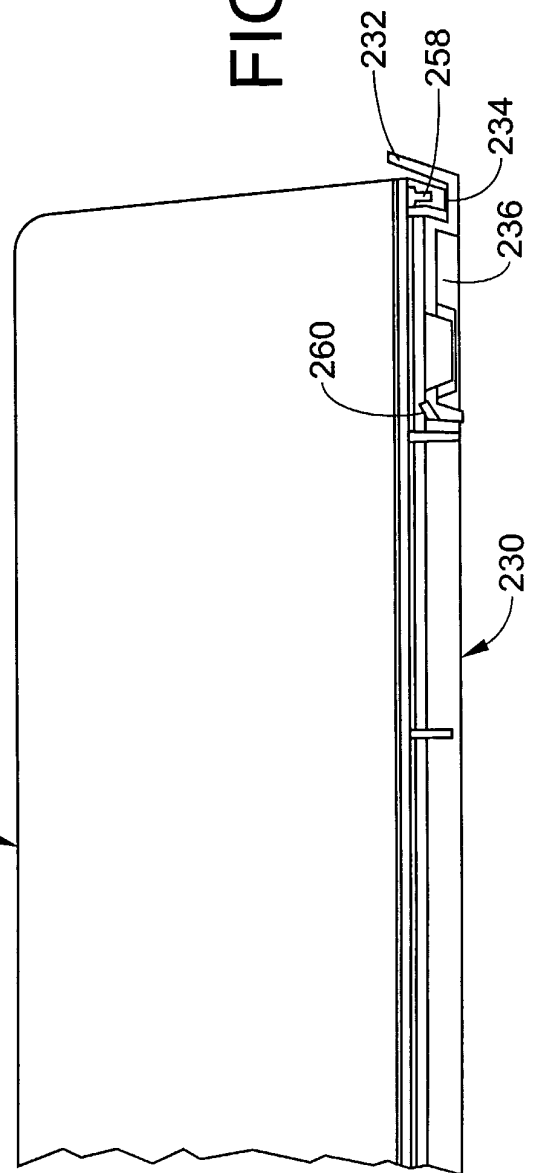


FIG. 17

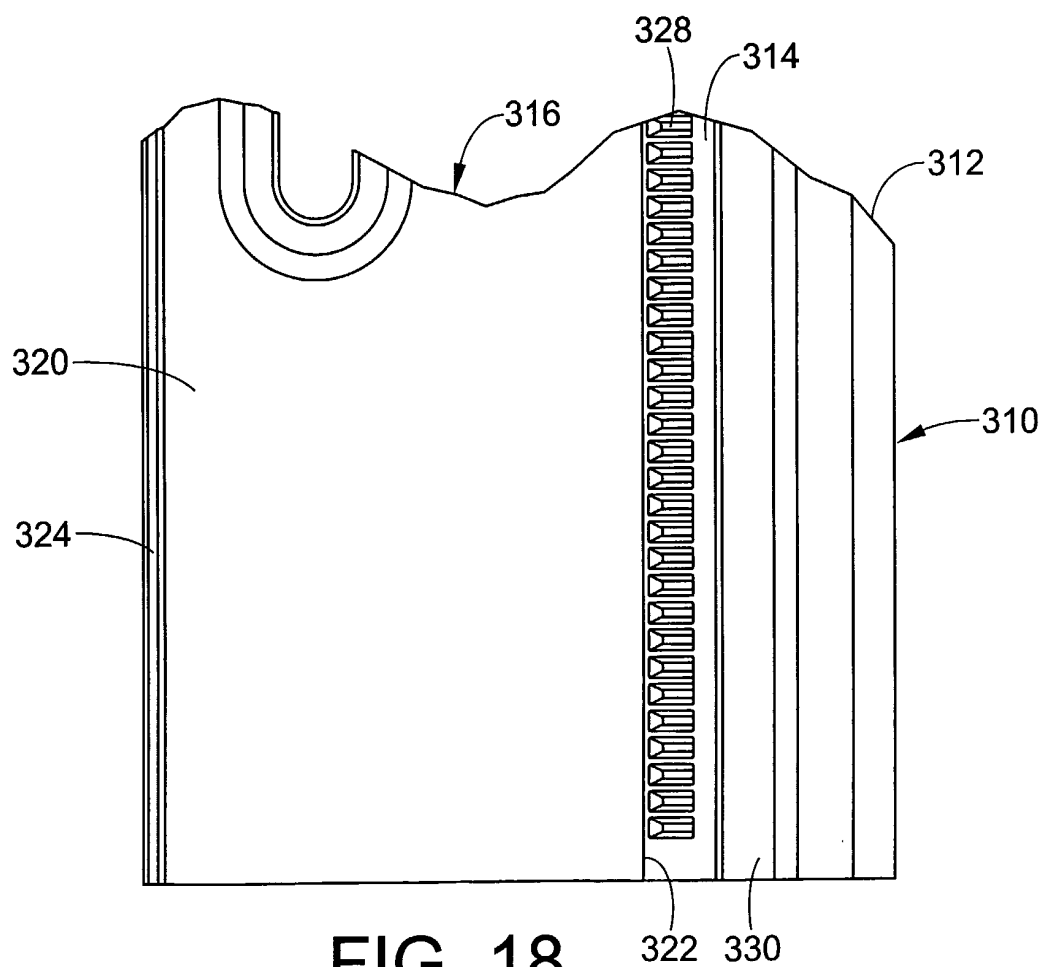
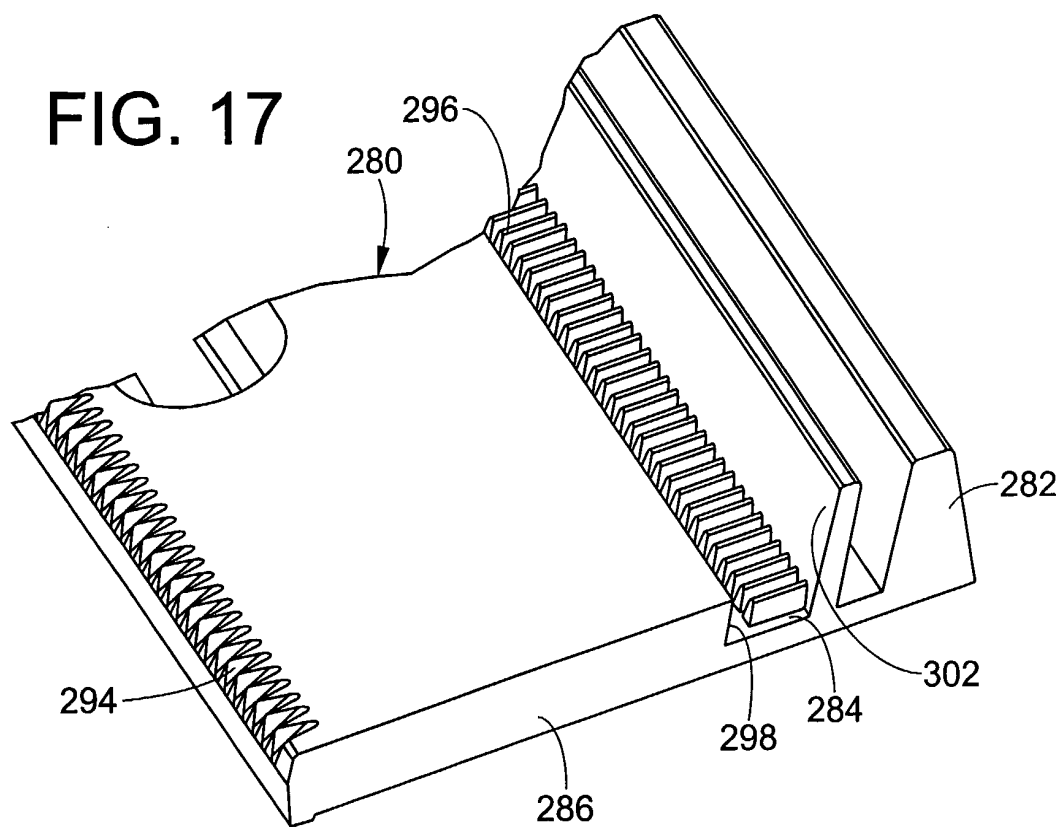


FIG 18

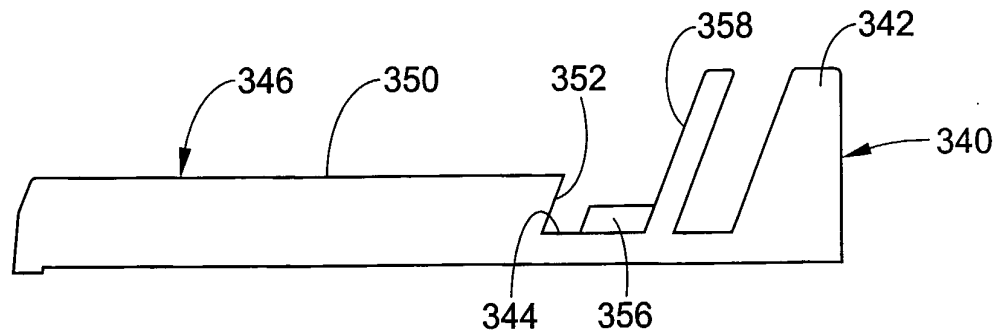


FIG. 19

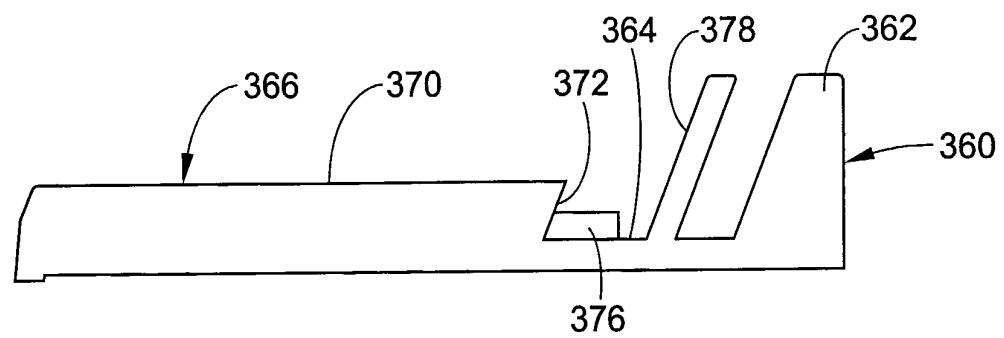


FIG. 20

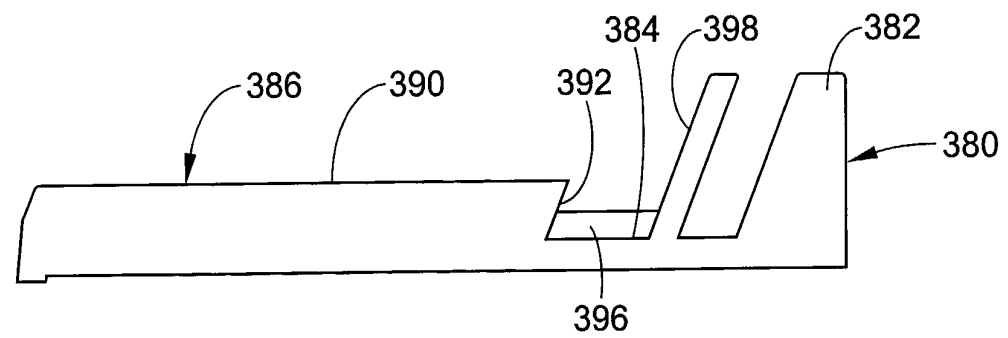


FIG. 21

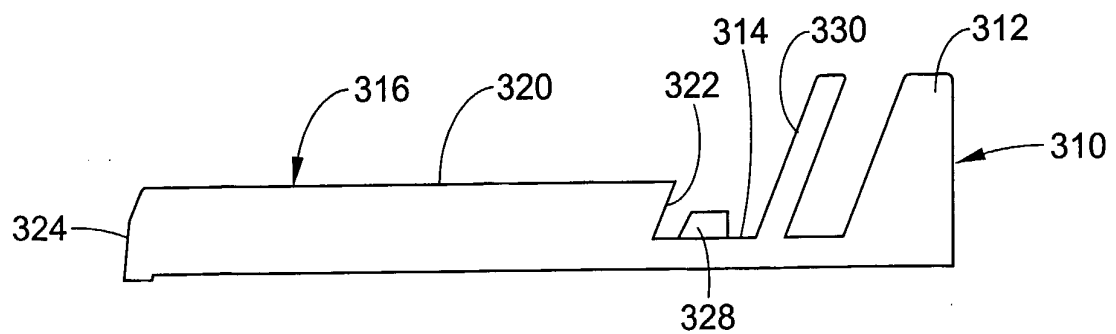
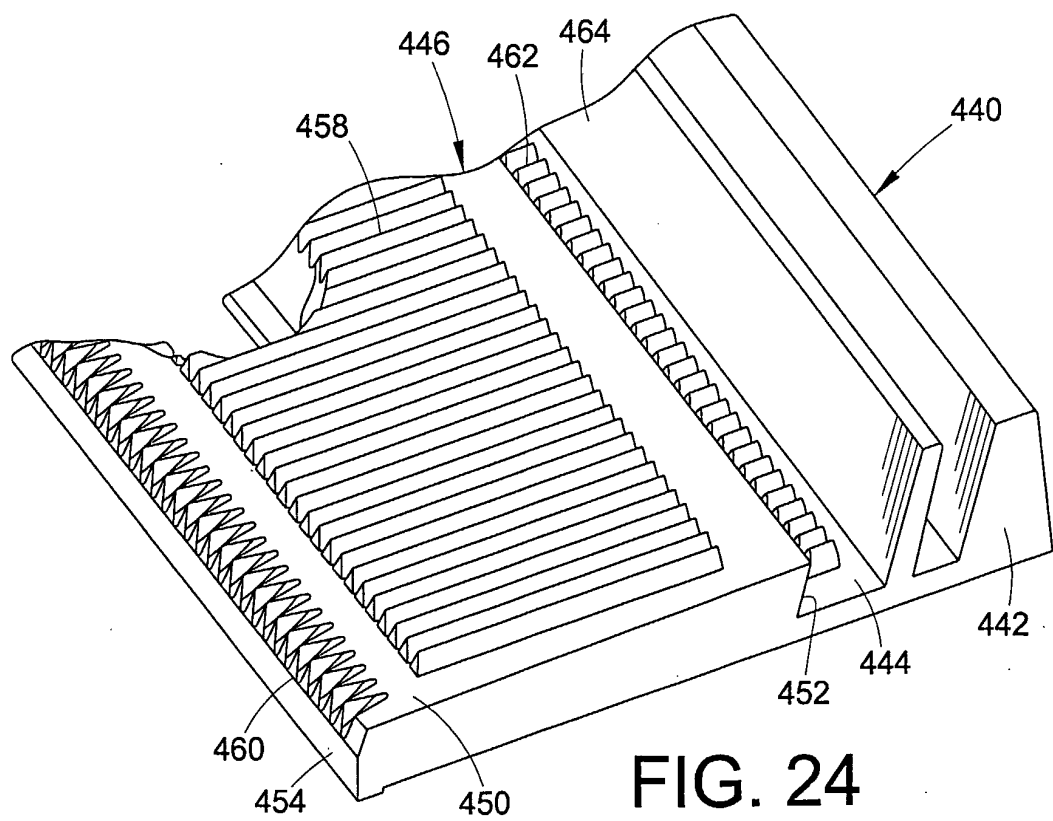
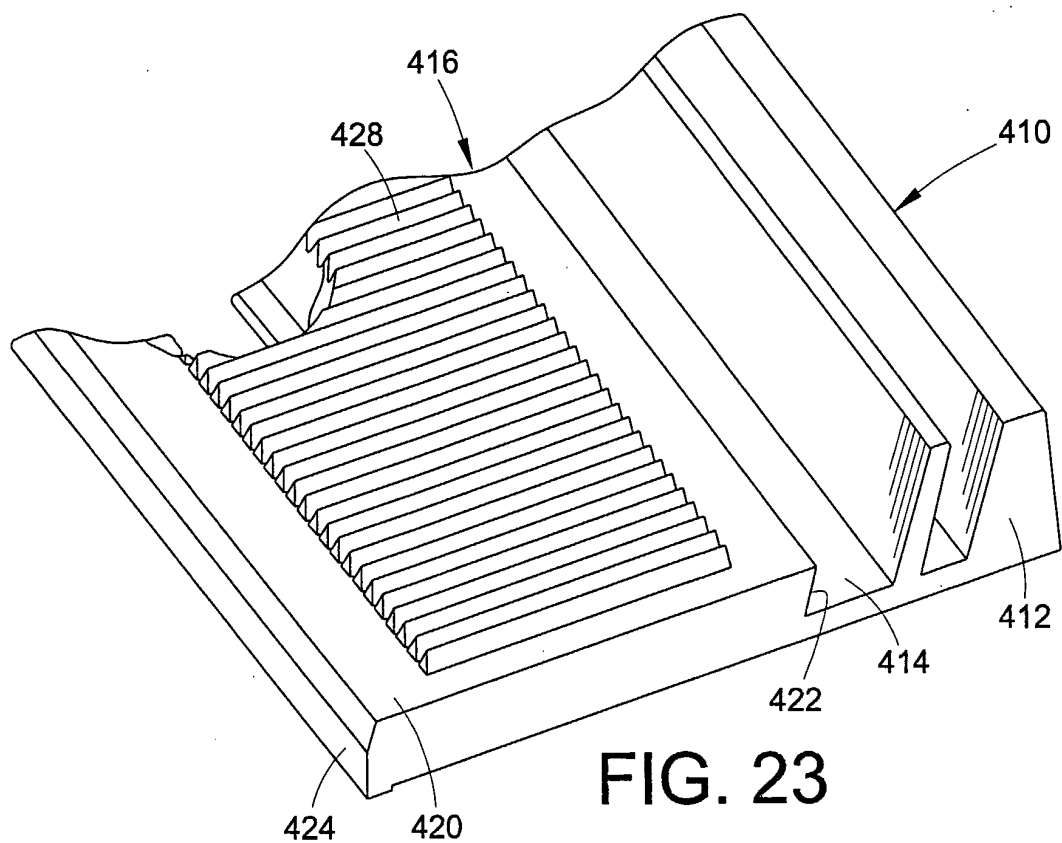


FIG. 22



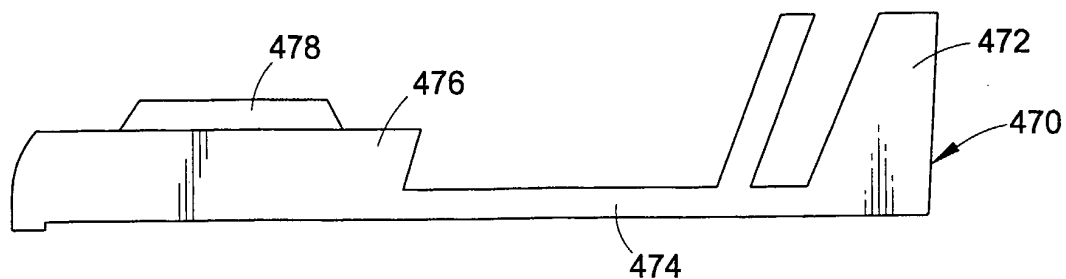


FIG. 25

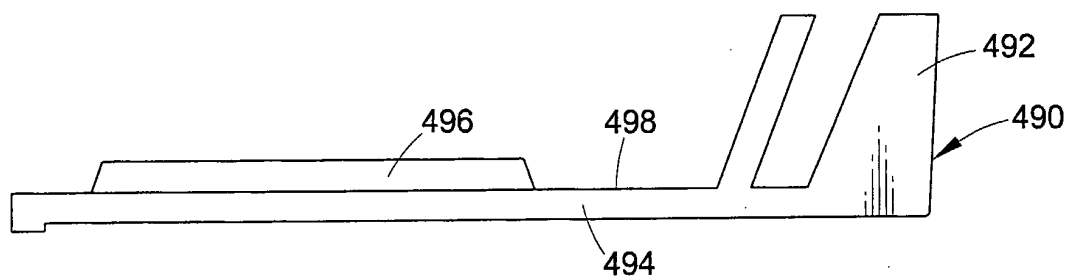


FIG. 26

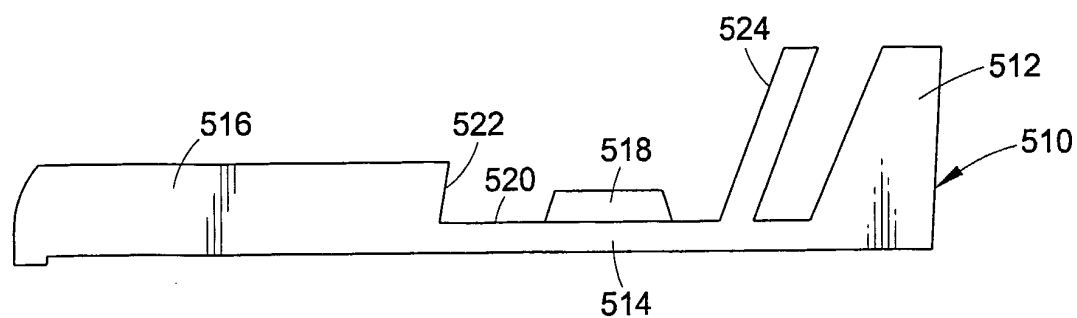
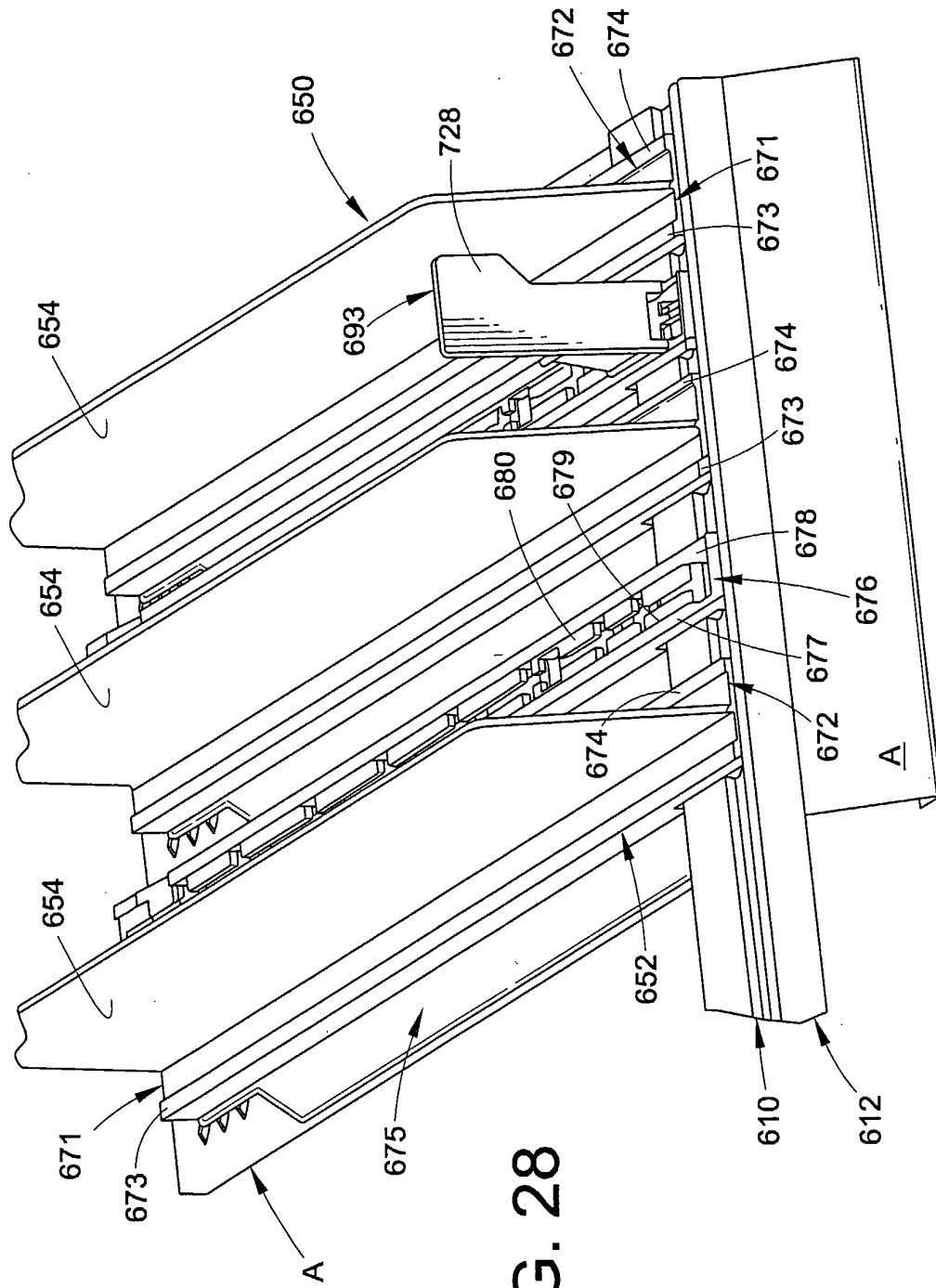
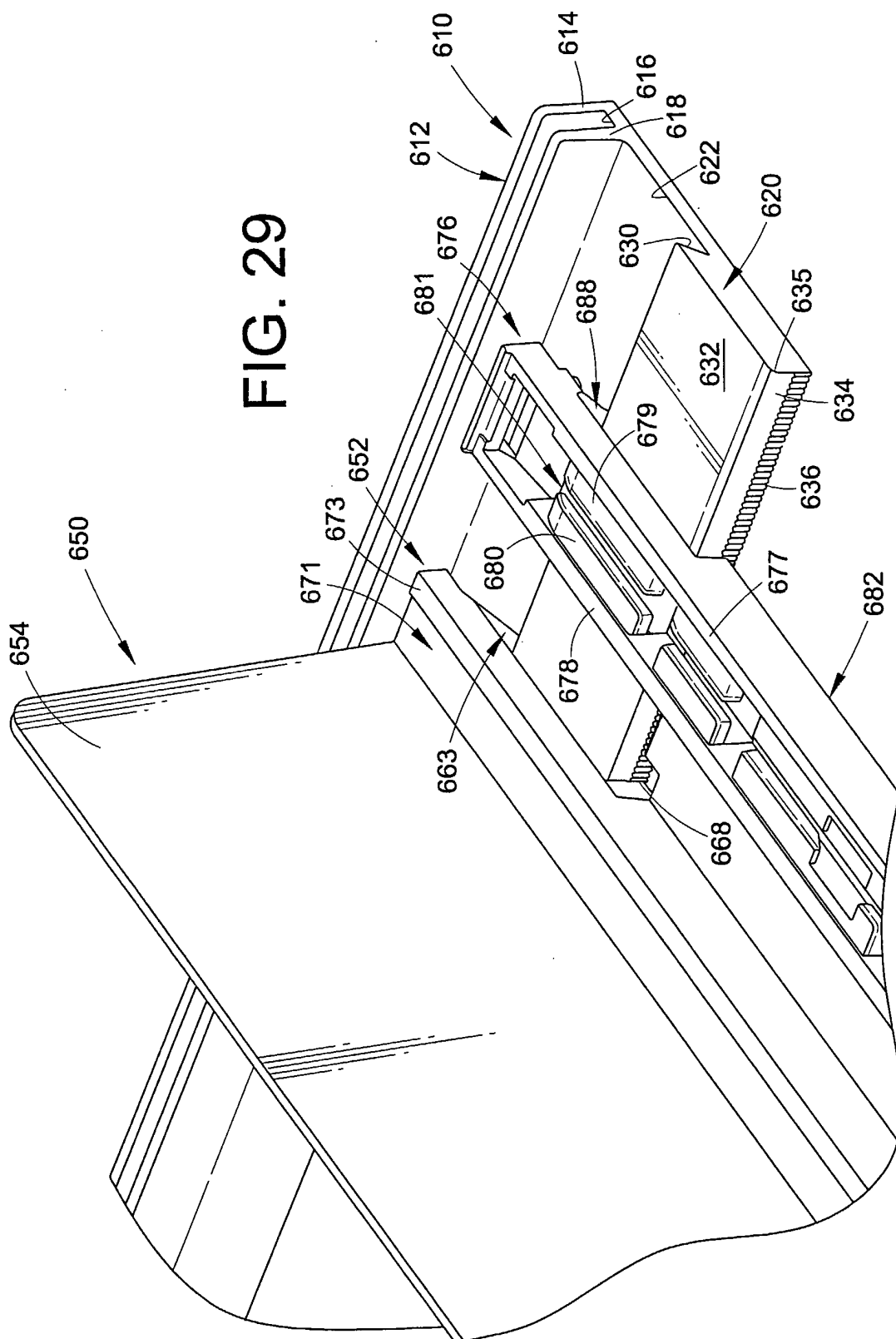
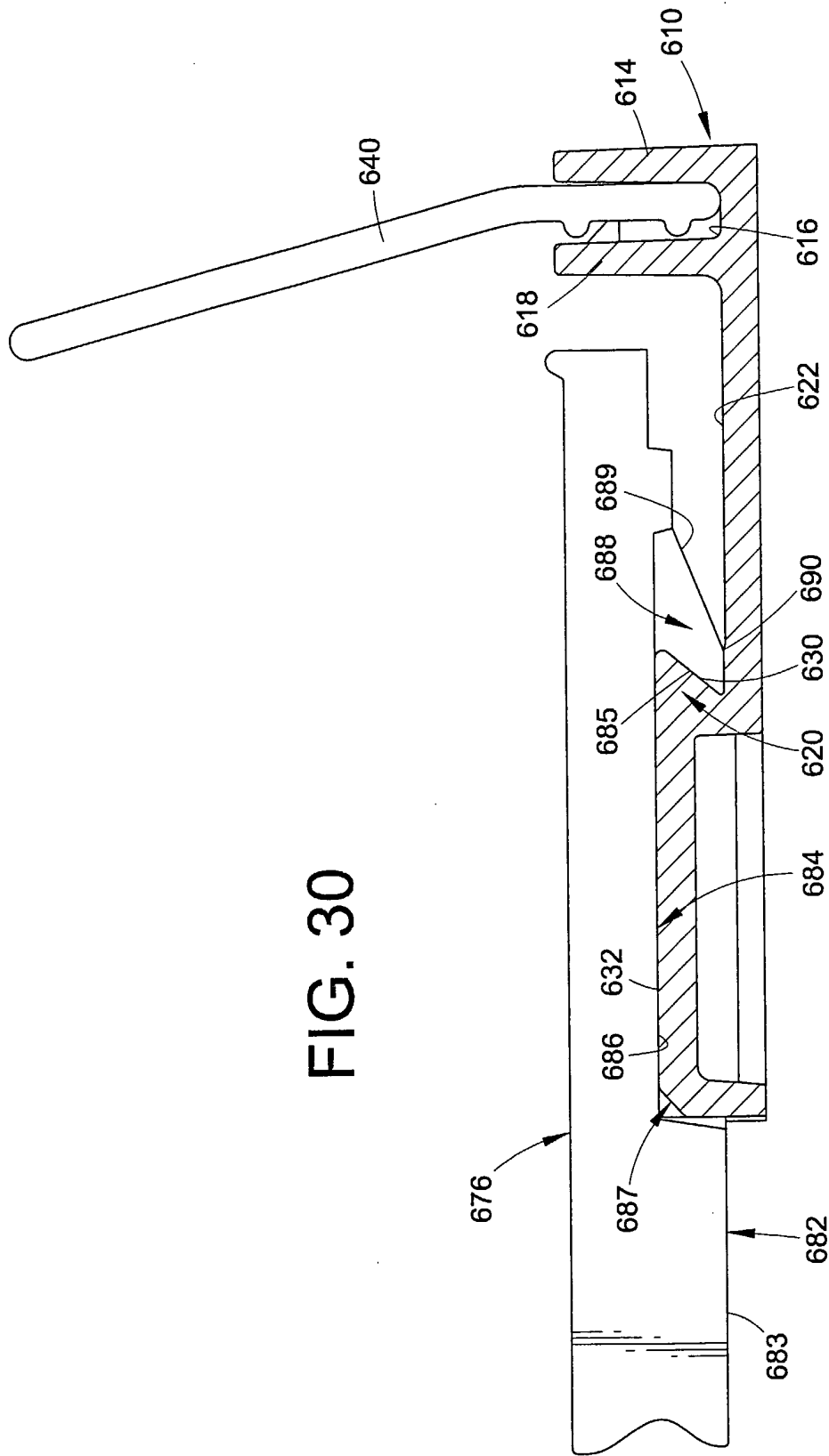


FIG. 27







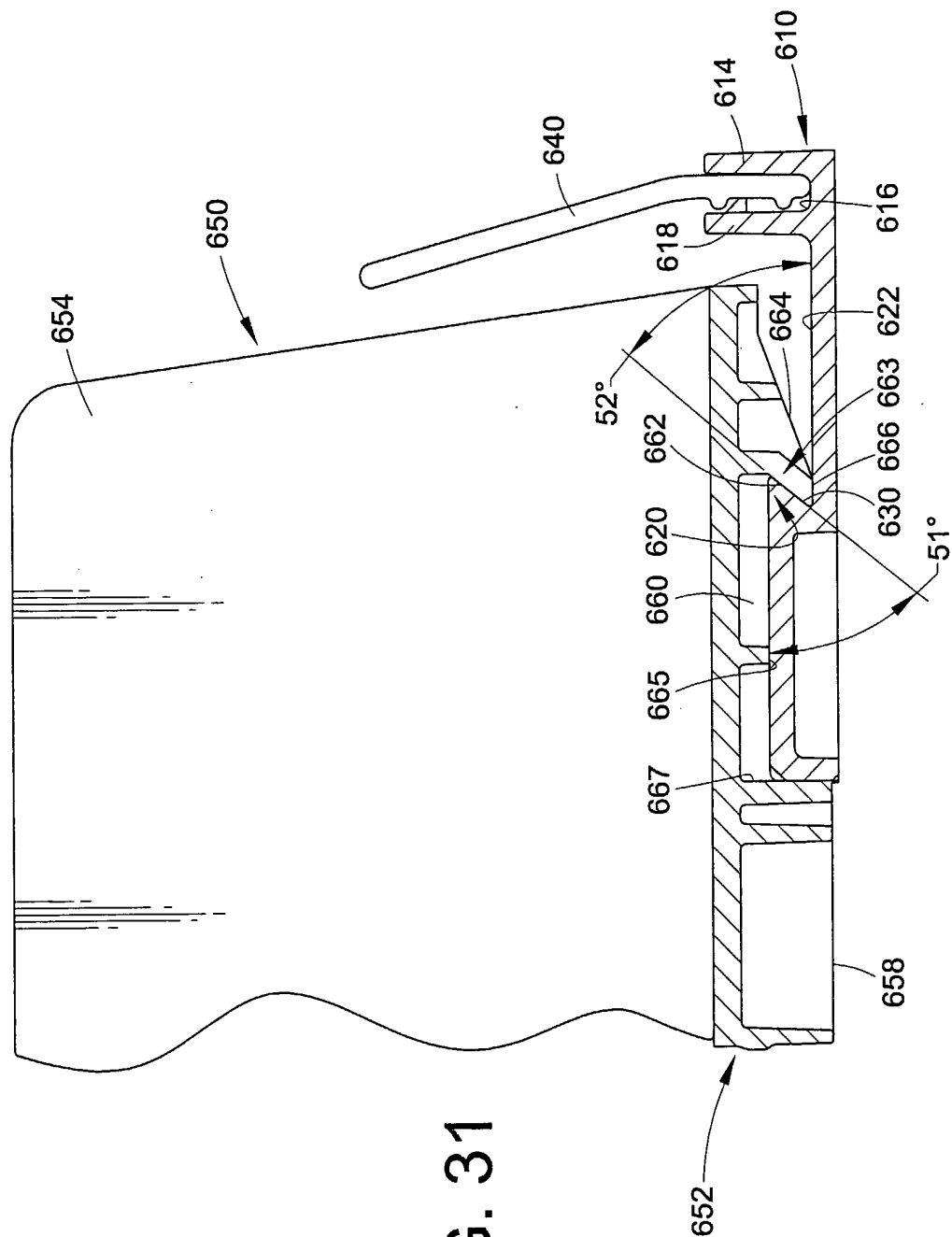


FIG. 31

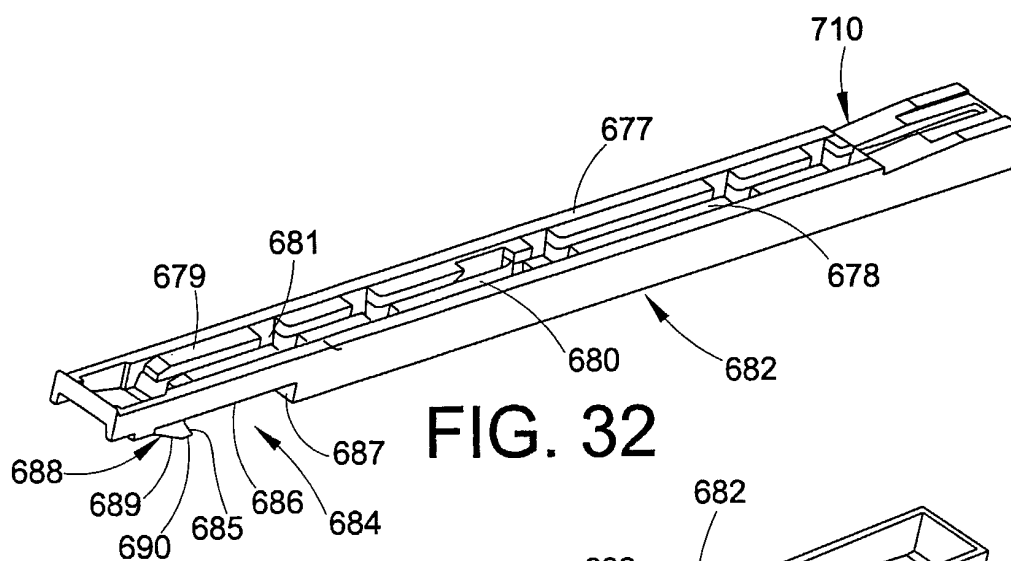


FIG. 32

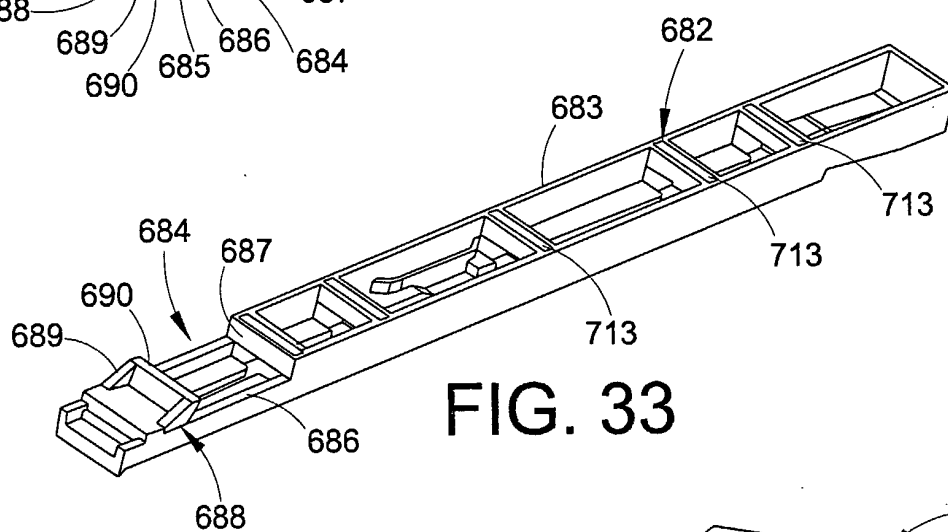


FIG. 33

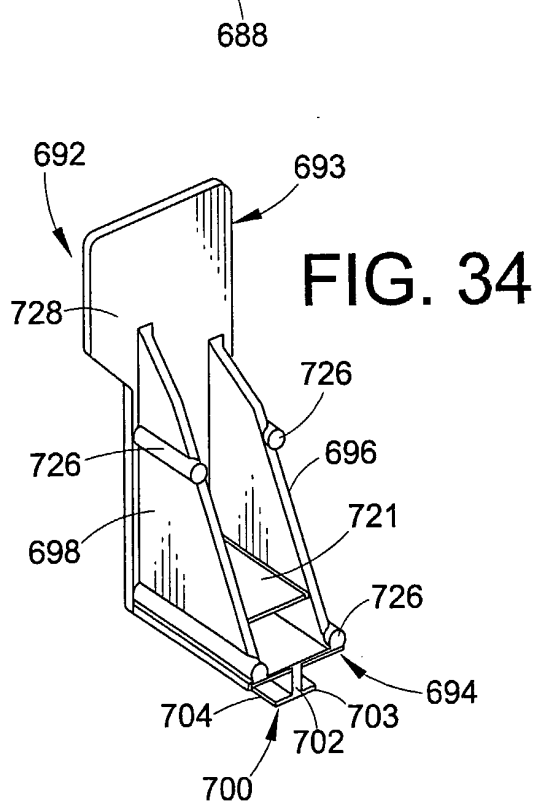


FIG. 34

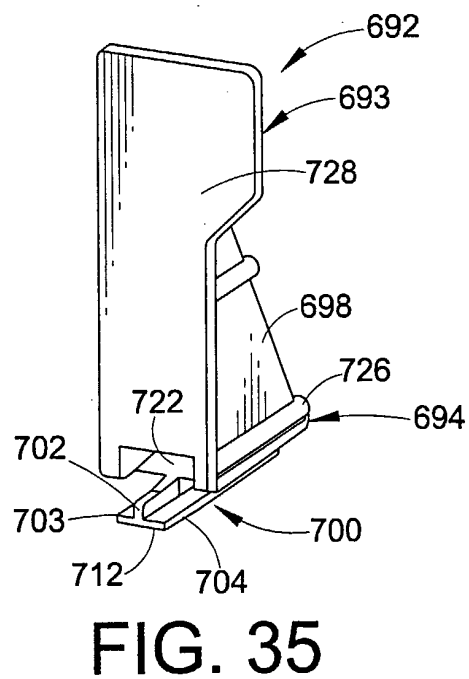
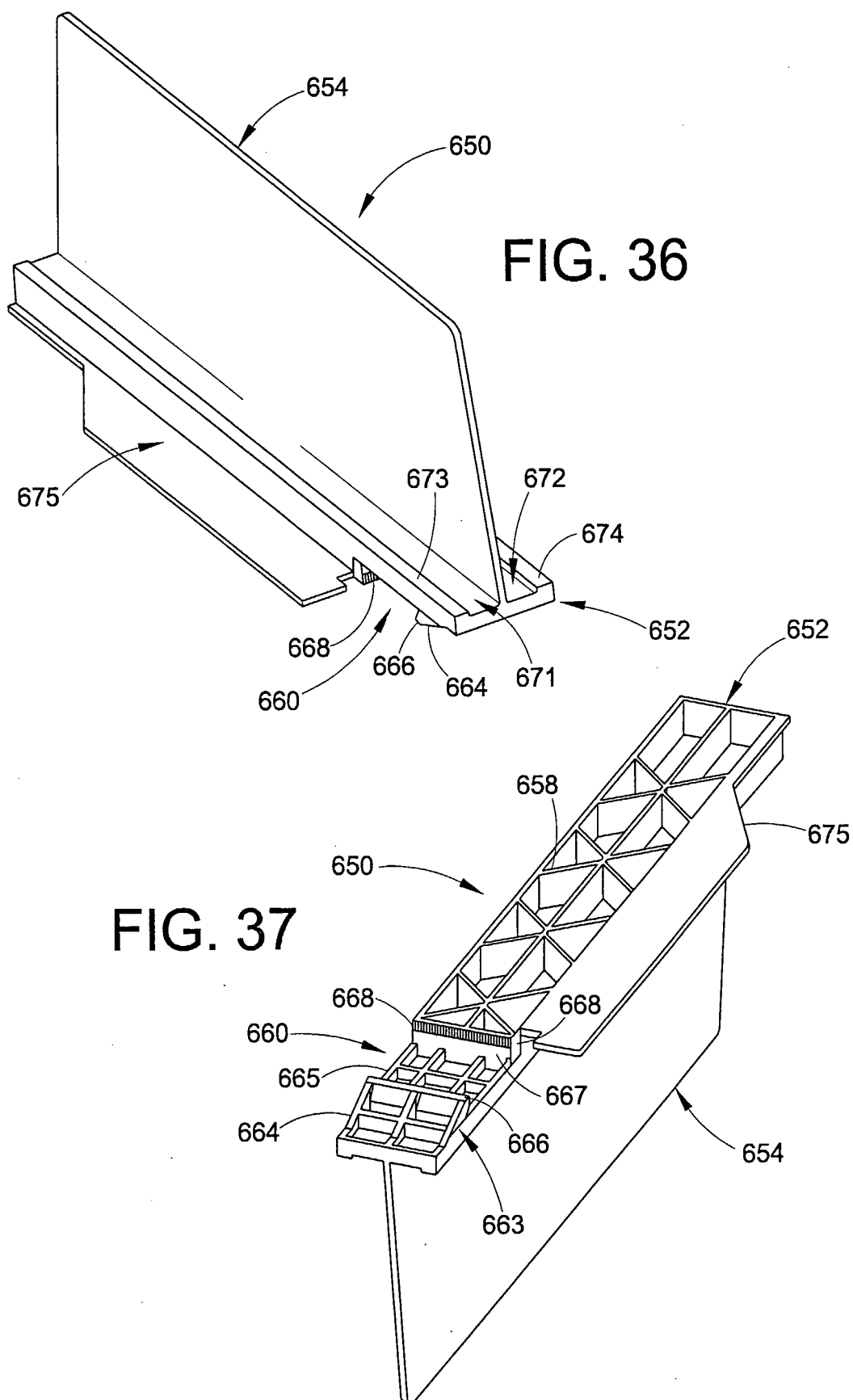
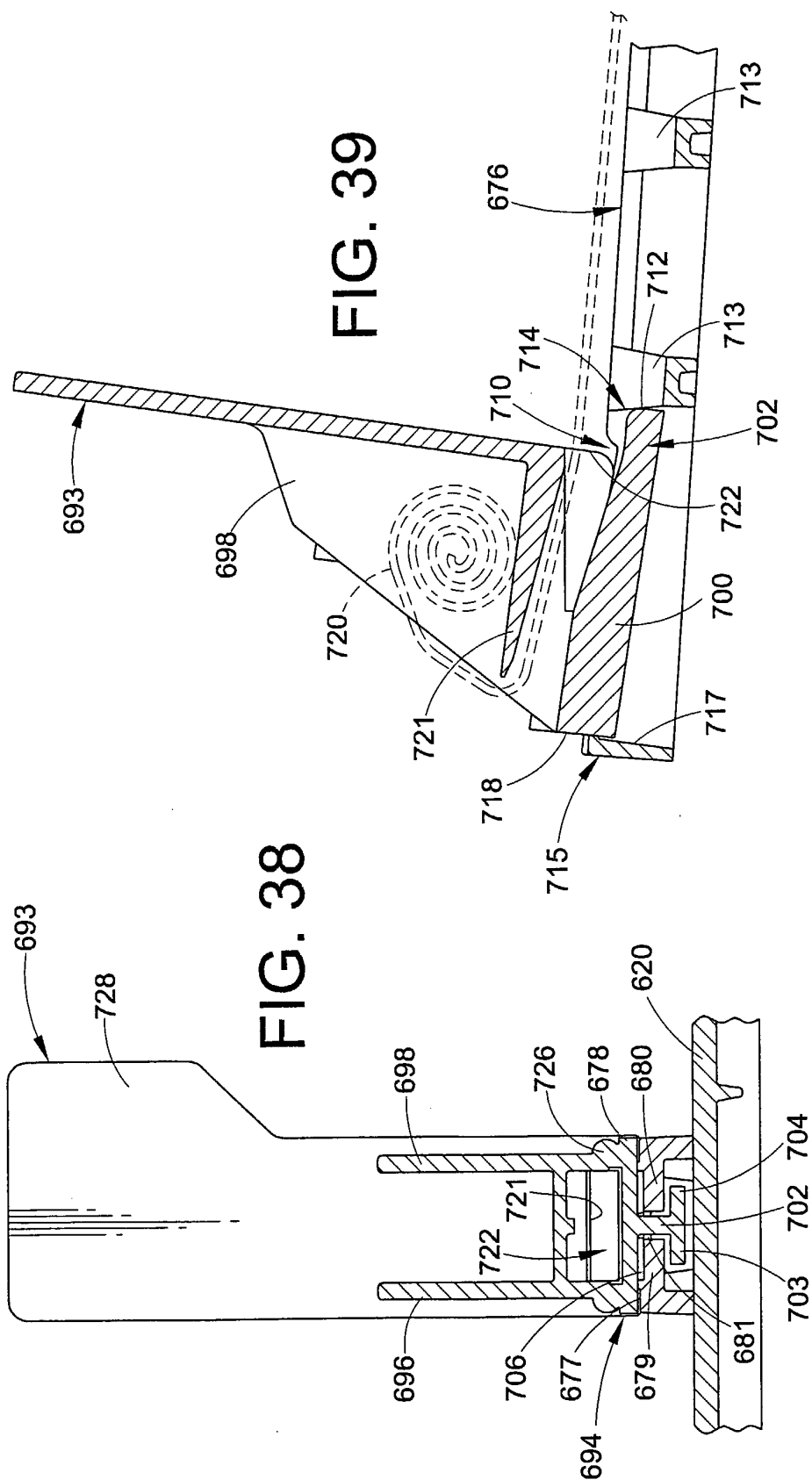


FIG. 35





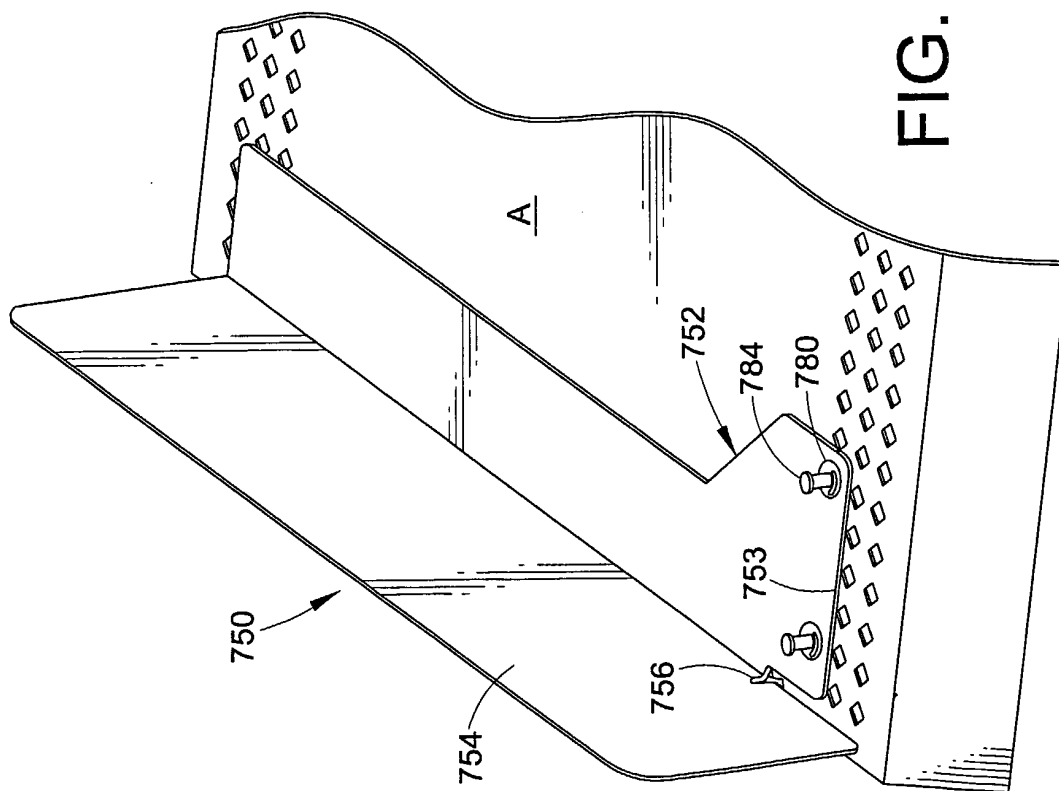


FIG. 40

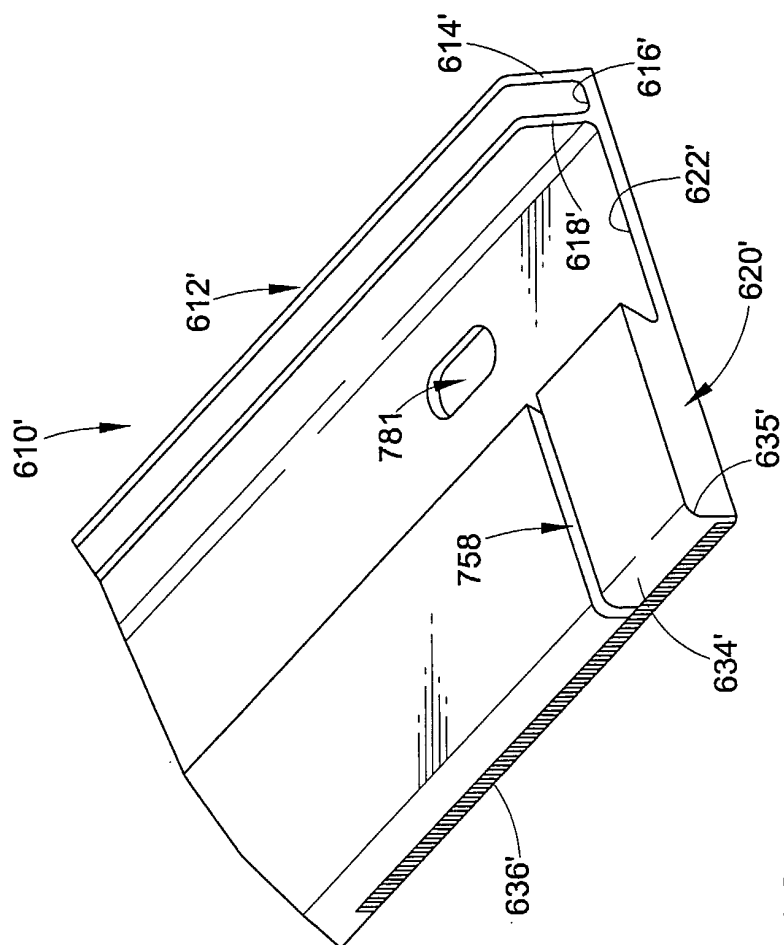


FIG. 41

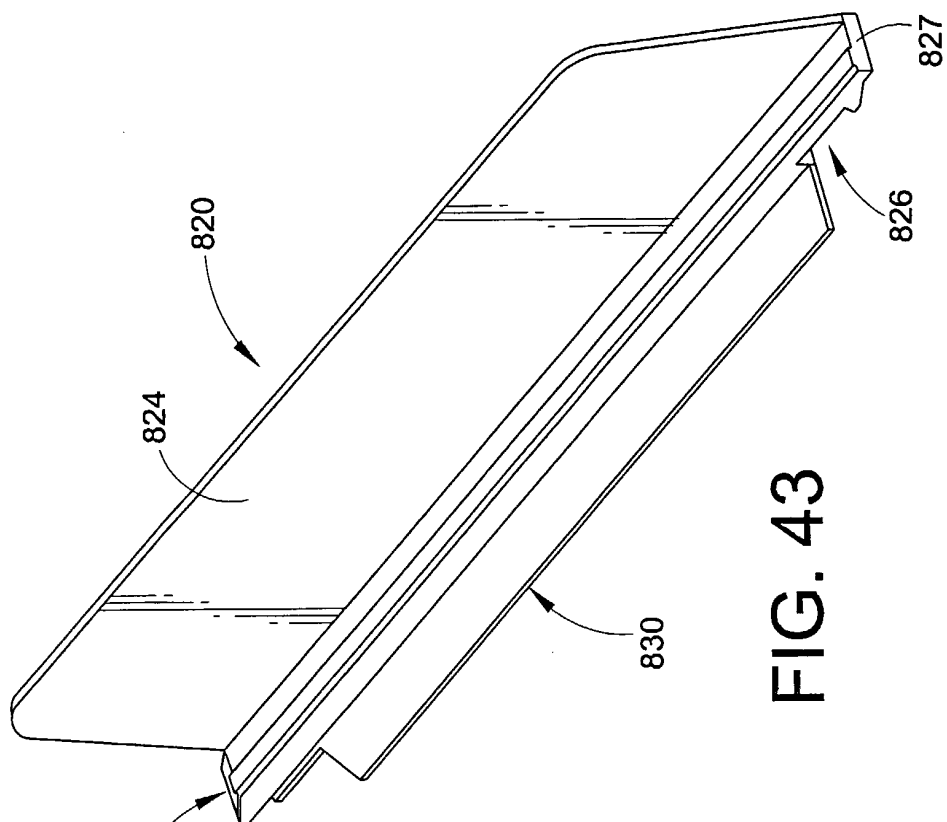


FIG. 43

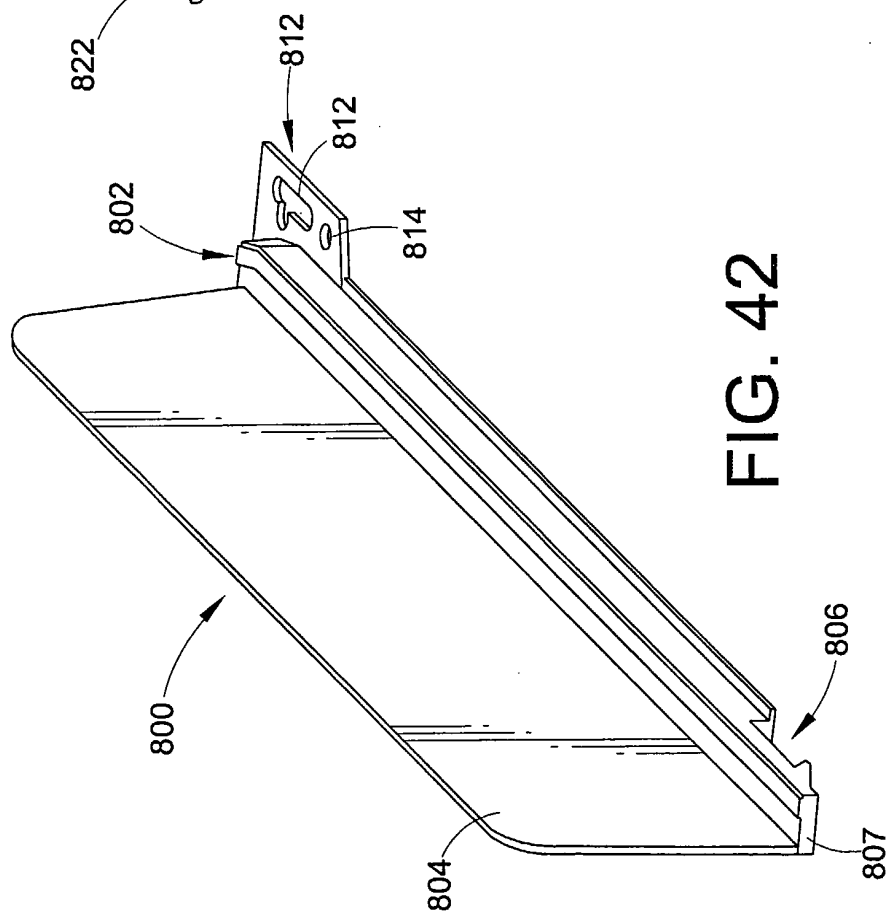


FIG. 42

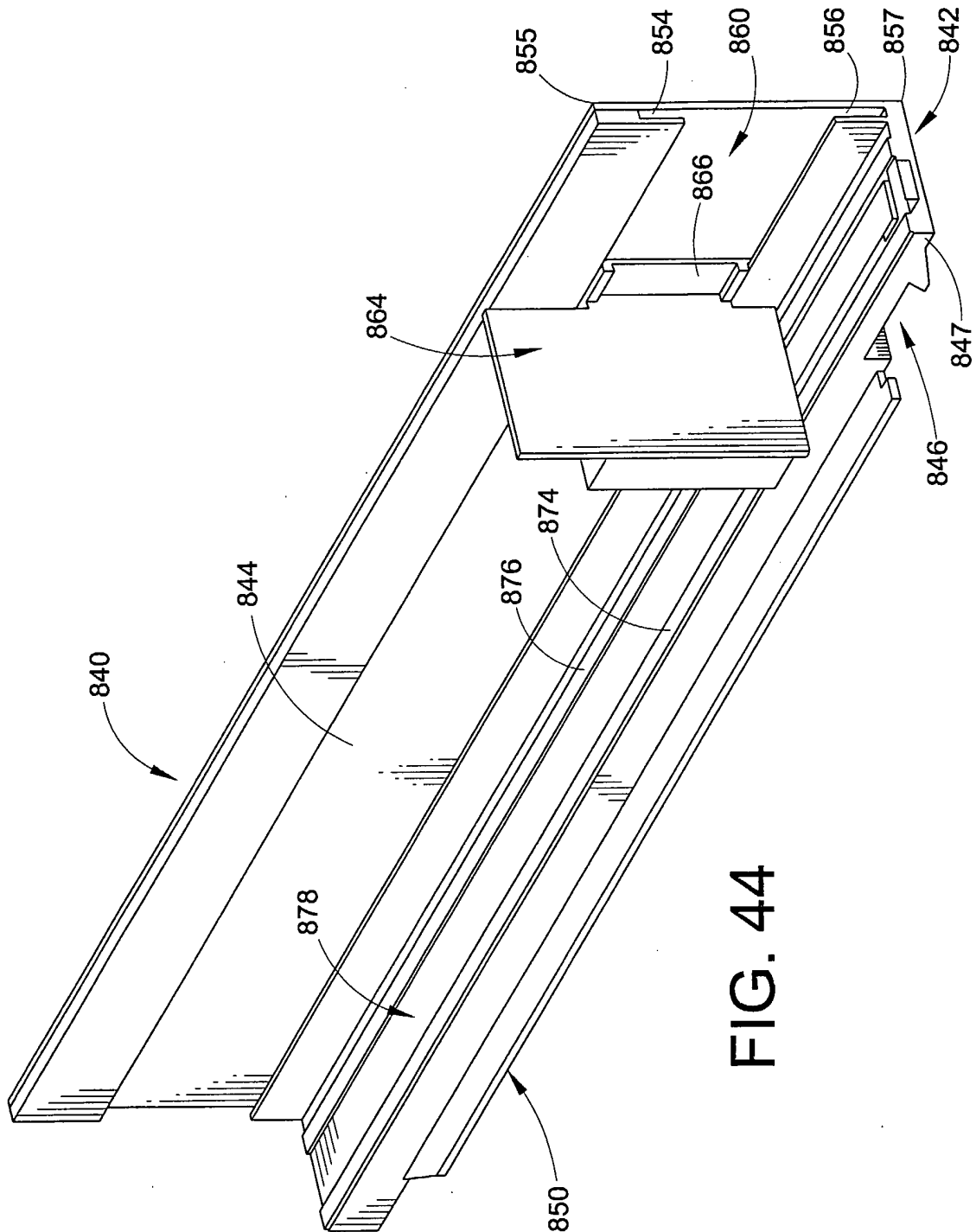


FIG. 44

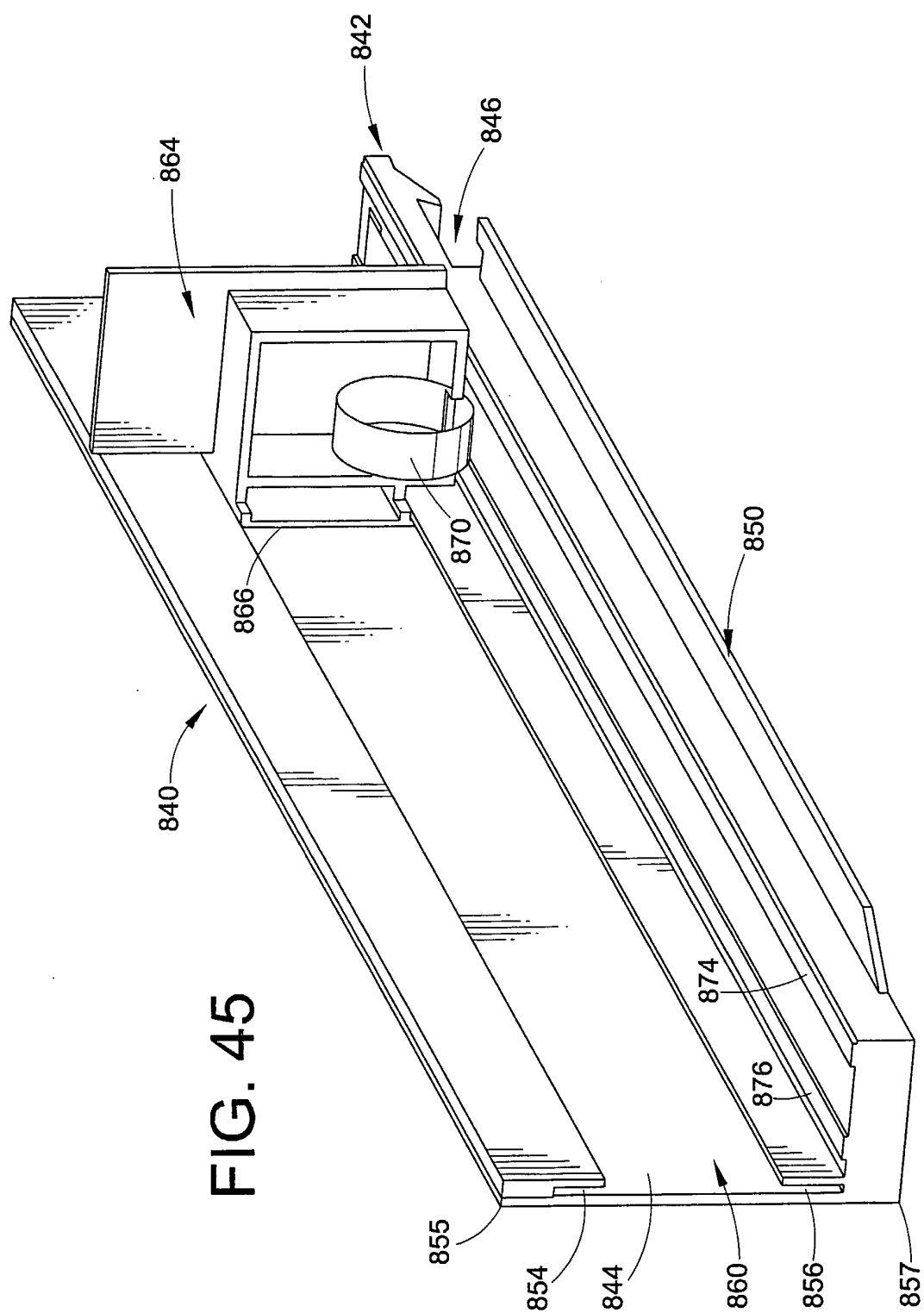


FIG. 45

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2004/033030

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A47F5/00

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A47F A47B

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 practical, search terms used)

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2 724 098 A1 (MEDIA 6 GESTION) 8 March 1996 (1996-03-08)	1
Y	the whole document	2-9, 11-19, 21-29, 31-41
X	US 2001/002659 A1 (BADA ALAIN MARCEL) 7 June 2001 (2001-06-07)	10
Y	the whole document	2-9, 11-19, 21-29, 31-41
Y	EP 0 337 340 A2 (RTC INDUSTRIES, INC) 18 October 1989 (1989-10-18) the whole document	1-41
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Patent family members are listed in annex.

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Date of the actual completion of the international search

27 January 2005

Date of mailing of the international search report

02/02/2005

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Lassen, S

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2004/033030

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2003/141265 A1 (JO MERIT ET AL) 31 July 2003 (2003-07-31) the whole document -----	1-41
Y	US 5 341 945 A (GIBSON ET AL) 30 August 1994 (1994-08-30) the whole document -----	1-41
Y	US 5 673 801 A (MARKSON ET AL) 7 October 1997 (1997-10-07) the whole document -----	1-41

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Information on patent family members

International Application No
PCT/US2004/033030

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US 5673801	A	07-10-1997	NONE	