(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 120 425**
A2

(12) # EUROPEAN PATENT APPLICATION

(21) Application number: **84102943.2**

(22) Date of filing: **16.03.84**

(51) Int. Cl.³: **A 47 H 13/14**
A 47 H 5/032, A 47 H 1/08
A 47 H 15/04, A 47 H 1/144

(30) Priority: **23.03.83 US 478166**
08.03.84 US 585352

(43) Date of publication of application:
03.10.84 Bulletin 84/40

(84) Designated Contracting States:
AT BE CH DE FR GB IT LI LU NL SE

(71) Applicant: **Leibowitz, Martin Nick**
11600 Audelia Road 187
Dallas Texas 75243(US)

(72) Inventor: **Leibowitz, Martin Nick**
11600 Audelia Road 187
Dallas Texas 75243(US)

(74) Representative: **Patentanwälte Grünecker, Dr. Kinkeldey, Dr. Stockmair, Dr. Schumann, Jakob, Dr. Bezold, Meister, Hilgers, Dr. Meyer-Plath**
Maximilianstrasse 58
D-8000 München 22(DE)

(54) **Drapery support and traverse system.**

(57) A drapery support system (20, 300, 500) having a telescoping channel-shaped track assembly (21, 521) and a plurality of support slides (130, 131, 504) each connected to a hanger (152, 270, 305, 514) for a pleat or fold of a drapery panel (30, 301), hanging bead configuration (400) or blind segment (502). The slides are interconnected by an elongated elastic cord member (148, 530) so that as the panels or segments are extended or stacked back, the folds are maintained evenly spaced by uniform extension and contraction of the elastic cord. End slides (130) of a panel (30) are connected to a carrier member (160, 250, 340) which is engageable with a gravity or magnetic latching mechanism (198, 245) to secure a panel in an extended or closed condition. One embodiment of the system is provided with an endless traverse cord (324) for traversing the end slide carrier members (340) between open and closed positions of the drapery panels (301). Another embodiment of the system includes rotatable slides (504) which are rotated and extended by opposed elastic cords (530) for opening and closing vertical venetian blind segments (502).

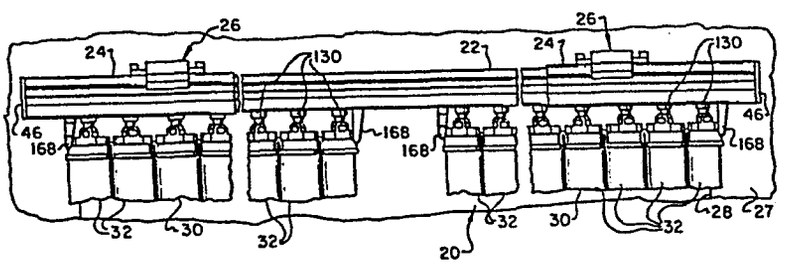


FIG. 1

EP 0 120 425 A2

DRAPERY SUPPORT AND TRAVERSE SYSTEM

CROSS REFERENCE TO RELATED APPLICATION

This application is a continuation in part of U.S. Patent Application Serial No. 478,166 filed: March 23, 1983.

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention pertains to a drapery support and traverse system comprising an adjustable telescoping support track, a plurality of drapery hanger slides interconnected by an elastic cord for maintaining equal spacing between drapery pleats or individual vertical blind segments and an improved latching mechanism for latching the slides in a drawn or extended position of the traverse cord. In an alternate embodiment of the system an endless cord traverse mechanism is used in conjunction with the elastic pleat spacing cord mechanism.

Background

In the art of drapery and vertical blind support systems numerous mechanisms have been developed for traversing the draperies or other window closures to allow extension and retraction of the drapery panels to form a closure across a window, doorway or to form a partition. A disadvantage with conventional drapery support systems pertains to the fact that the spacing between the folds or pleats of a drapery panel or between adjacent blind segments is not maintained equal in the extended or drawn position of the panel or in any position between the stacked back or folded position and the drawn position. This non-uniform spacing is unattractive and, in the case of vertical blind segments or bead chains does not provide for uniform admission of light through a window closure or good visual effect through the partially or completely drawn drapery or blind.

Prior art drapery support and traverse systems are also subject to sticking or snagging of the pleat support slide members during traverse of the slides between a stacked back and an extended position of the traverse mechanism.

Another problem associated with prior art drapery support systems pertains to the conventional manner of requiring the formation of sewn pinched pleats in drapery panels to provide a suitable manner of connecting the folds to the traverse mechanism. These types of pleats are expensive to form on the drapery material and add to the expense of cleaning and pressing draperies.

Another problem associated with conventional drapery support systems pertains to the mechanism for supporting the drapery support track structure. Prior art types of support brackets are somewhat cumbersome and do not provide easy adjustment of the position of the track or for easy removal and reinstallation of the track.

Accordingly, there has been a need for improvements in drapery support and traverse systems of the general type discussed herein and in regard to the particular problems discussed also herein.

SUMMARY OF THE INVENTION

The present invention pertains to a system for supporting closures such as draperies and vertical blind or partition panels and the like wherein an improved mechanism is provided for supporting the panels and for moving the panels between a stacked back or open position and an extended or drawn position over a window to form a partition or closure. In the following description the structure will be referred to primarily in regard to the support of a continuous flexible panel of fabric forming a drapery. However, those skilled in the art will appreciate that the invention may be used equally well with separate vertically extending venetian blind segments or similar closure structures including substantially rigid, hinged partition panels and the like.

In accordance with one aspect of the present invention there is provided an improved drapery support track structure including extruded, somewhat inverted channel shaped members which are configured to be of cross-sectional shapes so that one member is telescopically slidable within another member to form a drapery hanger slide support track of a preselected length. In accordance with another aspect of the present invention the improved support track configuration is adapted to be supported by a unique support bracket structure which is laterally adjustable with respect to a support wall and which is adapted to quickly release or receive the drapery panels support track for mounting and demounting the track.

An important aspect of the present invention resides in the provision of a drapery support system comprising a plurality of drapery pleat or fold hanger members which are supported individually by slide members slidable on a support track and wherein the slide members are interconnected by an elastic cord which is anchored at one end of the support track and wherein a master slide member may be pulled to extend the drapery panels from a folded or stacked back condition to an extended condition closing or partially closing over a window opening or the like. The drapery slide members are equally spaced apart and connected to the elastic cord and the equal spacing is maintained between a folded position of the drapery panels and an extended position.

In accordance with another aspect of the present invention there is provided a unique drapery fold or pleat hanger member which is easily attached or detached from the drapery panel and is also easily attached or detached from the drapery slide member. The hanger member may be provided with an integral hinge portion for receiving the edge of a drapery panel and whereby the panel may be conveniently adjusted as to its height by the amount of fold or hem placed in the hinged portion of the hanger.

In accordance with another aspect of the invention individual blind segments are supported by slides which are interconnected by opposed elastic cords for rotating the blind segments between open and closed positions.

The present invention still further provides a unique mechanism for a drapery support system comprising a slide member, a slide carrier and a coupler member for holding the slide carrier and the secondary slides in their extended and evenly spaced positions. In one embodiment of the invention a mechanical, gravity responsive coupler member holds the slide carrier in the latched condition and in another embodiment a magnetic latch structure is associated with the master slide carrier for holding the drapery panel in the extended position.

The abovenoted features and advantages of the present invention as well as additional superior aspects thereof will be further appreciated by those skilled in the art upon reading the detailed description which follows in conjunction with the drawing.

BRIEF DESCRIPTION OF THE DRAWING

Figure 1 is an elevation of a drapery support system in accordance with the invention for a double draw or center pull drapery arrangement;

Figure 2 is a perspective view of a portion of the drapery support system illustrated in Figure 1;

Figure 2A is a diagram showing the position of the slide members in the stacked back position;

Figure 2B is a diagram showing the slide members in the extended position;

Figure 3 is a view taken generally along line 3-3 of Figure 2;

Figure 4 is a detail section view of one of the hanger members;

Figure 5 is a section view taken along line 5-5 of Figure 2;

Figure 6 is a section view taken along line 6-6 of Figure 2;

Figure 6A is a plan view taken from line 6A-6A of Figure 5;

Figure 7 is a detail view of the elastic cord;

Figure 8 is a detail view of a portion of the track structure;

Figure 9 is a section view taken along line 9-9 of Figure 2;

Figure 10 is a section view taken along line 10-10 of Figure 9;

Figure 11 is a section view taken along line 11-11 of Figure 9;

Figure 12 is a section view taken along line 12-12 of Figure 9;

Figure 13 is a detail view of a magnetic latching mechanism for use with the slide carrier and traverse cord arrangement;

Figure 14 is a view taken from line 14-14 of Figure 13;

Figures 15A and 15B are views of an alternate embodiment of the hanger member;

Figure 16 is a perspective view of an alternate embodiment;

Figure 17 is a section view taken along the line 17-17 of Figure 16;

Figure 18 is a detail perspective view of a hanging bead panel;

Figure 19 is a detail section view taken along line 19-19 of Figure 18;

Figure 20 is a perspective view of another embodiment of the system of the invention;

Figure 21 is a section view taken along the line 21-21 of Figure 20; and

Figure 22 is a diagram showing various positions of the arms and blind segments.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In the description which follows like parts are marked through the specification and drawing with the same reference numerals, respectively. The drawing figures are not necessarily to scale and certain features of the structure may be shown exaggerated in scale in the interest of clarity.

Referring to Figures 1 and 2 an improved drapery support system in accordance with the present invention is illustrated and generally designated by the numeral 20. The drapery support system 20 includes an elongated drapery slide support track 21 including somewhat inverted channel shaped track sections 22 and 24. The track sections 22 and 24 are preferably formed of aluminum or plastic extrusions and are telescopically slidable one within the other whereby the overall length of the track assembly 21 may be selectively adjusted. The track assembly 21 is supported by at least two spaced apart track support bracket assemblies 26 which will be described in further detail herein. The bracket assemblies 26 are adapted to be mounted on a vertical wall 27, Figure 1, to support the track assembly adjacent a window opening or doorway 28.

The track assembly 21 is also adapted to support a pair of opposed drapery panels 30 which are formed to have opposed accordionlike segments or folds 32 whereby the drapery panel may be moved between a stacked back or substantially complete folded condition of the folds 32 or the panels 30 may be extended to the position shown in Figure 1 whereby the folds are substantially evenly spaced and formed substantially equal opposed angles with respect to each other and with respect to the track assembly 21. The arrangement of the drapery support system 20 illustrated in Figure 1 is for a pair of opposed drapery panels in a center draw or double drapery arrangement. However, those skilled in the art will recognize that the various features of the present invention maybe used in a single draw drapery support system wherein only one drapery panel 30 or a similar panel or vertical blind set is used in conjunction with a track assembly made up of only one of the track sections 22 or 24 or a combination of track sections 22 and 24.

Referring to Figure 5, in particular, the track sections 22 and 24 have substantially the same cross-sectional configuration; however, the track section 22 is dimensioned to be telescopically slidable within the track sections 24. The track sections 22 and 24 are arranged to have a generally inverted channel shape with the respective generally horizontally extending web portions 34 and 34a and opposed depending walls 36 and 36a which each form somewhat V-shaped inwardly extending recesses 38. The walls 36 and 36a include generally horizontally extending intermediate portions 40 and 40a and upwardly extended terminal flange ends 42 and 42a. The flange ends 42 and 42a are spaced apart to provide a longitudinal slot 44 extending the length of the track sections. The track sections 22 and 24 maybe be formed of extruded or rolled aluminum, steel or plastic and may be typically formed of .020 inch thick cold rolled steel, for example. As shown in Figures 1 and 2, the track assembly 21 is closed at its opposite ends by cap members 46 which will be described in further detail herein. The track sections 22 and 24 are preferably proportioned such that the inner track section 22 is engageable with the outer track sections 24 along the respective flanks 39 and 39a of the wall portions forming the recesses 38.

Referring now to Figures 5, 6 and 6A the support brackets 26 are each characterized by an assembly of a wall bracket member 50 and a sliding support assembly made up of a bracket member 52 and a clamp 54. The bracket 52 and clamp 54 are secured in assembly with each other and with the wall bracket 50 by a nut 56 which may be manually actuated to clamp the bracket 52 and clamp 54 together in a predetermined position on the bracket 50 with the track 21 secured thereby. The wall bracket 50 includes a wall mounting pad portion 60 having a mounting face 62 and spaced apart openings 64 for receiving bracket mounting screws or nail type fasteners for securing the wall bracket to a vertical wall.

The wall bracket 50 includes a generally horizontally extending beam portion 66 which is provided with a longitudinally extending slot 68 opening to the distal end 70 of the beam portion. Opposed side edges of the beam 66 are provided with opposed laterally projecting detent bosses 76, Figure 6, near the distal end of the beam portion. As shown in Figure 6, the slot 68 as a

cross-sectional profile which includes a channel portion with opposed sloping side walls 80 for receiving a boss 82 formed on the underside of the bracket 52 and extending longitudinally thereof. The boss 82 provides support for a depending threaded stud 84 which projects through the slot 68 and is engaged by the nut 56. The bracket 52 is configured to be slidably disposed on the beam 66 with the stud 84 disposed in the slot 68.

The bracket 52 includes a web portion 88 and opposed longitudinally extending flanges 90. The flanges 90 include generally horizontally extending longitudinal side edges 92 which are each provided with a vertically projecting stop portion 94, Figure 2. The flanges 90 are provided with opposed spaced apart slots 96, Figure 6, which are of a length sufficient to receive the respective detent bosses 76 for locking the bracket 52 in a selected position on the wall bracket 50. The flanges 90 and the opposed portions of the beam 66 defining the slot 68 of sufficient resilience to allow deflection of one member or the other to permit movement of the bracket member 52 between positions wherein the bosses 76 project into a selected set of slots 96. The bracket 52 includes a depending end 98, Figure 5, having a curved distal edge and configured to fit in one of the opposed recesses 38 of the track assembly 21.

The clamp member 54 includes a web portion 100, Figure 5, which is integrally formed with a boss 102 of a configuration to fit in the other of the longitudinally extending recesses 38 of the track assembly 21 to secure the track assembly between the end 98 and the boss 102. The clamp 54 includes opposed flange portions 104, Figure 6, which are of generally U-shaped configuration and have reentrant spaced apart fingers 106 forming a slot between the fingers 106 and the web portion 100 and adapted to receive the opposed distal edges 92 of the flanges 90 whereby the clamp 54 is slidably disposed on the bracket member 52.

The clamp 54 includes a circular sector shaped boss 110 formed on the underside of the web 100 and having a beveled surface 112 cooperable with a frusto conical shaped head portion 114 of the nut 56. The head portion 114 and a depending digital button portion 116 of the nut 56 define a peripheral groove 118 in which is disposed a circular wire spring 120 having opposed leaf portions 122,

Figure 6A, the ends of which are engageable with depending projections 124 formed on the clamp 54. The spring leaves 122 bias the clamp member 54 toward the recess 38 in the track assembly 21 and when the nut 56 is tightened against the boss 110 the clamp 54 is securely clamped with respect to the bracket 52 and with respect to the beam 66 of bracket 50.

The track assembly 21 may be easily mounted on or demounted from the spaced apart bracket assemblies 26 by loosening the nuts 56 of each bracket and deflecting the clamp member 54 out of the recess 38 until the bracket end 98 is clear of the side wall of the track section. The spring leaves 122 will bias the clamp 54 toward the track section 24 to prevent the track from falling off the bracket assemblies 26 unless forced by deflection of the spring leaves. Moreover, when the nut 56 is loosened the assembly of the bracket member 52 and the clamp 54 may be moved to place a selected pair of opposed slots 96 in registration with the detent bosses 76 to laterally position the track assembly 21 with respect to a wall adjacent the brackets 26. Thanks to the arrangement of the clamp 54, the bracket 52 and the spring 120, the track assembly 21 may be adjusted longitudinally, demounted from the brackets 26 and remounted on the brackets 26 and the brackets 26 may be easily adjusted with respect to the wall surface.

Referring again to Figures 1, 2, 3 and 4 the drapery support system 20 includes a plurality of spaced apart pleat or fold hanger support slides 130 each of which are provided with a central trunk portion 132, Figure 3, and opposed downwardly curved shoulders 134. The shoulders 134 are shaped to form opposed parallel extending slots 136 defined between the trunk portion 132 and the shoulders 134. The trunk portion 132 is flared outwardly at the bottom edge to form to opposed laterally extending projections 138. A pintle 140, Figures 3 and 4, depends from the slide trunk portion 132 and is provided with an integral hanger retaining collar 142. The slots 136 are defined by arcuate bearing surfaces 137, 139 and 141 which are operable to bear against the distal flange ends 42 and 42a of the track sections to locate and support the slides 130 within the channels formed by the track sections 22 and 24.

The top edge of the trunk portion 132 of each slide 130 is provided with an open ended keyhole shaped groove 146 in which an elongated elastic cord member 148 may be forcibly inserted and retained connected to respective ones of the slides 130 which are preferably selectively spaced apart equal distant one from the other along the elastic cord member 148. The elastic cord member 148 is characterized as a cord of homogeneous highly elastic material such as natural or synthetic rubber having a substantially uniform force-deflection characteristic along any portion of its length. The elastic cord 148 will stretch uniformly so that the spacing between slides 130 will remain substantially equal for each pair of adjacent slides whereby the folds or pleats 32 of the drapery panels 30 are maintained in a uniform angled relationship with respect to each other regardless of the degree of the fold or unfolding of the drapery panels.

Figures 2A and 2B illustrate the relationship between adjacent slides 130 of each of the drapery panels when the panels are in at least a partially open or stacked back position as indicated in Figure 2A and in an extended position as indicated in Figure 2B. As shown in Figure 2A, the slides 130 connected to each elastic cord member 148 are evenly spaced apart although relatively close together as compared with the spacing of the slide members in Figure 2B. In Figure 2B the cords 148 have been stretched to the position wherein the panels are closed or positioned near a closed condition; however, the slides 130 of each drapery panel are still spaced equal distant one from the other thanks to the uniform stretchability of the cord members 148.

Referring briefly to Figure 7, the elastic cord 148 is preferably formed with a cord of singular or plural strands 149 of elastic material surrounded by a braided or woven sheath or jacket 150. The sheath 150 may be tightly woven over the core strands 149 or adhered to the core strands by a suitable adhesive. The sheath 150 forms a casing which limits the stretchability of the core members 149 and provides a wear resistant cover. By predetermining the configuration of the braid or weave of the sheath 150 the stretchability of the elastic member 148 can be predetermined to never exceed a limit which, is preferably in the range of 1.5 to 2.5 times

the relaxed length of the cord member. The construction of the cord member illustrated in Figure 7 may be similar to an elastic stretch cord of a type manufactured by Bungee International Manufacturing Corporation, Chatsworth, California. The slides 130 are each connected to a hanger member 152, to be described in further detail herein, pivotally supported on the hanger support pintle 140. Each of the slides 130 normally rests on the upward facing surfaces 43 and 43a of the flange ends of the track sections as shown in Figure 3. The surfaces 137 and 139 bear against the side surfaces of the flange ends 42 and 42a to locate the slides 130 generally centrally in the slot 44.

Referring of Figures 3 and 4, the pintles 140 depend through the slots 44 and support hanger members 152 which are each provided with opposed spaced apart jaws 156 which define a generally oval slot 158 for receiving the retaining collar 142. The jaws 156 are each provided with a somewhat conical sector shaped jaw surface 159 forming a bearing engageable with the pintle 140 whereby the hanger members 152 may be freely pivotally supported on the respective slides 130. The hangers 152 each comprise an elongated laterally extending beam 153, as shown by example in Figure 3, and of sufficient width to provide a relatively thin web portion 155 which may be suitably secured to the upper hem 33 of the respective panel folds 32 by suitable means such as sewing the hem to the web portion 155 with stitching 157.

Accordingly, as the panel folds 32 move from a generally parallel relationship relative to each other in the stacked back or folded condition of a drapery panel 30 to a generally extended or drawn condition the hangers 152 will pivot freely on the respective slide pintles 140 to allow the drapery panel folds to assume generally equal angular positions relative to each other and to the longitudinal axis of the track assembly 21. The hangers 152 may be conveniently snapped into and out of position supported by the pintles 140 by merely deflecting the jaws 156 to increase the gap between the jaw surfaces 159. Accordingly, the drapery panels 30 may be disconnected from the track assembly 21 and reconnected thereto without removing the slides 130 and the interconnecting cords 148 from within the track assembly 21.

Referring to Figure 2, in the exemplary center draw drapery arrangement shown in Figures 1 and 2 the inner end slide 130 associated with the last fold 32a of each drapery panel 30 is connected to a slide carrier 160. The opposite end folds 32b are also supported by a slide 130 connected to a slide carrier 160. As shown by way of example in Figures 9, 10 and 11 the slide carrier 160 includes a pair of opposed trunnions 162 formed for retaining thereon carrier support rollers 166. The rollers 166 are engageable with the web 34 or 34a if the slide carrier is pushed upward to the position shown on Figure 11 or the hub portions 169 of rollers 166 engage the flange surfaces 43 and 43a when the carrier is traversing along the track 21. The carrier 160 includes a depending body portion 167 having an intergally formed baton hook 168 secured thereto. The hook 168 is operable to be connected to the upper end 170 of an elongated drapery draw baton 172 for traversing the carriers 160 along the track assembly 21. The width of the body section 167 is slightly less than the width of the slot 44 to facilitate free traversal of the carrier 160 along the track sections 22 or 24.

Referring to Figure 9, the body portion 167 includes a recess 173 and a transverse latch pin 174 extending across the recess. Referring also to Figure 10, a backwall 176 of the body 167 includes a bifurcated projection 178 having opposed radially extending flange portions 180 which are adapted to project through an opening 133 formed in the trunk portion 132 of each of the slide members 130, whereby the slide member associated with either a fold 32a or 32b is releasably secured to a slide carrier 160.

Each carrier member 160 associated with an end slide 130 of a drapery panel is adapted to be latched in the extended condition of the drapery panel and the pleat spacing cord 148 by a unique latch mechanism. The latch mechanism will be described in detail with regard to a center latch 179, Figure 2; however, opposite end latches 181 may also be provided as part of the end caps 46. Referring to Figures 9 and 12, the latch mechanism 179 includes a body 180 having opposed downwardly opening slots 182 formed therein for supporting the body on the track flange ends 42 and/or 42a as shown in Figure 12. The body 180 is provided with an internally threaded bore for receiving a screw 184 which may be adjusted to

bear against one of the webs 34 or 34a to lock the body 180 in a selected position along the track assembly 21. The body 180 has mounted thereon a leaf spring member 188 which projects longitudinally in the slot 44 toward a downwardly curved end 190. The leaf spring 188 also projects between a pair of spaced apart ears 192 integral with the body 180 and having downwardly opening slots 194 for receiving opposed trunnions 196 formed on a carrier coupler member 198. The coupler member 198 is retained in the slots 194 by the spring 188 and has a cam surface 200, Figure 9, engageable with a transverse end wall 202 of the body 180 to limit the downward pivotal movement of the latch member 198 with respect to the body 180 under the urging of gravity forces. The coupler member 198 includes a throat 204 formed in part by a tip 206 having a generally downwardly inclined cam surface 208 formed on the outer side thereof.

The coupler member 198 may be pivoted between the position shown by the solid lines to the alternate position indicated by the alternate position lines to clear the latch pin 174 on the carrier 160. In response to movement of the carrier 160 toward the coupler member 198 the latch pin 174 will engage the downwardly curved end 190 of spring 188 and essentially simultaneously engage the cam surface 208 forcing the coupler member 198 to rotate in an anti-clockwise direction, viewing Figure 9, until the tip 206 clears the pin 174. When the pin 174 moves into the throat 204, the coupler member 198 returns to the position indicated by the solid lines to engage and retain the carrier 160 in the position shown. Thanks to the upwardly inclined surface 209, defining part of the throat 204, and a flattened edge 175 on the latch pin 174, the carrier 160 will be retained in a latched condition.

As the carrier 160 engages the spring 188, the stiffness of the spring is sufficient to lift the carrier 160 upward until the rollers 166 engage the web 34 or 34a and are clear of the flange end surfaces 43 by a predetermined amount. Accordingly, in the latched position of the carrier 160 there is a predetermined clearance which will permit the carrier to be pulled downwardly against the bias of the spring 188 engaged with latch pin 174. If the carrier 160 is pulled downwardly and tilted slightly anticlockwise,

viewing Figure 9, the coupler member 198 will not rotate clockwise past the position illustrated thanks to the cam surface 200. However, by pulling downwardly and tilting the carrier 160 it may be released from the coupler member 198 and will automatically be urged to retract away from the coupler under a biasing force acting on the carrier 160 and the respective slides 130 due to the elastic cord member 148.

The latch assembly 179 formed by the body 180 and opposed coupler members 198 is arranged to comprise a back-to-back arrangement to form a center latching mechanism for opposed carriers 160 for a double-draw drapery arrangement as illustrated in Figure 2. A carrier 160 is secured to the slide 30 at the opposite end of a drapery panel 130 and connected to a latch mechanism comprising a body 181 supporting a coupler member 198 in the same manner and connected to or placed adjacent to the caps 46. Alternatively, the caps 46 could be provided with projections similar to the projections 178 for securing an end slide member 130 directly to the cap members 46.

Accordingly, the drapery panels 30 may be easily moved from a retracted and folded or stacked back condition to an extended condition and latched with the panels closed over the window 28, as shown in Figure 1, by grasping the batons 72 and pulling the carriers 160 associated with panel folds 32a toward the center position latch assembly 179, whereby the elastic cords 148 will be stretched uniformly to maintain equal spacing between the respective slides 130 and associated pleats or folds 32. When a drapery panel 30 is unlatched from its extended or closed position, the elastic cord 148 will automatically retract the drapery panel to a collapsed or more folded condition. The lightweight slides 130 and the roller supported carriers 160 traverse the track sections 22 and 24 relatively easily and with minimal friction. Moreover, thanks to the configuration of the track sections as illustrated in Figure 8 and the configuration of the slides 130, the slides will not catch or hang up in the tracks when passing from a track section 22 to a track section 24.

As illustrated in Figure 8, by example, each end 23 of track section 22 is formed such that the flange ends 42 are curved

downwardly at 27 toward the transverse flange portions 40. In like manner, the end 25 of the track section 24 is curved downwardly at 29 toward the flange portions 40a so that at the point that the track sections overlap the slides 130 will move smoothly from being supported solely by the surfaces 43 or 43a to the other of the surfaces without catching on the transverse edges of the track sections.

Referring now to Figures 13 and 14, there is illustrated an alternate embodiment of a latching mechanism for the drapery support system of the present invention, including a latch body 240 formed integral with a modified track end cap 246. The latch body 240 is made of a non-magnetic material, such as nylon, and is configured to support a permanent magnet 245 which is operable to generate a magnetic field. An end slide 130 is secured to a modified slide carrier member 250 by a bifurcated projection 252 similar to the projections 178 on the carrier member 160. The carrier 250 also includes opposed trunnions 254 for supporting a pair of spaced apart rollers 166. The carrier 250 supports a member 260 of magnetic material, such as steel, which is operable to be attracted by the magnet 245 for holding the carrier 250 in engagement with the latch body 240. The latch body 240 and the slide carrier 250 are provided with cooperating inclined opposed cam surfaces 241 and 251. The carrier 250 includes a depending hook portion 253 for connection to a baton 172 whereby the carrier 250 may be tilted to engage the cam surfaces 241 and 251 to thereby forcibly separate the carrier 250 from the latch body 240 in response to a pulling action, generally in the direction of the arrow 263 in Figure 13.

Referring now to Figures 15A and 15B, there is illustrated an alternate embodiment of a hanger 270 for a fold or pleat 271 of a drapery panel 272. The hanger 270 comprises an elongated beam 273 having center positioned opposed claw portions 274 similar to the claws 156 of the hanger 152. The beam 273 includes a thickened flange 275 and a relatively thin corrugated web portion 276 which is integral with a hinge portion 277 connected to a second web portion 278. The distal end of the web portion 278 comprises a rounded cam 280 which is adapted to be snap fitted into a recess 281 formed along the beam flange 275. Accordingly, the web portion 278 may be moved

relative to the corrugated web portion 276 about the hinge 277 between opened and closed positions wherein an edge 279 of a drapery panel may be inserted between the web portions 276 and 278 and the hanger closed by inserting the cam portion 280 into the recess 281 to secure the edge of the panel to the hanger. Clearly, the amount of material inserted between the beam web portions 276 and 278 will determine the overall hanging length of the panel which may be selectively adjusted. The corrugated web portion 276 assists in pinching the material between the web portions 276 and 278 and the drapery panel material is also pinched between the cam 280 and the surface defining the recess 281.

Referring now to Figures 16 and 17, there is illustrated a drapery support system 300 adapted for supporting and traversing various types of window closures, and including relatively heavy drapery panels 301. The drapery support system 300 is provided with an improved endless traverse cord arrangement in combination with the elastic traverse cord for maintaining even spacing between a plurality of support slides 131. The slides 131 are similar to the slides 130 but include depending jaw portions 303 for securing the slides to modified drapery pleat hangers 305 for supporting each pleat or fold 307 of panels 301. The support system 300 utilizes the telescoped track sections 22 and 24 with modified end caps 302 and 304. The slides 131 are interconnected by elastic cords 148. The end cap 302 includes a support beam 310 for supporting a rotatable traverse cord pulley 312. The beam 310 is also provided with a downwardly opening recess or notch 314 for receiving the top edge of an end slide 131 for retaining the slide latched to the end cap 302. The end cap 304 is provided with a beam portion 320, also projecting within the channel space formed by the track 24 for supporting a pair of spaced apart traverse cord pulleys 322 rotatable in a plane perpendicular to the plane of rotation of the pulley 312. An endless traverse cord 324 is trained around the pulleys 322 and 312 and around a conventional tension pulley 326 connected to a suitable tensioning mechanism 328 of a conventional type known in the art of drapery traverse cord systems.

The endless traverse cord 324 is preferably formed with ball and socket connecting links 330 and 332 secured to opposite

ends of the cord and comprising a so called bead chain-type connection between the ends of the cord 324 and a section of elastic cord 334 which may be used for tensioning the traverse cord 324 in place of or in addition to the use of the tensioning pulley mechanism 328.

The drapery support system 300 includes a pair of opposed slide carrier members 340 which are of identical configuration and are each provided with a flange 344 defining a recess for receiving a slide 131 in latched relationship. The slide carrier 340 includes interlocking coupler tongues 346 projecting from the ends of the carriers opposite the flanges 344. The coupler tongues are configured to be elastically deflected laterally to releasably interlock with each other when engaged in abutting relationship as shown in Figure 16.

As shown in Figure 17, by way of example, each of the slide carriers 340 includes a traverse cord clamping jaw including a fixed jaw 348 and a movable jaw member 350 which is adapted to be biased toward the jaw member 348 by a screw 352 to clamp the carrier 340 to the cord 324. The jaw member 350 is suitably hinged at 356 to the carrier 340 to undergo pivotal movement into forcible engagement with the cord 324 under the urging of the screw 352. By connecting the carriers 340 and 342 to opposed runs 325 and 327 of the traverse cord 324 the carriers are operable to extend the drapery panels 301 to a closed position wherein the coupler tongues 346 are interlocked to hold the panels in position against the tension of the cords 148. Accordingly, the concept of the elastic traverse cord in combination with the slides 131 may also be used in applications involving the use of an endless traverse cord and slide carrier arrangement for remote control of opening and closing such closures as relatively heavy drapery panels or other panel configurations.

Referring to Figures 18 and 19, the support system 20 may be used in conjunction with a unique hanging bead-type closure assembly generally designated by the numeral 400 and comprising a plurality of somewhat slotted tubular-shaped hanger members 402, each having opposed jaws 404 for engagement with the pintles 140 of the slides 130, respectively. The tubular hangers 402 are each operable to receive an array of side-by-side vertically hanging bead

chains 406 and 408 which are made up of a predetermined pattern of decorative beads or trinkets interconnected by a suitable link members 411. The hangers 402 are interconnected with each other by snap in-type end caps formed by an end cap assembly 412 having opposed end caps 414 and 416 interconnected by an integral molded hinge portion 418. The end caps 414 and 416 are provided with suitable flange portions for interference within the bores of the tubular hangers 402 whereby the hangers may be suitably hingedly interconnected by the end cap assemblies. The bead chains 406 and 408 may be cut to a predetermined length and may be inserted in the bores 403 of the hangers and removed therefrom by the removal of one or more of the end caps 414 or 416. An end bead 413 of each of the bead chains 406 or 408 is retained in the bore 403 and its connecting link 411 depends through a longitudinal bottom slot 405 formed along the underside of each of the hangers 402.

Referring now to Figures 20, 21 and 22, there is illustrated an improved support system for supporting vertical blind closures or the like, said support system being generally designated by the numeral 500. The support system 500 preferably utilizes a track 521 comprising at least one each of track sections 22 and 24 for supporting a plurality of vertical blind segments or slats 502. The blind segments 502 are adapted to be traversed from a stacked back condition directly adjacent each other to a traversed or extended condition and also rotated from a position wherein the plane of the blind segments extends perpendicular to the direction of traverse to a position wherein the segments 502 extend generally parallel to the direction of traverse to form a closure. Each of the segments 502 is adapted to be suspended from a slide member 504 including a portion forming opposed radially extending arms 506. THe arms 506 have distal end portions 508 extending at an angle with respect to the main portion of the arms as shown in Figure 22. The slide members 504 each include a downwardly depending shank portion 510 having an integral hook 512 for receiving a hanger rod 514 for each segment 502. The slides 504 each include an upwardly projecting central trunnion 516 which is adapted to be received in a recess 518 formed in a latch member 520 which may be formed as a separate member secured to the inside surface of the top web of one of the track

sections 22 or 24 at a preselected point thereon. Alternatively, the latch members 520 may be integrally formed with and projecting from an end cap 522 similar to the end caps 46.

The distal ends 508 of the arms of the slide members 504 are each adapted to receive respective swivel members 524. The swivel members 524 each comprise a shank or trunnion portion 526, Figure 21, adapted to be pivotally supported in a cooperating bearing bore formed in each of the arm portions 508. The swivel members 524 include a body portion 528 having a bore therein for receiving an elastic cord 530 similar to the elastic cord 148. The swivel members 524 may be formed of a suitable material adapted to undergo plastic deflection whereby the bodies 528 may be crimped to grip the cord 530 at predetermined points therealong for positioning the slide members 504 according to a predetermined initial spacing when the cords 530 is in a relaxed condition.

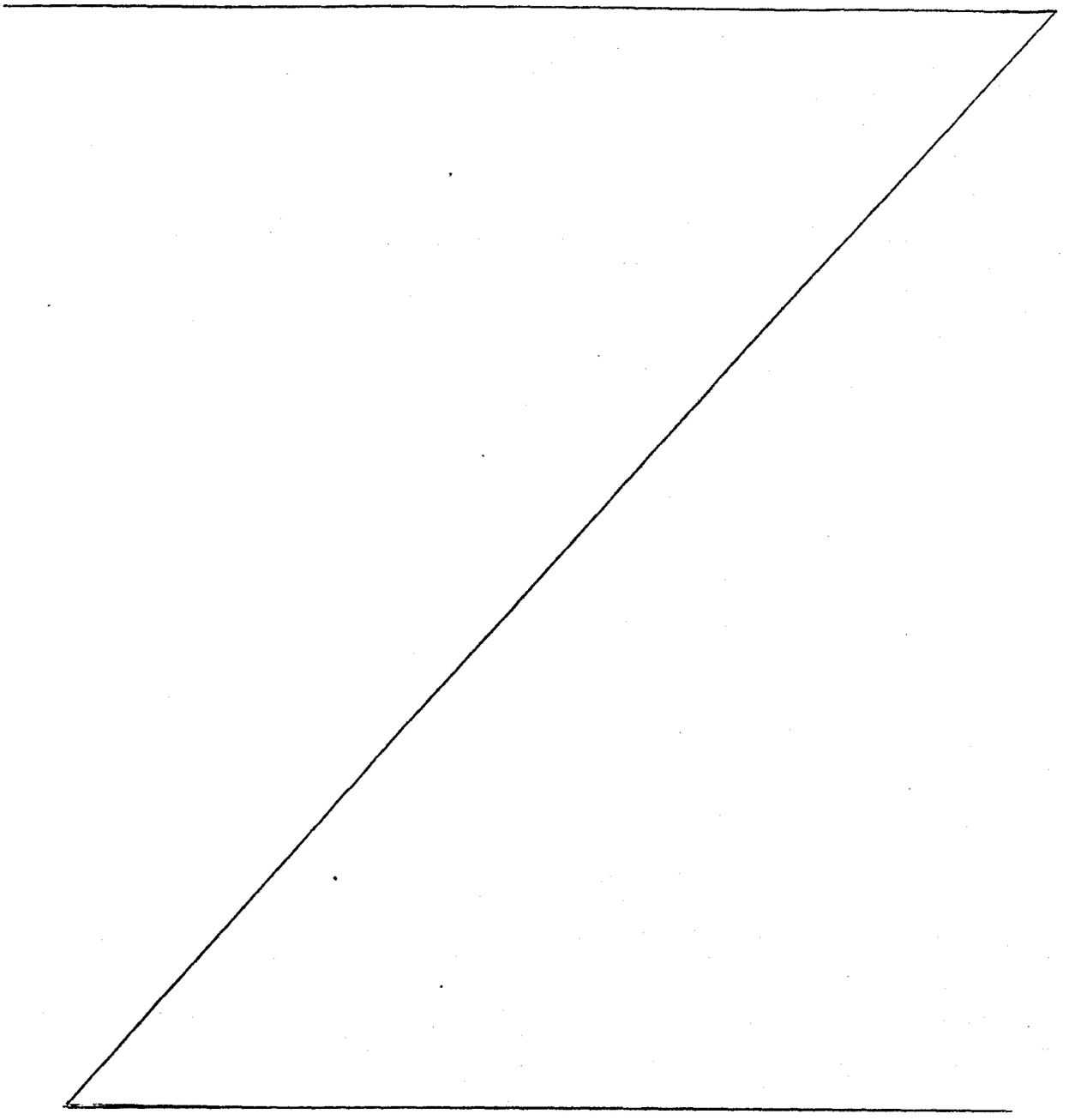
The latch members 520 may be provided at opposite ends of the track 521 in the configuration shown as part of the end caps 522. One or the other of the end slide members 504 is preferably permanently latched to a latch member 520 by insertion of the trunnion 516 into the recess 518. The end slide members 504 are preferably biased in the latched position by axially projecting resilient fingers 532 which are engageable with the bottom side of the arms 506 for biasing the end slide members 504 upwardly as the trunnion 516 engages the distal end of the latch member. The fingers 532 may also be formed integral with the respective end caps 522. The fingers 532 each also have sloping cam surfaces 534 which allow the end slide member 504 to ride up slightly on the fingers and clear of the track bearing support edges 43 and 43a so that adequate vertical clearance is provided for deflecting the fingers 532 downward to unlatch a slide member 504 from a latch member 520.

The drapery support system 500 is also provided with a baton 540 adapted for use in traversing the blind segments 502 along the track 521 as well as rotating the blind segments between an open and closed position or any selected position therebetween. The baton 540 includes a hook portion 542, Figure 21, cooperable with the shank portion 510 such as to provide a non-rotatable interlocking fit between the baton 540 and slide member 504. A baton 540 may, of

course, be clipped to either or both of the end members 504. By pulling downwardly on the baton 540 the fingers 532 may be depressed sufficiently to allow the trunnion 516 to be removed from the recess 518 whereby the segments 502 may be traversed from a closed to an open position stacked closely adjacent to each other.

By rotating the baton 540, the slide member 504 connected to the baton is rotated to also effect rotation of all of the slide members 504 through the interconnecting elastic cords 530. Since the cords 530 have a uniform elasticity or force-deflection characteristic each of the blind segments 502 will be rotated to the same degree upon rotation of the slide 504 connected to the baton 540. As shown by the diagram plan view of Figure 22 the slide members 504 may be rotated almost 90° in opposite directions from the open position of the blind segments 502 to the point where the cords 530 are adjacent to each other and whereby the segments 502 are substantially closed but remain parallel to each other. In the view of Figure 22 the segments 502 and slides 504 are shown in an alternate position rotated in a clockwise direction. The segments 502 may, of course, be rotated counterclockwise from the maximum open position to the same extent. Accordingly, with the support and traverse system 500 the blind segments 502 may be maintained uniformly spaced in a stacked back or extended position as well as in folded or rotative positions relative to their support track.

Although preferred embodiments of drapery and similar type closure support systems have been described herein, those skilled in the art will recognize that various substitutions and modifications may be made to the specific embodiments disclosed without departing from the scope and spirit of the invention as recited in the appended claims.



What I claim is:

1. A support and traverse system (20,300,500) for a vertically hanging closure (30,301,400,502) formed by a plurality of elongated adjacent pleats of a drapery panel or the like, comprising:

an elongated track (21,521) supporting a plurality of slide members (130,131,504) for traversing movement therealong;

means for supporting said track across an opening (28) to be traversed by said closure;

a plurality of slide members (130,131,504) disposed on said track including, respectively, hangers for (152,305,514) for supporting said closure; and

an elongated elastic member (148,530) secured to respective ones of said slide members at predetermined spaced apart points on said elastic member, said elastic member being operable to be stretched and relaxed to maintain said slide members substantially equally spaced apart to provide for substantially equal spacing between said pleats in selected positions of said closure.

2. The system set forth in Claim 1 wherein:

said elastic member (148) includes means (150) for limiting the elastic deflection of said elastic member whereby the maximum distance between said slide members may be predetermined.

3. The system set forth in Claim 1 including:

releasable latch means (160,198,245,250,340,520) for latching an end slide member of said closure, said latch means including a coupler member (198,245,340) for engagement with means (160,250,340) connected to said end slide member to releasably latch said closure in a stretched condition of said elastic member.

4. The system set forth in Claim 3 wherein:

said latch means is disposed at an end cap (46) of said track.

5. The system set forth in Claim 3 wherein:

said latch means includes a support body (180,240) for said coupler member (198,245) selectively positionable in a fixed position along said track.

6. The system set forth in Claim 3 wherein:

said latch means includes a spring member (188) for retaining said coupler member (198) connected to said means (160) connected to said end slide member, said spring member being

responsive to a downward pulling action on said means connected to said end slide member to allow said end slide member to be disconnected from said coupler.

7. The system set forth in Claim 3 wherein:

said means connected to said slide member comprises a carrier member (160,250) including means (174,260) engageable with said coupler members and roller means (166) for supporting said carrier member for rolling engagement with said track.

8. The system set forth in Claim 3 wherein:

said latch means comprises cooperating magnetic members (245,260) supported on said means connected to said end slide member and said track.

9. The system set forth in Claim 3 wherein:

said track comprises at least one section of a generally inverted channel shaped structure (21) comprising a web portion (34,34a) opposed walls (36,36a) depending from said web portion, said walls having respective opposed distal end flange portions (42,42a) extending toward said web portion and spaced apart one from the other to define a slot (44) along said track.

10. The system set forth in Claim 9 wherein:

said track includes telescoping inner and outer track sections (22,24) having opposed longitudinal ends (23,25) and said distal ends of said flange portions are tapered (27,29) to form a smooth transition between said track sections for traversal thereover of said slide members.

11. The system set forth in Claim 1 including:

hangers (152) connected to a top edge of said panel and releasably connected to said slide members, respectively, said slide members each including a depending pintle (140) for engagement with cooperating jaw portions (156) on said hangers for releasably connecting said hangers to said slide members, respectively.

12. The system set forth in Claim 1 including:

latch means (340) for securing said closure (301) in a stretched condition of said elastic member (148) to secure said closure in a preselected position extending a least partially across said opening, an endless traverse cord (324) extending along said track, members (312,322) along said track for supporting said traverse cord to provide opposed runs (325,327) of said traverse cord, and means (348,350) for securing said traverse cord to one of said latch means at a preselected point on said traverse cord.

13. The system set forth in Claim 12 wherein:

said closure includes a pair of opposed drapery panels (301) secured to opposed sets of slide members (131), respectively, said elastic members include elongated elastic members (148) interconnecting respective ones of said slide members of said opposed sets, opposed coupler members (340) secured to said opposed sets of slide members, and secured to opposite runs (325,327) of said traverse cord, respectively, said coupler members being releasably engageable with each other to latch said respective sets of slide members in the stretched condition of said elastic members.

14. The system set forth in Claim 1 wherein:

said track is formed by at least one elongated channel member (22,24) having a central elongated slot (44) formed along the bottom side thereof, said slot being delimited by opposed flange portions (42,42a) of said track forming respective bearing and guide surfaces (43,43a) for said slide members (130), and said slide members include cooperating bearing and guide surfaces (137,139,141) formed thereon and engageable with said surfaces on said track for supporting and guiding said slide members on said track, respectively.

15. The system set forth in Claim 1 wherein:

said track (21) includes at least one elongated channel member (22,24) including a top web (34,34a), opposed downwardly depending sidewalls (36,36a), and respective opposed recesses (38) in each of said sidewalls, and said means for supporting said track

includes spaced apart brackets (26), each of said brackets including a base member (50) including a base portion (60) having a wall mounting surface (62), a horizontal beam portion (66) projecting from said base portion, a first bracket member (52) slidably mounted on said beam portion, and a second bracket member (54) adjustably mountable on said first bracket member for clamping said track between opposed projections (98,102) on said first and second bracket members extending into said recesses in said sidewalls of said channel member, respectively.

16. The system set forth in Claim 15 including:

spring means (120) for biasing said second bracket member in engagement with said track.

17. The system set forth in Claim 16 wherein:

said first bracket member includes a threaded member (84) extending through a slot (68) in said beam portion and a nut (56) threadedly engaged with said threaded member (84) on first bracket member, said nut including digital actuating means (116) for actuating said nut for securing said track to said bracket and said bracket members to said beam portion at a preselected position with respect to said mounting surface.

18. The system set forth in Claim 17 wherein:

said beam portion and said first bracket member include cooperating detent parts (76,96) for holding said first and second bracket members and said track in a selected one of a plurality of positions relative to said mounting surface.

19. The system set forth in Claim 1 wherein:

said closure comprises a plurality of elongated individual blind segments (502) adapted to be suspended vertically from respective ones of said slide members (504), said slide members being adapted to rotate with respect to said track to pivot said slide segments between a first position parallel to each other and spaced apart to admit light through said opening and a second position forming a substantial closure across said opening, said elastic member

(530) being operable to rotate said slide members to maintain said segments substantially parallel to each other in said first and second positions.

20. The system set forth in Claim 19 wherein:

said elastic member comprises a pair of spaced apart coextensive elastic members (530) interconnecting said slide members (504) and connected to said slide members at points spaced apart on opposite sides of a pivot axis of said slide members, and a member (540) connected to a slide member at one end of said closure for drawing said closure from said stacked back condition to said extended condition and for rotating said slide members and said segments by said elastic members.

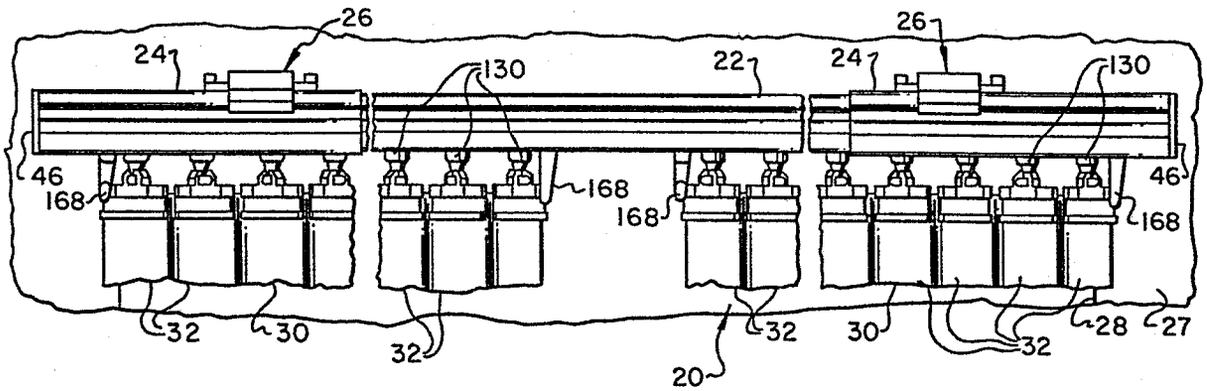


FIG. 1

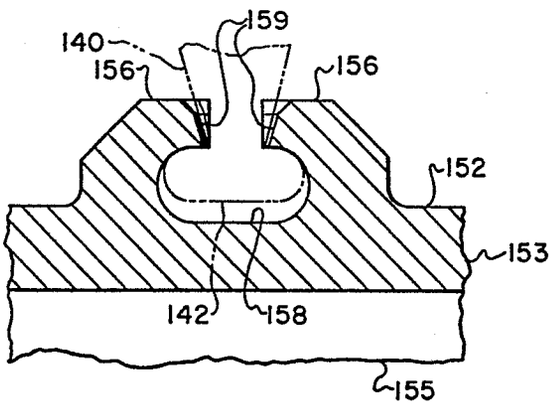


FIG. 4

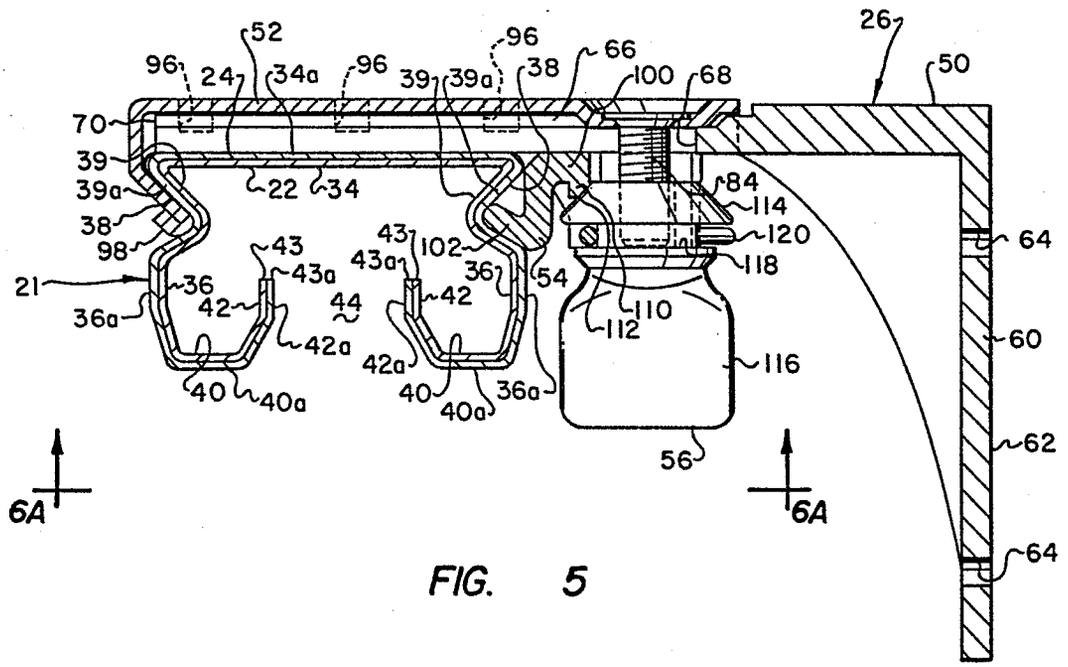


FIG. 5

0120425

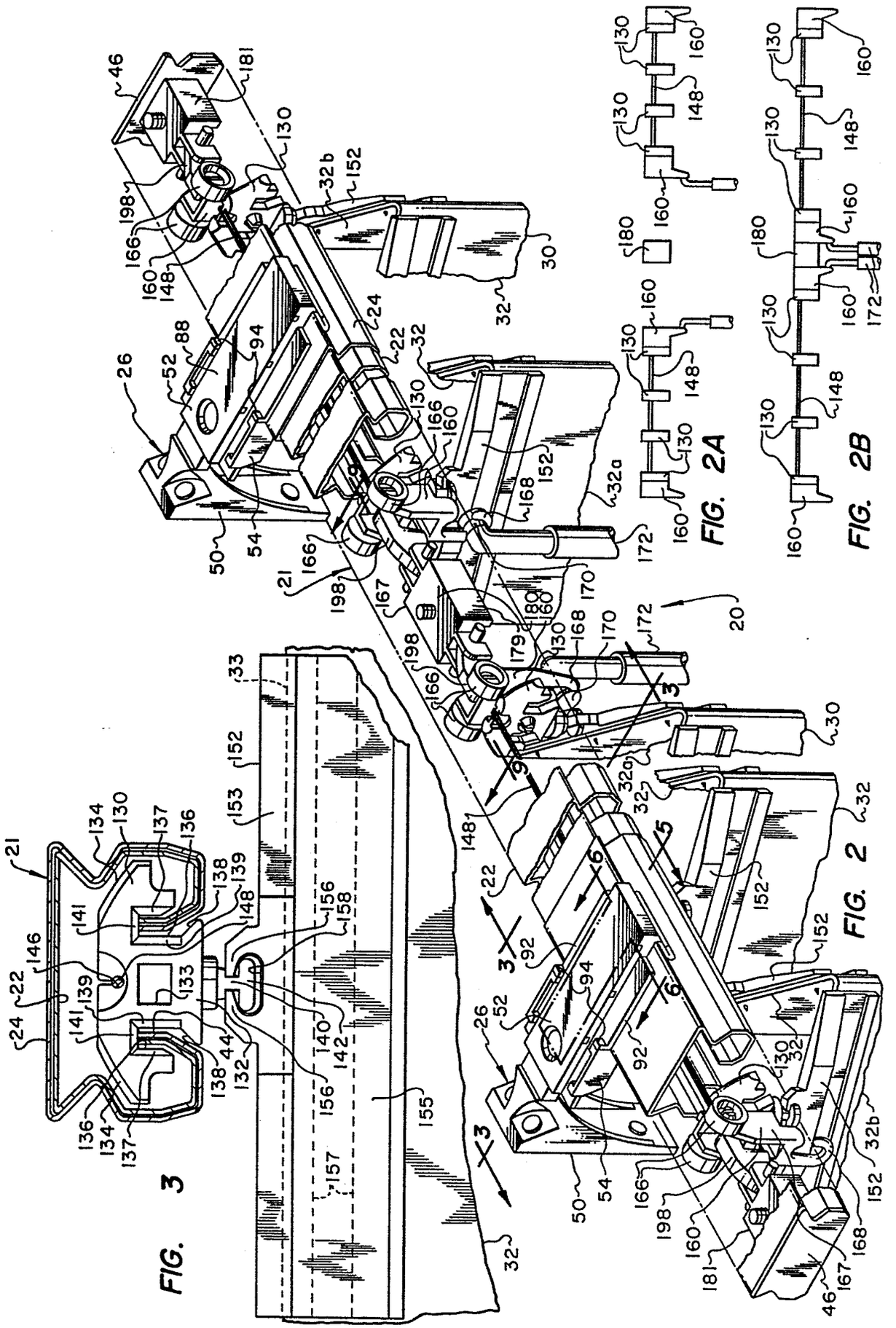


FIG. 3

FIG. 2

FIG. 2A

FIG. 2B

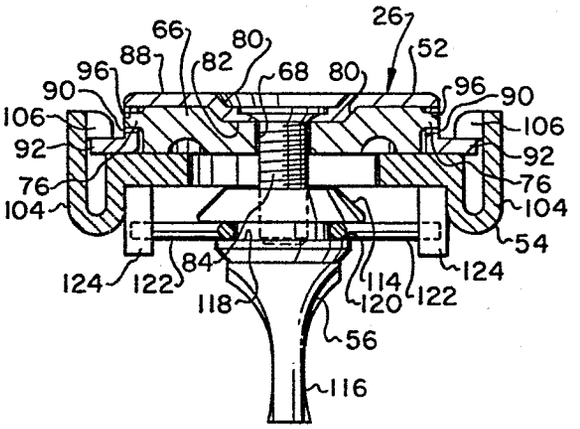


FIG. 6

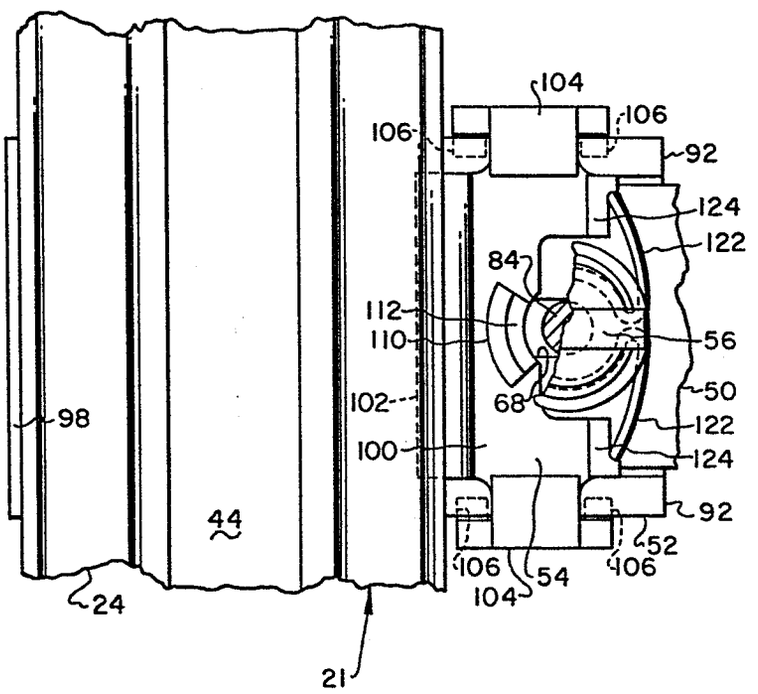


FIG. 6A

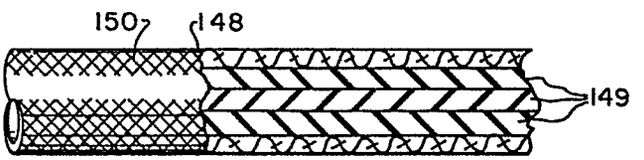


FIG. 7

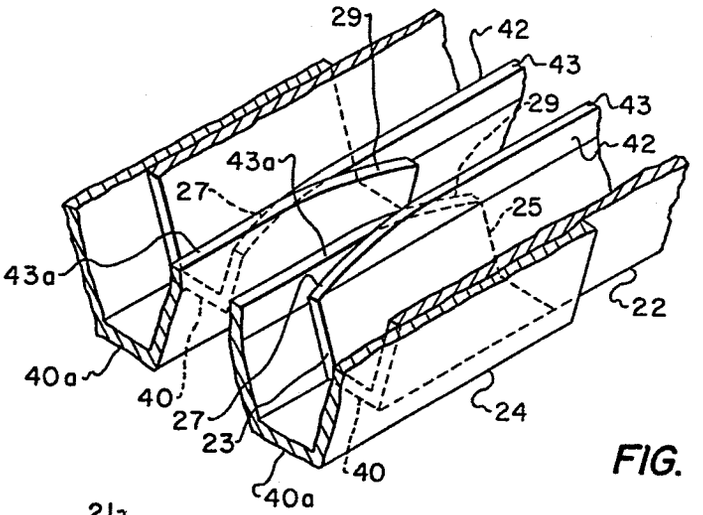
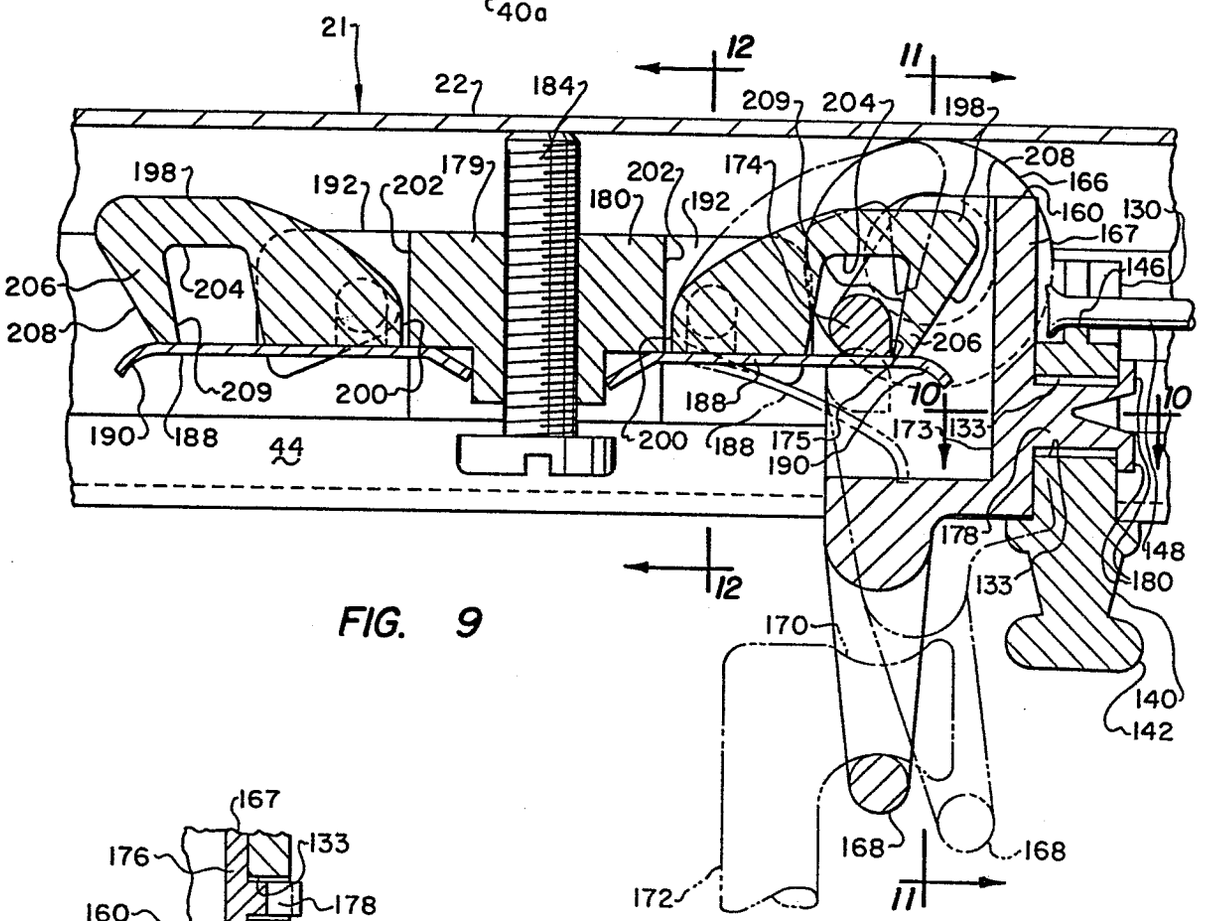

29
42
43
29
43
42
43a
27
25
43a
22
40a
40
27
23
24
40
40a

FIG. 8


21
22
184
12
11
209
204
198
208
166
160
130
167
146
198
192
202
179
202
180
192
174
206
204
208
209
200
188
206
10
10
190
188
44
200
188
175
190
173
133
178
148
133
180
170
140
142
168
168
172
11
12

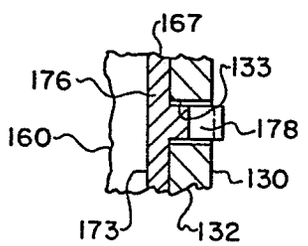

167
176
133
160
178
130
173
132

FIG. 10

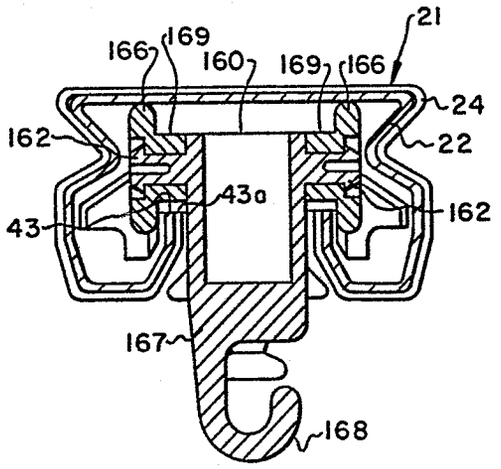


FIG. 11

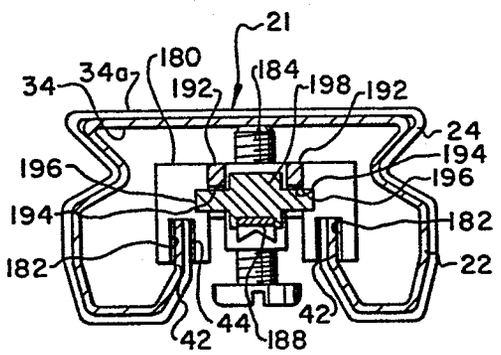


FIG. 12

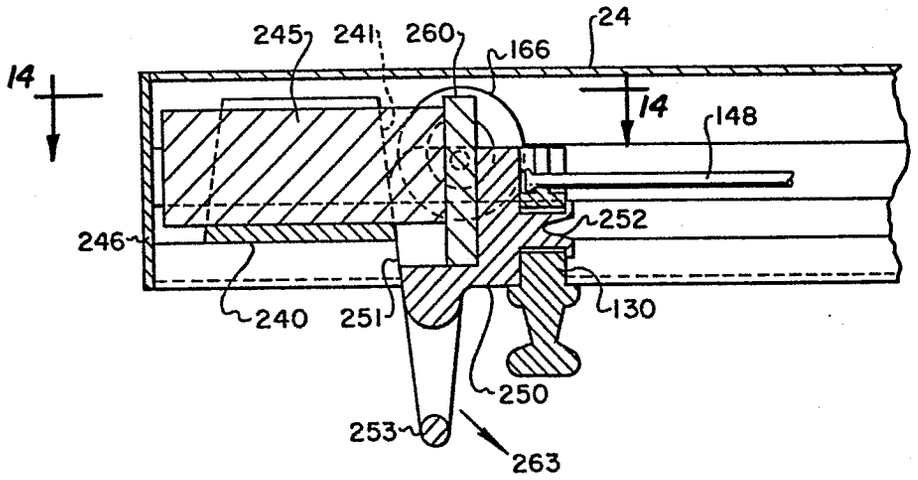


FIG. 13

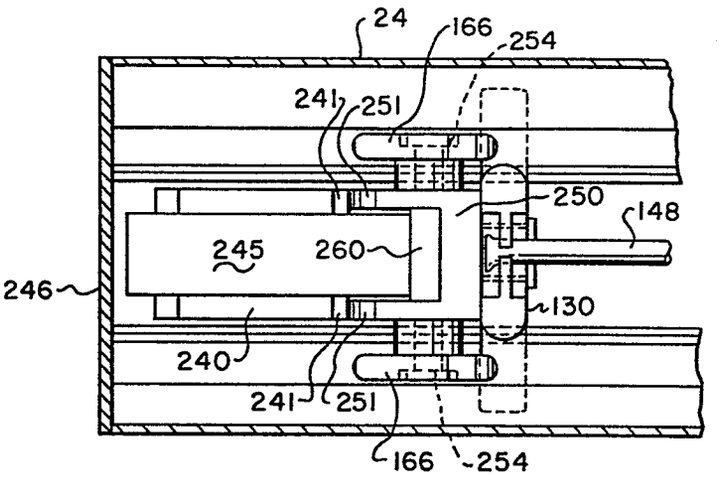


FIG. 14

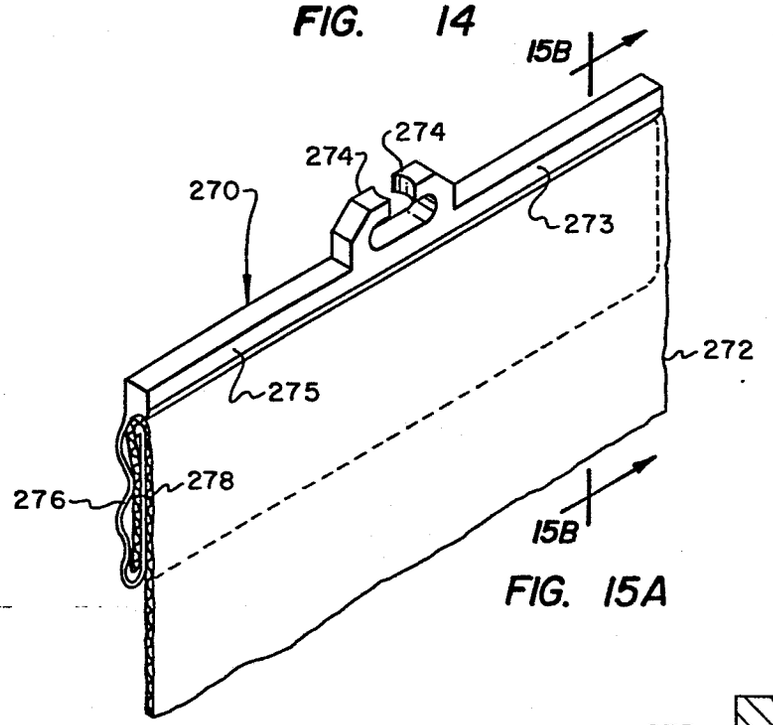


FIG. 15A

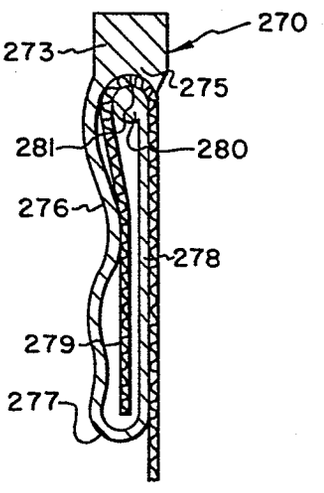


FIG. 15B

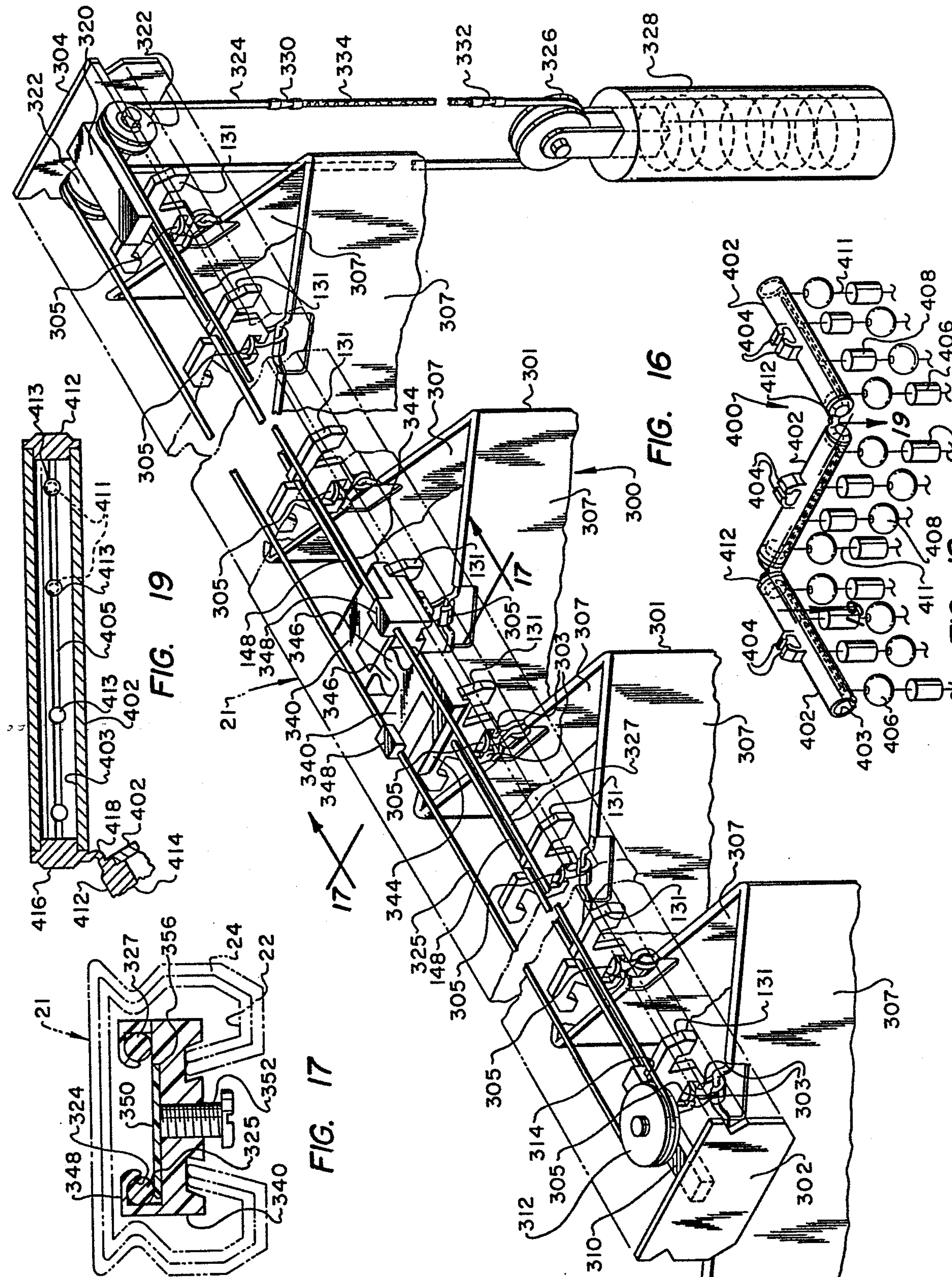


FIG. 16

FIG. 18

FIG. 19

FIG. 17

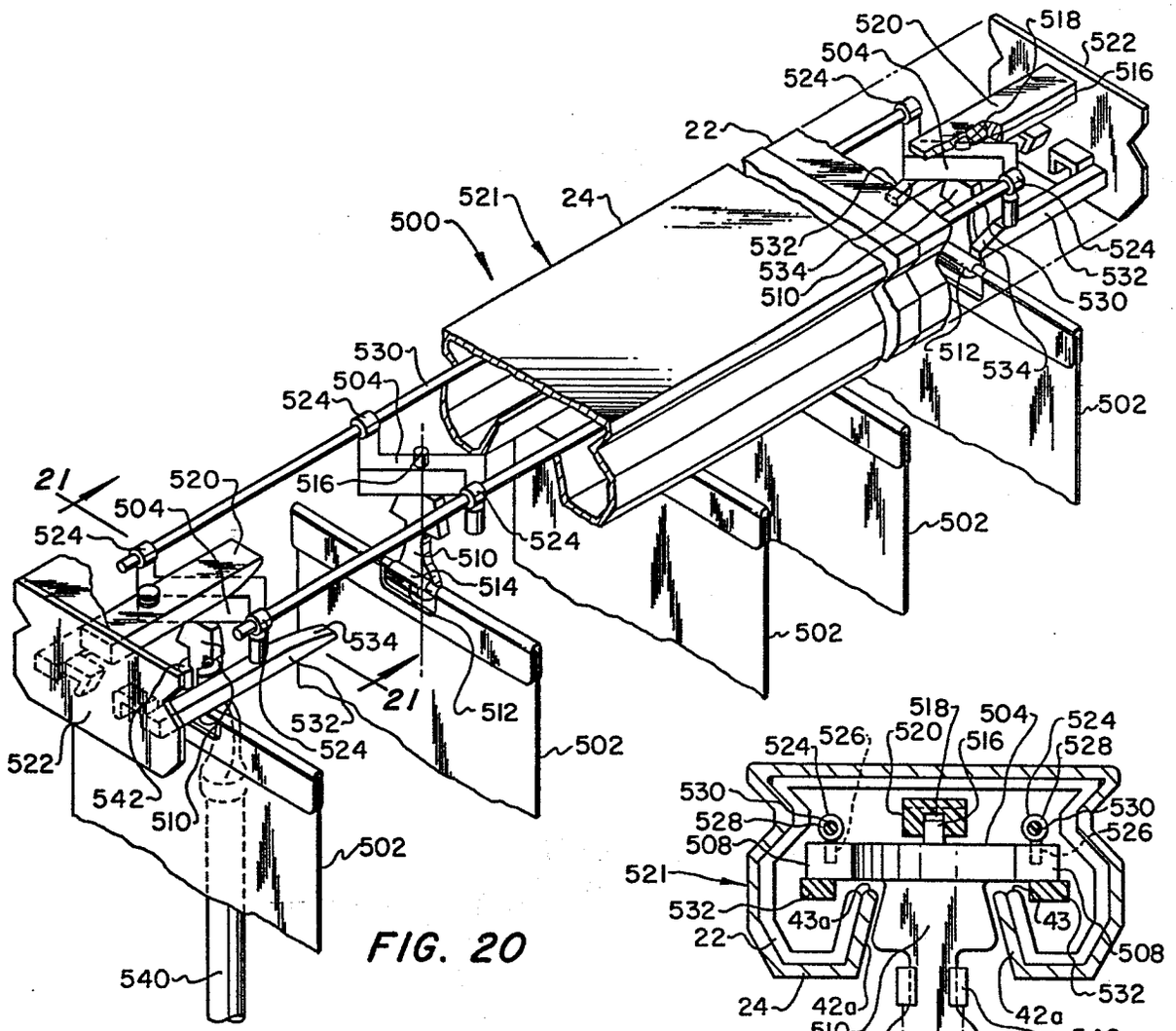


FIG. 20

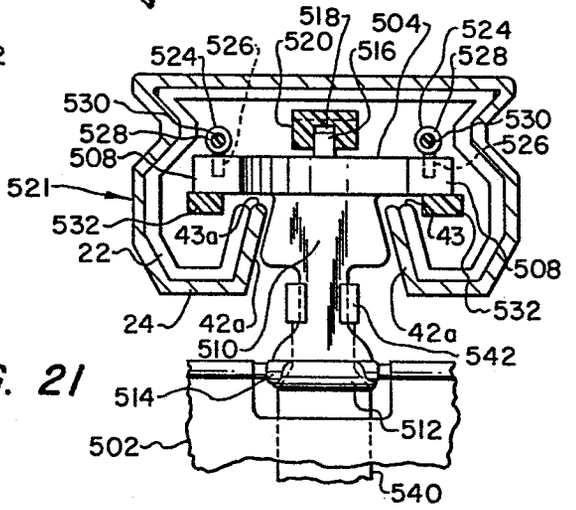


FIG. 21

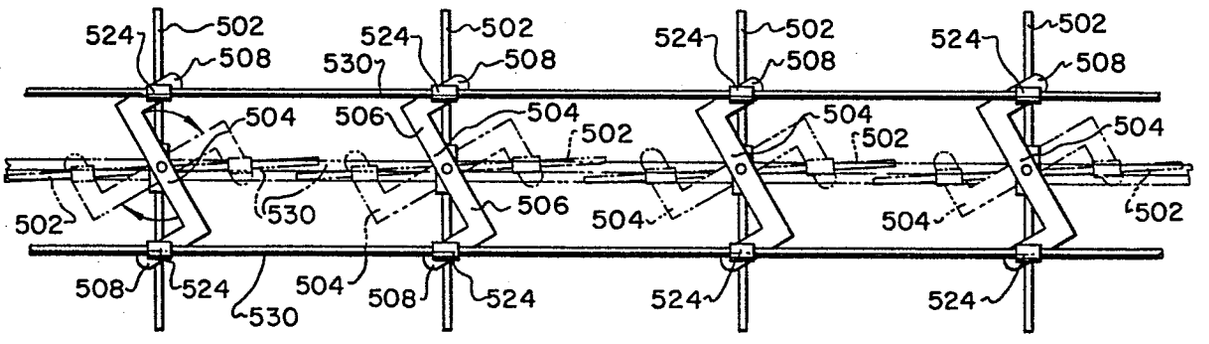


FIG. 22