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(54) **APPARATUS FOR DRAWING TOGETHER THE BOTTOM-PANELS OF A CARRIER**

VORRICHTUNG ZUM ZUSAMMENZIEHEN DER BODENKLAPPEN EINER TRAGEVERPACKUNG

APPAREIL PERMETTANT DE TIRER ENSEMBLE LES PANNEAUX DE FOND D'UNE STRUCTURE PORTEUSE

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(73) Proprietor: **THE MEAD CORPORATION**
Dayton Ohio 45463 (US)

(72) Inventors:
- **ROBINSON, Glenn**
Atlanta, GA 30342 (US)
- **OLIFF, James, R.**
Douglasville, GA 30134 (US)

(74) Representative: **Hepworth, John Malcolm et al**
Hepworth Lawrence Bryer & Bizley
Bloxam Court
Corporation Street
Rugby, Warwickshire CV21 2DU (GB)

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Description

[0001] The invention relates to bottom-loading basket-style carriers for articles such as beverage bottles.

[0002] Previous methods and apparatus for loading bottles into basket-style carriers from the bottom are disclosed in US patent number 2,276,129 to Wesselman, US patent number 2,603,924 to Currie et al., US patent number 3,521,427 to Masch, US patent number 3,627,193 to Helms, US patent number 3,698,151 to Arneson, US patent number 3,751,872 to Helms, US patent number 3,747,294 to Calvert et al., US patent number 3,805,484 to Rossi, US patent number 3,842,571 to Focke et al., US patent number 3,848,519 to Ganz, US patent number 3,924,385 to Walter, US patent number 3,940,907 to Ganz, US patent number 4,915,218 to Crouch et al., US patent number 4,919,261 to Lashyro et al., US patent number 5,234,103 to Schuster, and US patent number Re. 27,624.

[0003] The present invention provides a method and apparatus for the continuous opening and loading of basket-style bottom-loading carriers.

[0004] A first aspect of the invention provides a tightening apparatus for drawing together panels of a carrier as the carrier is moved along a predetermined path, the panels having alignment apertures, the apparatus comprising a conveyor in synchronous motion with the carrier and a plurality of pairs of opposing lug sets, each lug set in operative communication with said conveyor characterised in that each lug set having a stationary lug member and moveable lug member, such moveable lug member is reciprocally transversely translatable with respect to said stationary lug member and said conveyor between a retracted position and a predetermined extended position and in that said lug sets initially engage the alignment apertures when said moveable lug members are in said retracted position and translate transversely inwardly toward a respective opposing one of said pairs of opposing lug sets to said predetermined extended position.

[0005] According to an optional feature of this aspect of the invention, said stationary lug member may further comprise a lip portion in contact with a portion of said alignment aperture when said moveable lug member is in said predetermined extended position, said lip portion being adapted to prevent said panel being moved out of its predetermined path.

[0006] According to yet another optional feature of this aspect of the invention, the alignment apertures may have a triangular configuration and wherein said moveable lug member and said stationary lug member each have a configuration corresponding to a portion of the alignment aperture engaged thereby.

[0007] According to a further optional feature of this aspect of the invention, the alignment apertures may have an inwardly pointing triangular configuration in relation to a centreline of the carrier and wherein said moveable lug member has a complementary angular configuration.

[0008] Optionally, said stationary lug member has an upwardly extending lip.

[0009] Other advantages and features of the present invention will be apparent from the following description, the accompanying drawings, and the appended claims.

Figure 1 is an isometric illustration of a carrier suitable for loading bottom loading basket style carriers according to a preferred embodiment of the invention;

Figure 2 is a plan view of a blank for forming the carrier of Figure 1;

Figure 3 is an illustration of the carrier of Figure 1 in collapsed condition.

Fig. 5 is a schematic illustration of an apparatus for loading bottom-loading basket-style carriers according to a preferred embodiment of the invention.

Fig. 31 is an isometric illustration of a folder-gluer assembly of the apparatus of Fig. 5.

Fig. 32 is a top plan view of the folding block of the folder-gluer assembly of Fig. 31.

Fig. 33 is a side elevational view of the folding block of the folder-gluer assembly of Fig. 31.

Fig. 34 is a side elevational view of the folding block of the folder-gluer assembly of Fig. 31.

Fig. 35 is a side elevational view of the folding block and sealing block of the folder-gluer assembly of Fig. 31.

Fig. 36 is a top plan view of the bottom-panel alignment assembly.

[0010] There are no figures 4,6-30, 37-39.

Detailed Description of the Preferred Embodiment The Carrier

[0011] The method and apparatus 10 described herein as the preferred embodiment of the invention is particularly suitable for loading carriers such as the bottom-loading basket-style carrier 3 shown in Fig. 1. Although use of the method and apparatus 10 of the subject invention is not limited to the carrier 3 described below, the features of the invention are very clearly described by reference to the invention's handling and loading of the carrier 3 illustrated. A blank 906 for forming the carrier 3 is shown in Fig. 2. Fig. 3 is a plan view of the collapsed carrier 3 of Fig. 1.

[0012] The carrier 3 is of the nature described in US

patent application serial number 08/326,987. That application is also owned by the owner of the present invention application. The carrier 3 and blank 906 for forming the carrier 3 are described below to facilitate understanding of the invention. First, reference is made to Figs. 1 and 2 simultaneously. The carrier 3 illustrated is generally designed to accommodate two rows of bottles. The examples of carriers 3 discussed herein describe use of the invention with carriers 3 that accommodate two rows of three bottles and two rows of four bottles, that is, a six-pack version and an eight-pack version. However, the invention may also be practiced to accommodate rows of other multiples of bottles. Both sides of the carrier are the same. Thus, the features described with respect to the side shown in Fig. 1 are equally applicable to the unseen side. The side wall 920, 930 has a cut-out portion that generally defines a lower side wall band 921, 931 and an upper side wall band 923, 933. Foldably connecting the lower 921, 931 and upper 923, 933 bands to respective end walls 940, 942, 950, 952 are respective corner tabs 922, 932, 924, 934. The corner tabs 922, 932, 924, 934 respectively form bevelled corners at the intersections of the side walls 920, 930 and end walls 940, 942, 950, 952. A center cell is formed on each side of the carrier by cell bands 925, 935, corner tabs 926, 936 foldably connected to the cell bands and a central cell portion 927, 937 integrally formed with the side wall 920, 930. A handhold flap 984 is also visible from the view shown. Cut lines between center cell portions of side walls 920, 930 and respective handle structure panels 980, 982, 990, 992 terminate in respective curved cut lines 986, 988, 996, 998. Cut lines between the upper bands 923, 933 of respective side walls 920, 930 and corresponding center cell portions terminate in respective curved cut lines 987, 989, 997, 999. The blank 906 is essentially symmetric about a perforated fold line dividing the handle panels 980, 982, 990, 992, and halves, of the carrier 3 from one another. One of the two bottom wall panels 910, 912 is widthwise greater than the other and for convenience is designated the greater bottom wall 912. The other bottom wall panel is conveniently designated the lesser bottom wall panel 910. Support tabs 961, 963, 971, 973 for attachment to the bottom wall panels 910, 912 are foldably connected to the lower edges of respective riser panels 960, 962, 970, 972. A suitable carrier for loading by the invention may also have the support tabs connected to the lower edges of respective end walls 940, 942, 950, 952 along fold lines without departing from the scope hereof. The center cell bands 925, 935 are connected along perforated fold lines to the lower portions of respective handle panels 980, 982, 990, 992. Handhold apertures 981, 983, 991, 993 are formed in the respective handle panels 980, 982, 990, 992. Handhold flaps 984, 994 are connected along perforated fold lines to respective handle panels 980, 990 within the respective handhold apertures 981, 991 thereof. Curved cut lines 986, 987, 988, 989, 996, 997, 998, 999 help direct stress away from strategic termination points of cut lines in the carrier 3.

[0013] Other features of the carton will be apparent from the drawings and in particular Figures 1, 2 and 3.

[0014] As previously mentioned, the method and apparatus described herein are particularly suitable for loading carriers having the general characteristics of the type described above. The elements of the carrier 3 enable it to be formed in collapsed condition, shipped, loaded into the apparatus described herein, and then erected and loaded with bottles. Although several types of articles or bottles are suitable for handling and loading by the invention, the invention is particularly useful for loading so-called contoured PET bottles into the carrier 3 illustrated.

[0015] The carrier 3 is received by the apparatus of the invention in collapsed condition, as illustrated in Fig. 3, with the bottom wall panels 910, 912 pivoted upwardly into face contacting relationship with the side walls of the carrier 3.

Overview of Apparatus and Method

[0016] Referring first to the schematic illustration in Fig. 5 of the overview of the apparatus 10 according to a preferred embodiment of the invention, the apparatus 10 is constructed upon an elongate frame. In the illustration the direction of movement of bottles 1 and carriers 3 is from left to right. As a general overview, bottles move through the apparatus 10 in two rows along an essentially linear path. As the bottles move along their defined path, carriers (in collapsed condition with bottom wall panels folded upwardly flat against the sides of the collapsed carrier) are moved along the hopper 30 to a point of interface with the carrier feeder 50. The feeder 50 moves individual carriers 3 from the hopper 30 to a timing section 60. A timing-transport section meters out carriers at set intervals and a predetermined rate of speed. In one embodiment, the timing-transport section consists of two consecutive assemblies. The first segment of the two is a timing section 60 in which each carrier 3 is removed from suction cups 54 of the feeder 50 and conveyed at a predetermined stagger to the downstream components of the apparatus 10. In what may generally be referred to as the transport segment of the timing-transport section a path is defined between a pair of vertically oriented belts. More specifically, this segment is referred to as a nip belt assembly 70. The vertical nip belts 72 are a pair of opposing endless belts that pinch, or "nip," the handle area of each carrier (the carrier's topmost portion) and move the carriers in a defined linear path down the apparatus 10. When the carriers 3 are in the hopper 30, they are in collapsed condition with the bottom wall panels 910, 912 pivoted up and lying flat against the sides of the carrier 3. Upon removal from the hopper 30, the bottom wall panels 910, 912 of the carrier 3 fall away from their position flat against the sides of the carrier 3. As a carrier 3 moves through the timing section the bottom wall panels 910,

912 are engaged and pulled outward to open the carrier 3 for loading. As the carriers 3 are being pulled open along the carrier path of the apparatus 10, bottles are moved along in a path beneath the carriers. In the lower path (the bottle path) a star wheel 105 on either side of the apparatus 10 meters a row of bottles 3 into distinct groups for loading. For example, groups of three or four bottles in each row. An endless chain with lugs is one of the means for transporting bottles after they have been metered by the starwheel 105. Bottle grippers 113 (moving in conveying fashion such as upon an endless chain) immediately follow the star wheels 114 and maintain the spacing and alignment of each bottle grouping. As the bottles 3 move further along the length of the apparatus 10 the bottle grippers 113 assure the spacing between bottles 1 and groups of bottles. At the same time, the carriers 3 move to a position whereby each bottom wall panel 910, 912 is received by a pair of downwardly-sloping gripping and declination belts 92, 94 & 93, 95. An overhead conveyor mechanism such as an endless overhead chain assembly 100 is aligned over the centrally located handles of the carriers 3 in parallel alignment with the declination belt assembly 90. Block members 102 mounted upon the overhead chain engage the tops of the handle portions of the carriers 3. The declination belt assembly 90 and overhead chain assembly 100 move the carriers 3 forward and downward over the dual-row groups of bottles. The lowering work of the declination belt assembly 90 and overhead chain assembly 100 is completed by the pusher wheel assembly 120. The pusher wheel assembly 120 has block members 122 mounted upon it to push downwardly upon the tops of the handles of the carriers 3, thereby fully lowering the carriers onto respective groups of bottles. As the carriers 3 move from the pusher wheel assembly 120 a package conveyor 130 such as side lugs 134 mounted upon respective opposing endless chains 132 engage the trailing end panel of the carriers 3/packages 7 and push them further along the apparatus 10. As the carriers 3 are moved along by the package conveyor 130, a bottom panel locking section 140 folds carrier support tabs 961, 963, 971, 973 and bottom wall panels 910, 912 into position for attachment of the support tabs 961, 963, 971, 973 to the bottom wall panels 910, 912 and for closure of the bottom of the carrier 3. The bottle panels 910, 912 are drawn together for proper alignment and held in that position while closure of the bottom of the carrier 3 is completed by a rotating punch lock mechanism. The loaded, fully closed carrier is then ejected from the apparatus 10.

Folder and Gluer

[0017] Referring now again particularly to Fig. 5, upon leaving the seating portion 120 of the apparatus 10 each package 7 is engaged and transported by a package lug assembly 130. The package lug assembly 130 primarily consists of a pair of opposing endless chains 132 upon which are mounted lugs 134 that engage each package 7. Closure of the carton 3 of each package 7 is accomplished in the folding and gluing area 140 of the apparatus 10 as the packages are moved along by the package lugs 134.

[0018] Referring now particularly to Fig. 31, therein is illustrated a folder-gluer assembly 140 of the apparatus for loading bottom-loading basket-style carriers 10 according to a preferred embodiment of the invention. The gluing operation will be discussed later, however, for clarity of understanding it is now noted that glue is applied to the interior side (that is, the side which faces the inside of the erected carrier 3) of the so-called greater bottom wall panel 912 of the carrier 3. Glue is applied to adhere the riser panel support tabs 961, 963, 971, 973 to the interior side of the greater bottom wall panel 912. In a version of the carrier without support tabs 961, 963, 971, 973 folding and adherence of the support tabs would obviously not be necessary for such a carrier. The elements of the folder-gluer assembly 140 are positioned to fold the elements of the carrier 3 in sequence. In addition to the illustration of Fig. 31, reference may now also simultaneously be made to Figs. 32, 33, 34 and 35 which contain additional views of the folder-gluer feature and any of the previously described figures which illustrate the panels 910, 912 and support tabs 961, 963, 971, 973. The folding features of the folder 140 are static elements that engage applicable panels and flaps of carriers 3 as the packages 7 are moved by the package lugs 134 in the direction indicated by the direction arrow 71. As the packages approach the folding section the bottom panels flaps 910, 912 are generally more horizontally inclined rather than downwardly vertically oriented. In the folding section, the bottom panels 910, 912 are first folded vertically downward, then under the carrier 3 into face-to-face relationship for later locking. The support tabs 961, 963, 971, 973 are folded into a horizontal position. The support tab folding elements are contained in what is conveniently referred to as a tab folding block 141. Consistent with the carrier orientation discussed above, the greater bottom panel flap 912 is the first of the two bottom panel flaps 190, 912 engaged. The greater panel flap 912 is engaged and caused to be folded vertically downward by the inclined edge of the first vertical panel-folding wedge 162. The first vertical panel-folding wedge 162 folds the greater panel 912 to a vertically downward position wherein it is sandwiched between the wedge 162 and the folding block 141. The folding block 141 provides edges and surfaces which separate and fold the support tabs into place and spaces which accommodate the tabs as they are being manipulated. Each pair of a long and short support tab 961 & 971, 963 & 973, at opposing ends of the carrier is engaged simultaneously by the block 141 (note Fig. 3, the end of the carrier with support tabs 961, the longer tab, and 971, the shorter tab, is the leading end). From a point of view facing the front portion of the support block 141, as in Fig. 34 in particular,

the right side of the block 141 is configured to engage and accommodate the longer tabs 961, 971 while the left side is configured to engage and accommodate the longer tabs 963, 973. The block 141 first separates each long tab 961, 963 from its accompanying short tab 971, 973. A horizontal facet 142 and a vertical facet 143 form a wedge-like cove 159 for the longer, or major, tab 961, 963. A recess 154 for the minor tab is formed by an inclined facet 152 and a vertical facet 153. A short upwardly-inclined edge 155 at the intersection of facet 143 and 152 engages the major support tab 961, 963. As the carrier advances, the major support tab 961, 963 moves divergingly away from the minor support tab 971, 973 along the edge 155. The leading major tab folding edge 155 intersects and is continued by a trailing major tab folding edge 144. The trailing major tab folding edge 144 is formed at the intersection of the major tab vertical facet 143 and the upwardly-inclined major tab ramp 145. As the carrier 3 continues its travel the major support tab 961, 971 continues its diverging ascent along trailing major tab folding edge 144. Because the major tab ramp 145 and the trailing major tab folding edge 144 also diverge outwardly as well as upwardly, the major support tab 961, 971 ultimately is placed in and travels in face contacting relationship with the major tab ramp 145. As the carrier continues to travel, the major support tab 961, 971 subsequently comes into face contacting relationship with the horizontal surface 156 of the folding block. As the major support tab 961, 963 is folded to the right side of the folding block 141 as described, the minor support tab 971, 973 is folded to the left. The minor tab recess 154 of the block 141 provides space for the minor tab 971, 973 of the carrier 3 to be initially separated from the major tab 961, 963. The minor tab 971, 973 is initially engaged by the leading minor tab folding edge 160. The leading minor tab folding edge 160 is formed at the intersection of the planes of the minor tab vertical facet 147 and the major tab ramp 145, and intersects the trailing minor tab folding edge 148. The trailing minor tab folding edge 148 is formed at the intersection of the minor tab vertical facet 147 and the minor tab ramp 149. The minor tab 971, 973 is moved outwardly and upwardly with respect to the carrier 3 by the outwardly and upwardly diverging edge 148. Further downstream movement of the carrier 3 causes the minor tab 971, 973 to come into face-contacting relation with the minor tab ramp. As the carrier 3 begins its travel upon the folding block 141 the bottles 3 in the carrier are supported on their undersides by the support ledges 158. When the carrier package 7 reaches the horizontal surface 156 of the folding block the major 961, 963 and minor 971, 973 tabs have been folded outwardly and into flat face relationship with the underside of bottles 3 of each package 7. As the conveyor continues to transport a package 7 downstream, glue is applied by conventional means such as a glue gun to the downwardly-extending greater bottom wall panel 912 as mentioned above. Glue is applied to the central portion of the panel 912 in a position suitable for the support tabs 961, 963, 971, 973 to be adhered thereto when the greater panel is folded up into flat face relation with the bottom of the package 7. Glue is applied at a convenient location such as the gluer recess 157 provided.

[0019] Referring particularly now to Figs. 31 and 35, after glue has been applied to the bottom panel 912 the bottom of the carrier 3 is closed and locked in successive stages. The dead plate 161 following the folding block 141 provides a suitable static surface upon which the package 7, and bottles 3 in the package in particular, may glide during further transport. The second vertical panel folding wedge 164 engages and folds the lesser bottom wall panel 910 downward in the same manner as the first vertical panel-folding wedge 162 folds the greater panel 912 as described above. The greater 912 and lesser 910 bottom panels are sandwiched between respective first 162 and second 164 panel-folding wedges and the dead plate 161. The first horizontal panel-folding wedge 166 and second horizontal panel-folding wedge 168 fold the respective bottom panels 912, 910 into their closing position of flat face relationship with one another. As can be more clearly seen in Fig. 35, the first horizontal panel-folding wedge 166 is longer and engages and folds the glue-containing greater panel 912 under before the lesser bottom panel is manipulated. The lesser bottom panel 910 thus becomes the outer-most of the two bottom panels.

[0020] The bottom wall sealing plate 170 follows the dead plate 161 and provides a surface 174 upon which the support tabs 961, 963, 971, 973 and glue-containing greater bottom panel 912 are caused to be pressed together thereby adhering the support tabs 961, 963, 971, 973 to the greater bottom panel 912. The bevelled lip 172 at the front of the sealing plate 170 helps the package 7 enter the sealing plate 170 without becoming easily snagged. To ensure a smooth transition from the deadplate 161 to the sealing plate 170, the bevelled lip 172 of the sealing plate 170 is positioned lower than the deadplate 161 and horizontal folding wedges 166, 168 and the plate 170 itself is positioned sufficiently close to the deadplate 161 to permit the bottom the bottom panels 910, 912 to engage the bevelled lip 172 without snagging. The side walls 176 of the sealing plate 170 urge the side walls of the carrier 3 inwardly to a desired position and help keep the transported packages 7 properly aligned during transport. The front portion of each sidewall 176 is inwardly bevelled to also help guide the package onto the sealing plate 170 between the walls 176.

Closure of the Carrier

[0021] Closure of the bottom of the carrier 3 may be achieved by several means. For example, adherence of the bottom panels 910, 912 to one another by an adhesive. Another effective means for closure is the use of a locking mechanism known as a "punch lock" in the

packaging field wherein the outermost of the two bottom panels has male locking members that are superimposed over corresponding female apertures and members formed in the inside bottom panel. To help effectively close the bottom of the carrier 3, particularly if the carrier will be closed utilizing a punch lock, the two bottom panels 910, 912 can be drawn inwardly to help align the two bottom panels 910, 912. This is particularly useful, and necessary, to engage male and female lock features and is also useful to generally ensure that the carrier 3 is in its optimum squared-up condition with the bottom panels 910, 910 overlapping by a predetermined amount. Referring now to Fig. 36, the bottom panels 910, 912 are urged into predetermined face-to-face alignment with one another by means of conveyor-mounted lug sets 182 in the bottom-panel alignment assembly. The lug sets 182 engage pull holes (also known as alignment apertures or tightening apertures) 914 (which can be seen in Fig. 3) in the bottom panels 910, 912 of the carriers 3. Each lug set 182 has an outwardly-biased moveable lug member 184 and a stationary lug member 186. Outward biasing may be accomplished by the spring 196 shown or other suitable biasing mechanism. A pair of opposing lug sets 182 is mounted upon a pair of support rods 190. The pairs of lug sets 182 are mounted upon conveyors such as endless chains 188. The moveable lug member 184 of each set is spring-biased outwardly and is moved inwardly along the support rods 190 through moving contact with the cam rail 192. The moveable lug members 184 of the lug sets 182 are in a retracted position prior to translating inwardly upon the ramp 194. The tightening apertures 914 of the carriers 3 are initially engaged by the lug sets 182 when the moveable lug members 184 are retracted (that is, prior to riding up the ramp 194). Each moveable lug member 184 has an angular-shaped protruding portion 185 that is configured to correspond to and be closely received by the apex of the triangular-shaped tightening apertures 914. Each stationary lug member 186 has a lip-like linear protruding portion 187 that is configured to correspond to and be closely received by the base of the triangular-shaped tightening apertures 914. As previously discussed, the bottom panels 910, 912 of carriers 3 are in face-to-face partially overlapping relationship when the packages 7 leave the folding and gluing area 140 of the apparatus 10. As the moveable lug members 184 travel the leading ramp 194 they pull the bottom panels 910, 912 inwardly to a predetermined position. The stationary lug members 186 help prevent the bottom panels 910, 912 from being drawn too far inwardly. The leading ramp 194 may be stepped in known manner to provide two tiers of ramps for the moveable lugs 184 so that leading and trailing moveable lug members may move inwardly essentially simultaneously to prevent a "scissoring" effect when the bottom panels 910, 912 are drawn together. In this arrangement cam followers of the leading moveable lug members engage only the upper-tiered ramp. The upper-tiered ramp is more steeply inclined than the lowered-tiered ramp. The less steep lower-tiered ramp is contacted only by the cam followers of the trailing moveable lug members. Because of the difference in pitches of the two ramps the leading lug members are delayed in their inward movement until the trailing lug members are also moving inwardly. After the bottom panels 910, 912 have been tightened a predetermined amount and held in place by the lug sets, 182 punch lock features may be engaged by means of conventional rotating fingers 200 which synchronously protrude upwardly through the alignment assembly 180. The moveable lug members 184 are allowed to retract to their outwardmost position by a ramp 195 at the trailing (or exit) end of the cam rail 192. The fully-closed packages 7 may then exit the apparatus by conventional means.

Claims

1. A tightening apparatus for drawing together panels (910, 912,) of a carrier (3) as the carrier is moved along a predetermined path, the panels (910, 912) having alignment apertures (914), the apparatus (180) comprising a conveyor (188) in synchronous motion with the carrier (3) and a plurality of pairs of opposing lug sets (182), each lug set (182) in operative communication with said conveyor (188) characterised in that each lug set (182) having a stationary lug member (186) and moveable lug member (184), such moveable lug member (184) is reciprocally transversely translatable with respect to said stationary lug member (186) and said conveyor (188) between a retracted position and a predetermined extended position and in that said lug sets (182) initially engage the alignment apertures (914) when said moveable lug members (184) are in said retracted position and translate transversely inwardly toward a respective opposing one of said pairs of opposing lug sets (182) to said predetermined extended position.

2. The tightening apparatus of claim 1, wherein said stationary lug member (186) further comprises a lip portion (187) in contact with a portion of said alignment aperture when said moveable lug member (184) is in said predetermined extended position, said lip portion (187) being adapted to prevent said panel being moved out of its predetermined path.

3. The tightening apparatus of claim 1 or claim2, wherein the alignment apertures (914) have a triangular configuration and wherein said moveable lug member (184) and said stationary lug member (186) each have a configuration (185, 187) corresponding to a portion of the alignment aperture (914) engaged thereby.

4. The tightening apparatus of any of claims 1 to 3, wherein the alignment apertures (914) have an inwardly pointing triangular configuration in relation to a centreline of the carrier and wherein said moveable lug member (184) has a complementary angular configuration (185).

5. The tightening apparatus of any preceding claim, wherein said stationary lug member (186) having an upwardly extending lip (187).

Patentansprüche

1. Spannvorrichtung zum Zusammenziehen von Wandflächen (910, 912) eines Trägers (3), wenn der Träger entlang eines vorbestimmten Weges bewegt wird, wobei die Wandflächen (910, 912) Ausrichtungsöffnungen (914) aufweisen, und wobei die Vorrichtung (180) eine Fördereinrichtung (188), die in synchroner Bewegung mit dem Träger (3) ist, sowie eine Vielzahl von Paaren gegenüberliegender Nasensätze (182) umfaßt, wobei jeder Nasensatz (182) in wirksamer Verbindung mit der Fördereinrichtung (188) steht, dadurch gekennzeichnet, daß jeder Nasensatz (182) ein stationäres Nasenelement (186) und ein bewegliches Nasenelement (184) aufweist, derart, daß das bewegliche Nasenelement (184) reziprok quer in Bezug auf das stationäre Nasenelement (186) und die Fördereinrichtung (188) zwischen einer zurückgezogenen und einer vorbestimmten ausgefahrenen Position verschiebbar ist und ferner dadurch, daß die Nasensätze (182) anfänglich die Ausrichtungsöffnungen (914) in Eingriff nehmen, wenn die beweglichen Nasenelemente (184) sich in der zurückgezogenen Position befinden und sich quer nach innen in Richtung eines jeweils gegenüberliegenden Paares der Paare von gegenüberliegenden Nasensätzen (182) in die vorbestimmte ausgefahrene Position bewegen.

2. Spannvorrichtung nach Anspruch 1, wobei das stationäre Nasenelement (186) weiter einen Lippenabschnitt (187), der in Kontakt mit einem Abschnitt der Ausrichtungsöffnung steht, umfaßt, wenn sich das bewegliche Nasenelement (184) in der vorbestimmten ausgefahrenen Position befindet, und wobei der Lippenabschnitt (187) angepaßt ist, um zu verhindern, daß die Wandfläche aus ihrem vorbestimmten Weg heraus bewegt wird.

3. Spannvorrichtung nach Anspruch 1 oder 2, wobei die Ausrichtungsöffnungen (914) eine dreieckige Konfiguration aufweisen und wobei das bewegliche Nasenelement (184) und das stationäre Nasenelement (186) jeweils eine Konfiguration (185, 187) aufweisen, die einem Abschnitt der davon in Eingriff genommenen Ausrichtungsöffnung (914) entspricht.

4. Spannvorrichtung nach einem der Ansprüche 1 bis 3, wobei die Ausrichtungsöffnungen (914) eine nach innen zeigende dreieckige Konfiguration im Verhältnis zu einer Mittellinie des Trägers aufweisen und wobei das bewegliche Nasenelement (184) eine komplementäre winklige Konfiguration (185) aufweist.

5. Spannvorrichtung nach einem der vorstehenden Ansprüche, wobei das stationäre Nasenelement (186) eine sich nach oben erstreckende Lippe (187) aufweist.

Revendications

1. Dispositif de serrage pour ensemble tirer des panneaux (910, 912) d'un élément de transport (3) lorsque l'élément de transport est déplacé le long d'un trajet prédéterminé, les panneaux (910, 912) ayant des ouvertures d'alignement (914), le dispositif (180) comportant un convoyeur (188) se déplaçant de manière synchrone avec l'élément de transport (3) et une pluralité de paires d'ensembles de pattes opposées (182), chaque ensemble de pattes (182) étant en communication opérationnelle avec ledit convoyeur (188), caractérisé en ce que chaque ensemble de pattes (182) comporte un élément de patte stationnaire (186) et un élément de patte mobile (184), de sorte que l'élément de patte mobile (184) peut être translaté transversalement en va-et-vient par rapport audit élément de patte stationnaire (186) et ledit convoyeur (188) peut être situé entre une position rétractée et une position étendue prédéterminée et en ce que lesdits ensembles de pattes (182) initialement viennent en prise avec les ouvertures d'alignement (914) lorsque lesdits éléments de pattes mobiles (184) sont dans ladite position rétractée et sont translatés transversalement vers l'intérieur en direction d'une paire opposée respective desdites paires d'ensembles de pattes opposées (182) vers ladite position étendue prédéterminée.

2. Dispositif de serrage selon la revendication 1, dans lequel ledit élément de patte stationnaire (186) comporte en outre une partie de lèvre (187) en contact avec une partie de ladite ouverture d'alignement lorsque ledit élément de patte mobile (184) est dans ladite position étendue prédéterminée, ladite partie de lèvre (187) étant adaptée pour empêcher ledit panneau d'être déplacé à l'extérieur de son trajet prédéterminé.

3. Dispositif de serrage selon la revendication 1 ou 2,

dans lequel les ouvertures d'alignement (914) ont une configuration triangulaire et dans lequel ledit élément de patte mobile (184) et ledit élément de patte stationnaire (186) ont chacun une configuration (185, 187) correspondant à une partie de l'ouverture d'alignement (914) mise en prise de ce fait.

4. Dispositif de serrage selon l'une quelconque des revendications 1 à 3, dans lequel les ouvertures d'alignement (914) ont une configuration triangulaire dirigée vers l'intérieur par rapport à une ligne centrale de l'élément de transport et dans lequel ledit élément de patte mobile (184) a une configuration angulaire complémentaire (185).

5. Dispositif de serrage selon l'une quelconque des revendications précédentes, dans lequel ledit élément de patte stationnaire (186) a une lèvre s'étendant vers le haut (187).

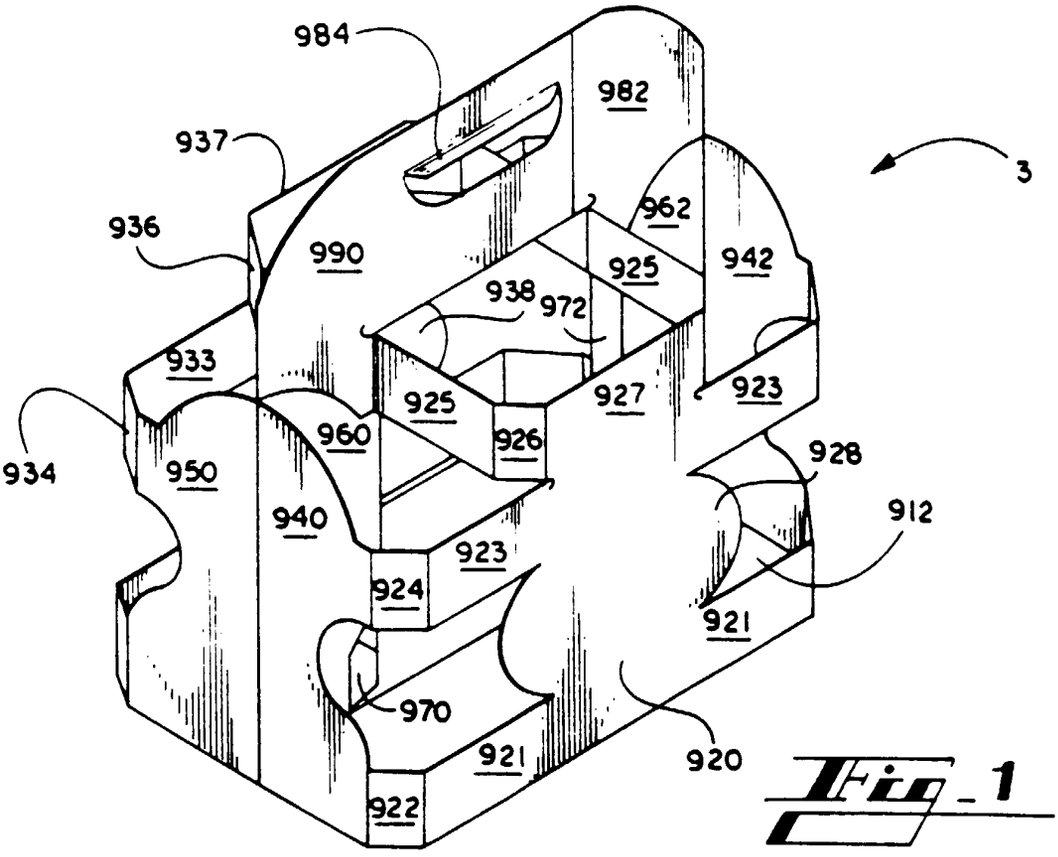
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Fig_1

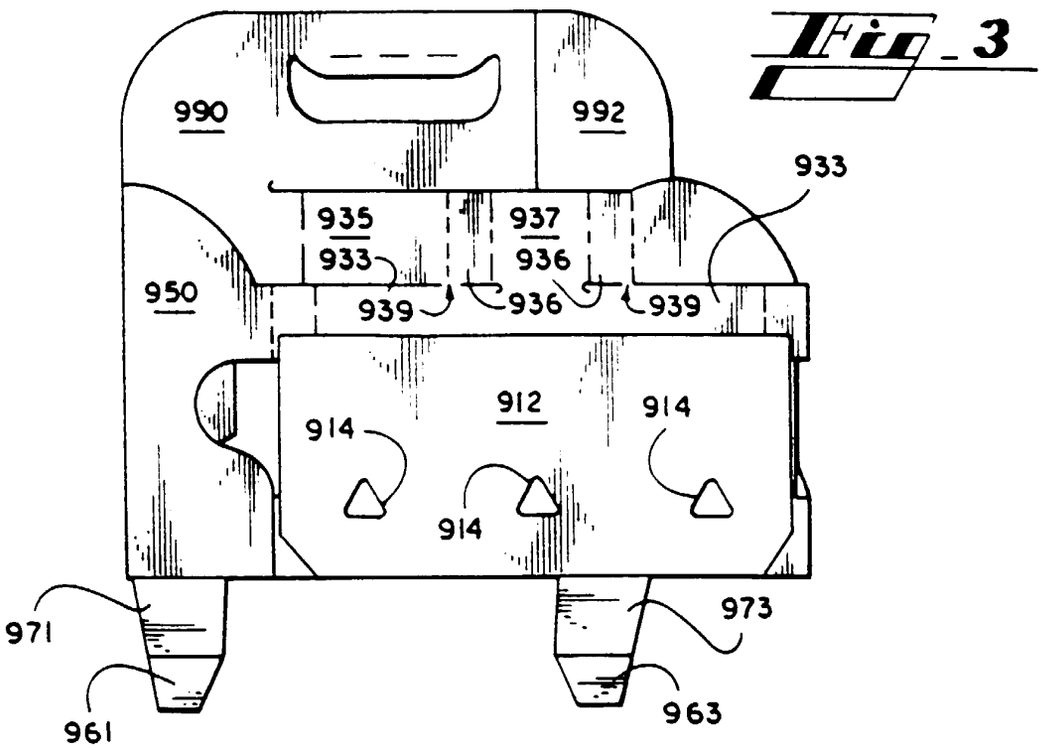
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Fig_3

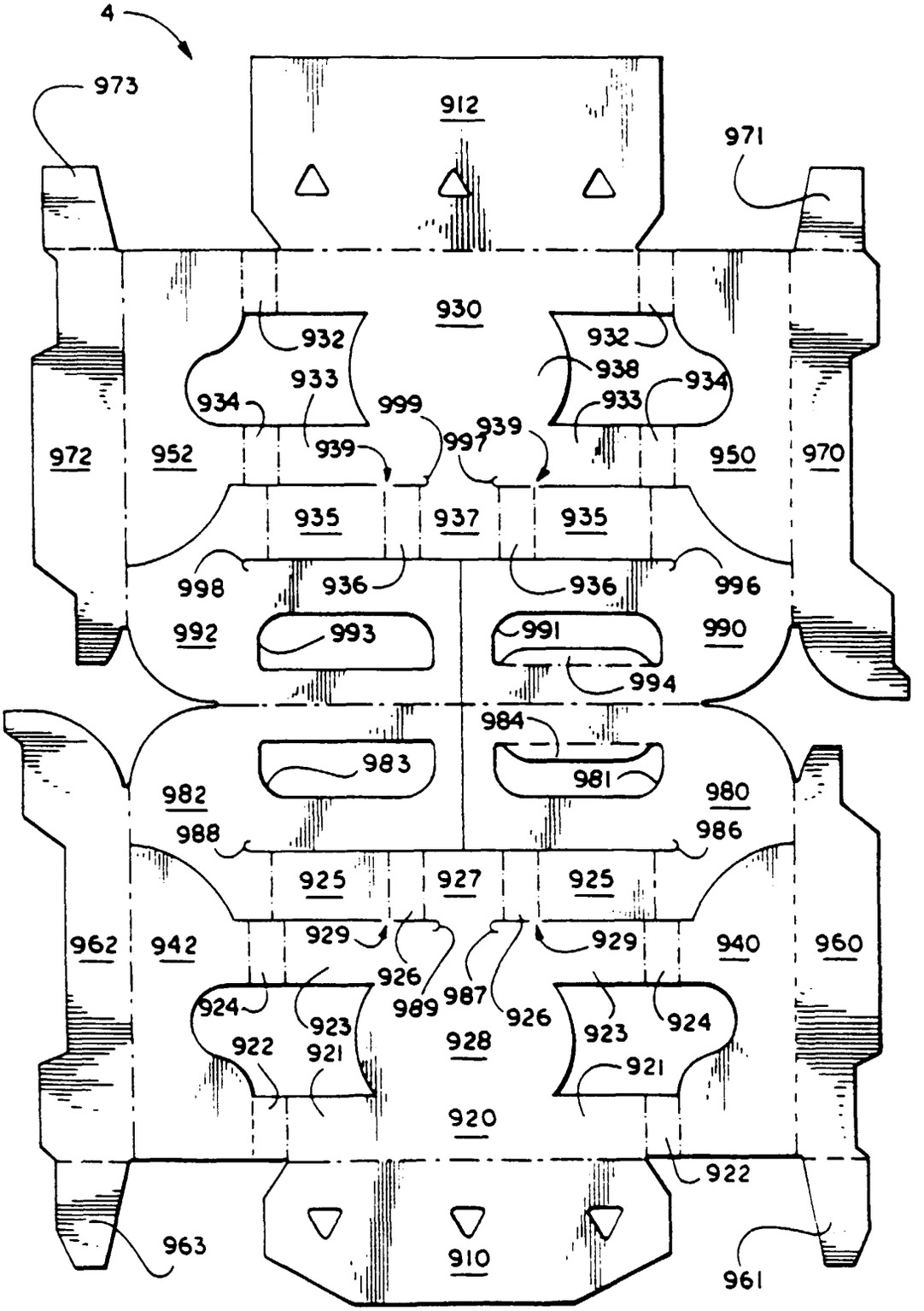
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Fig_2

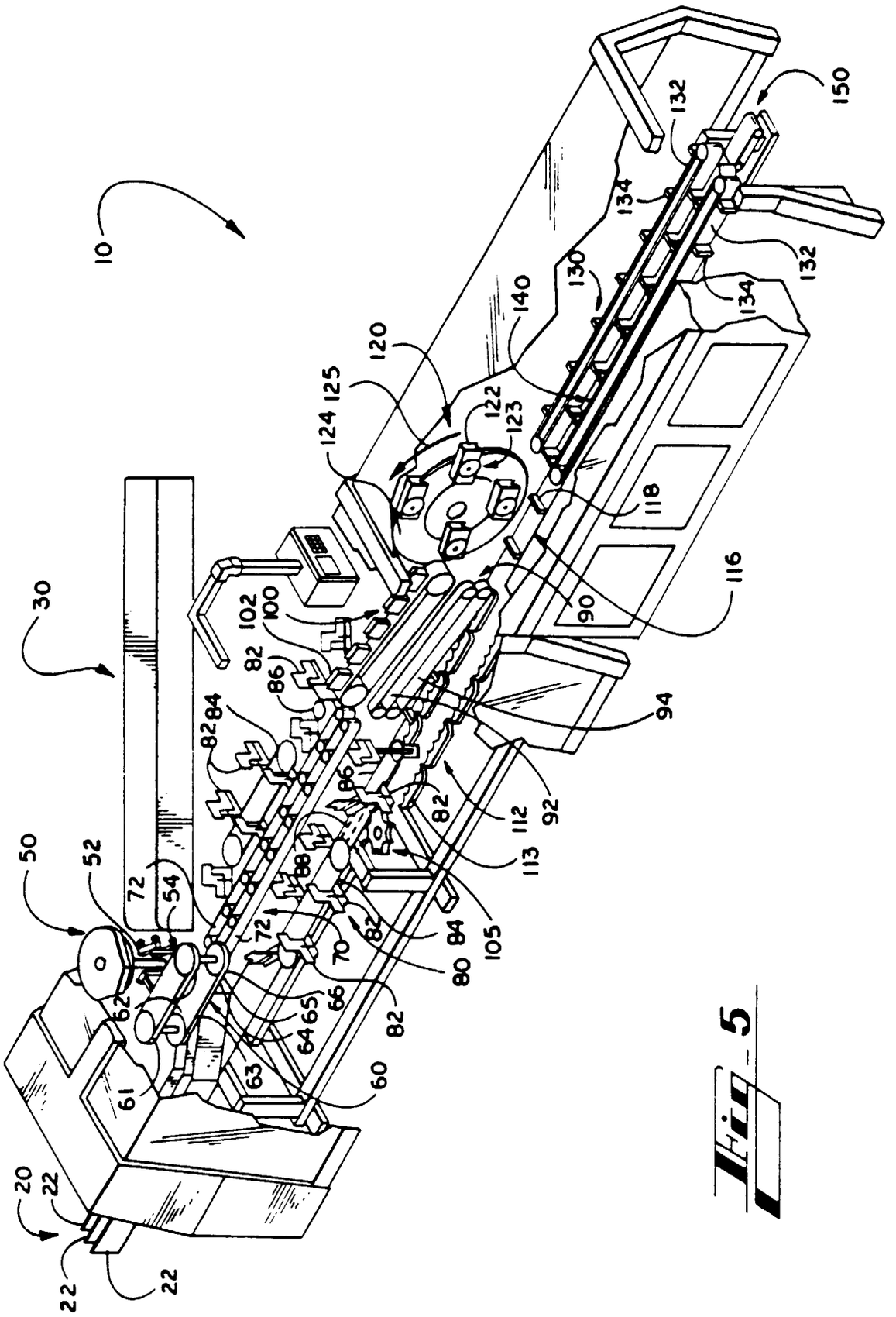
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Fig. 5

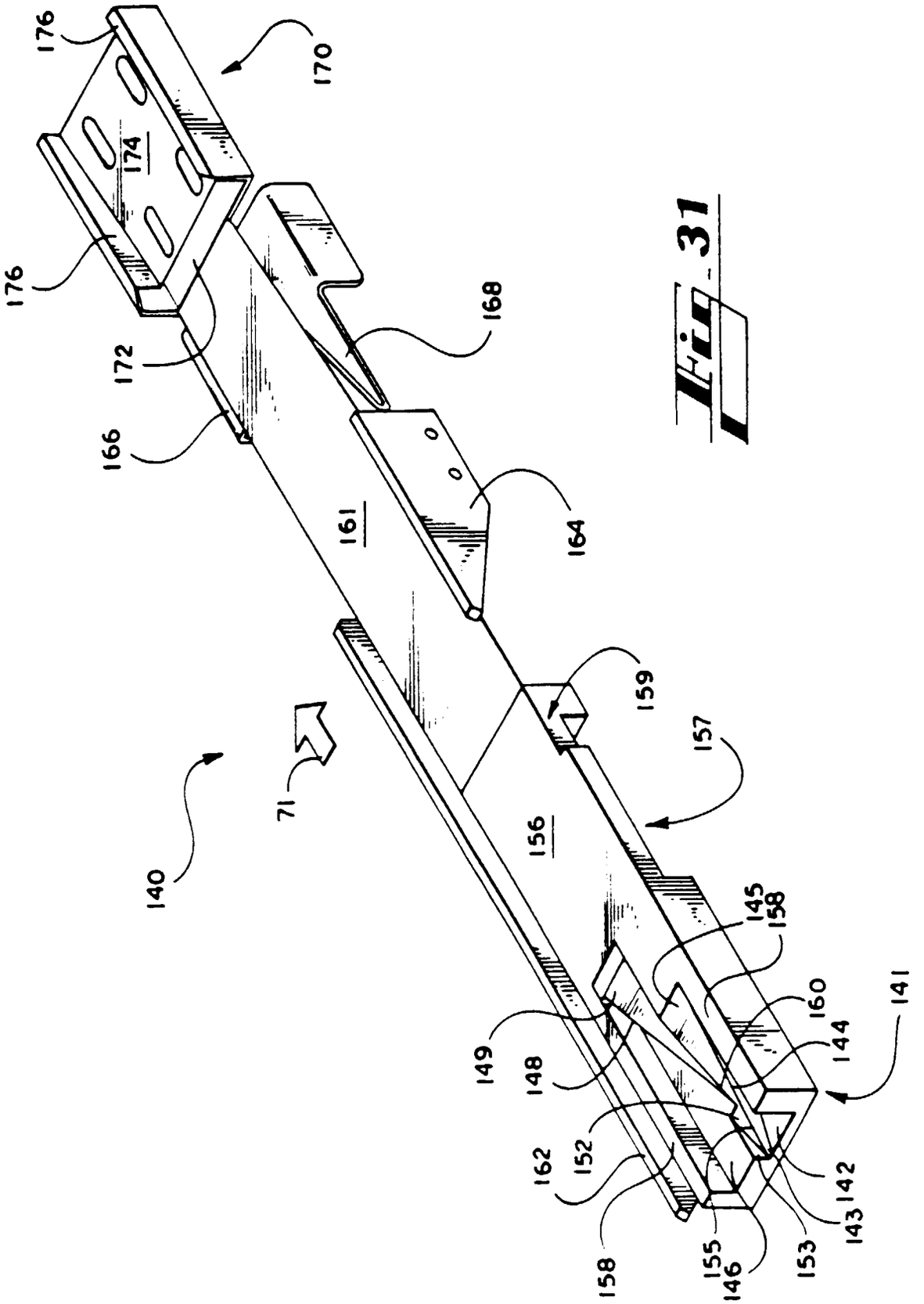
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Fig. 31

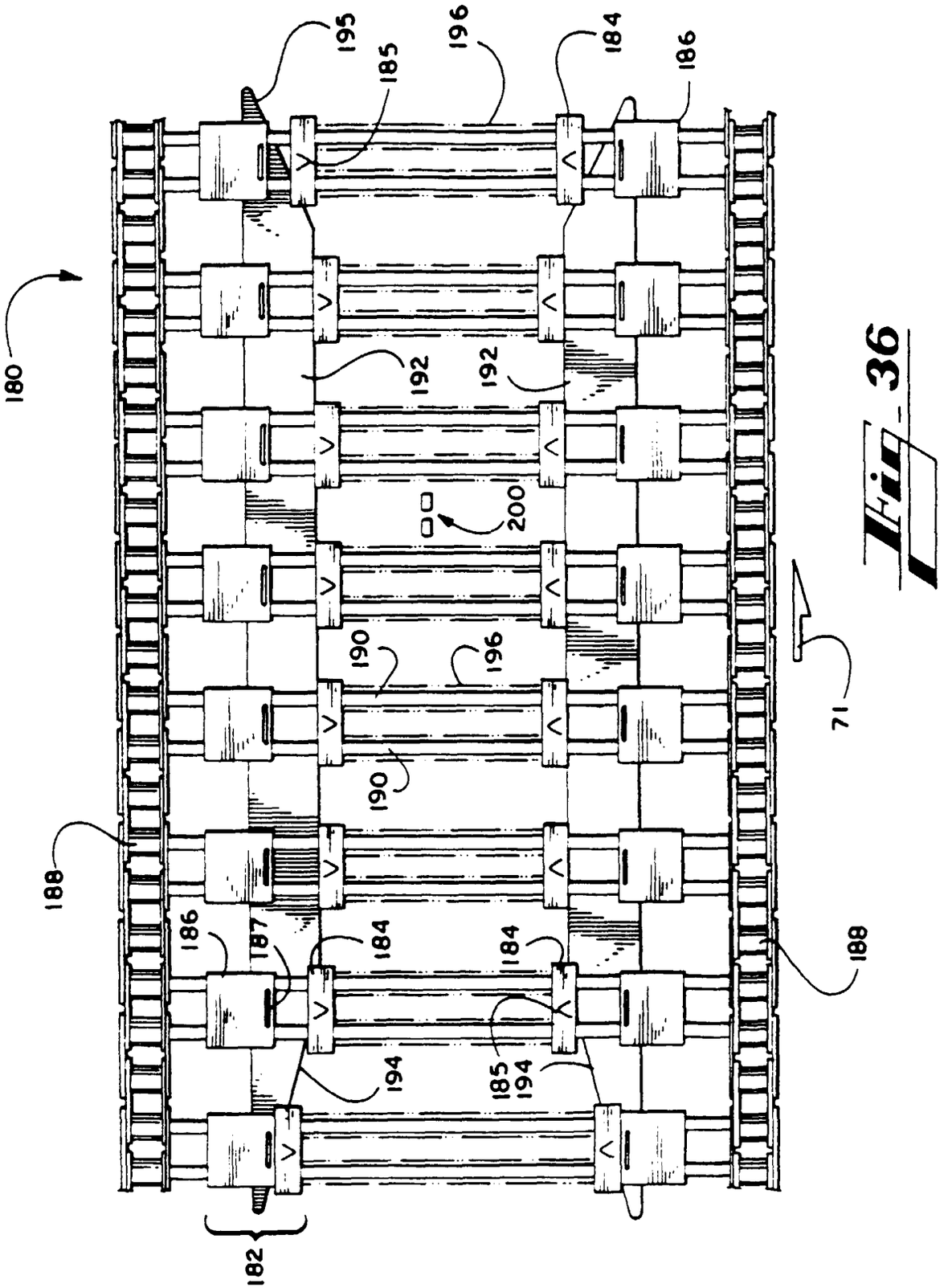
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Fig. 36

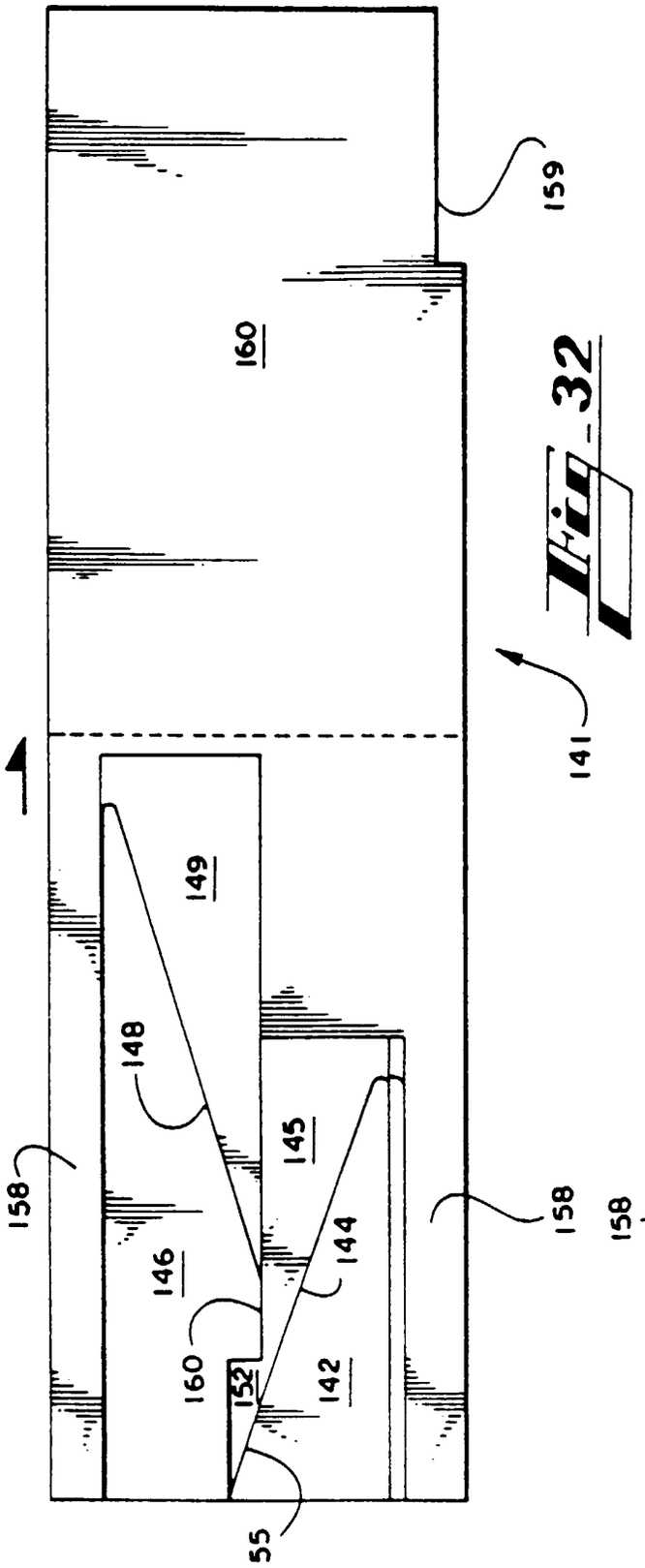
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Fig. 32

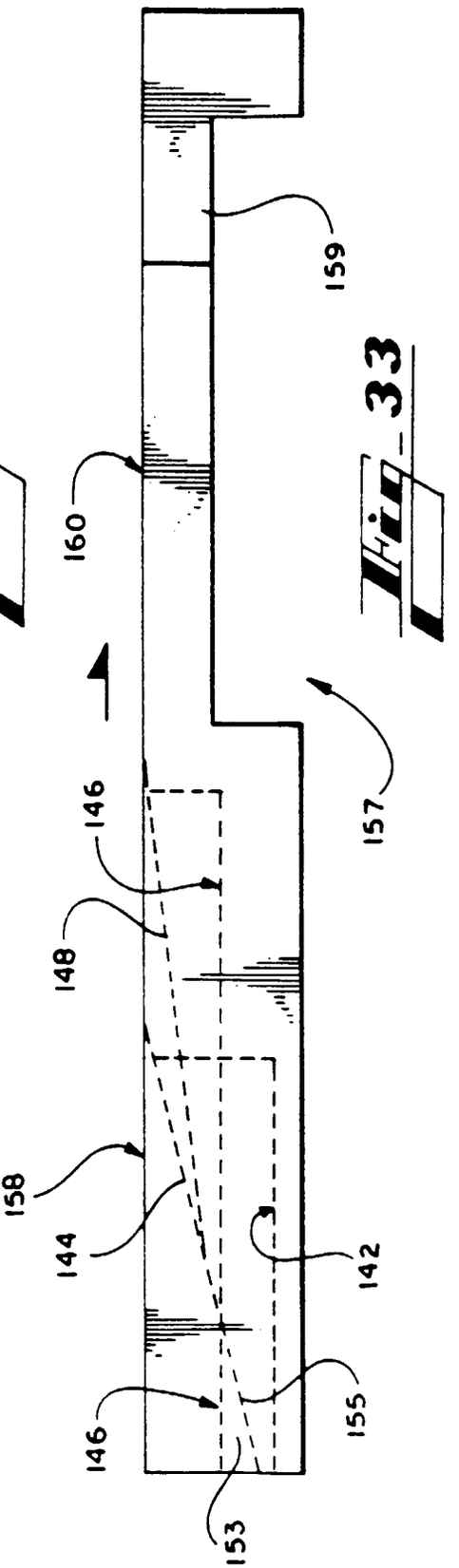
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Fig. 33

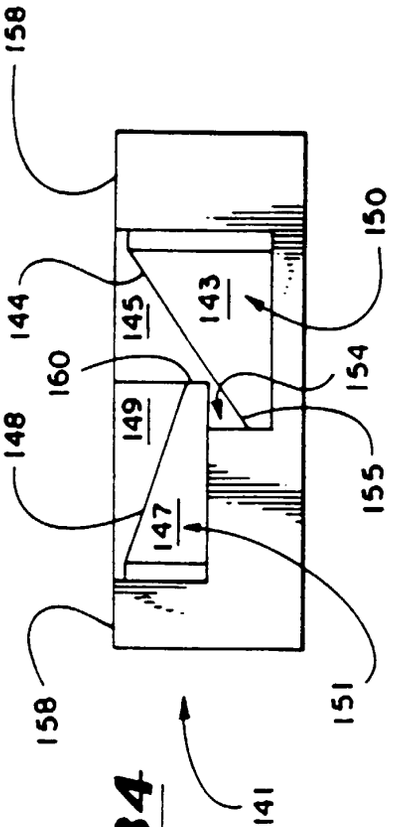
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Fig. 34

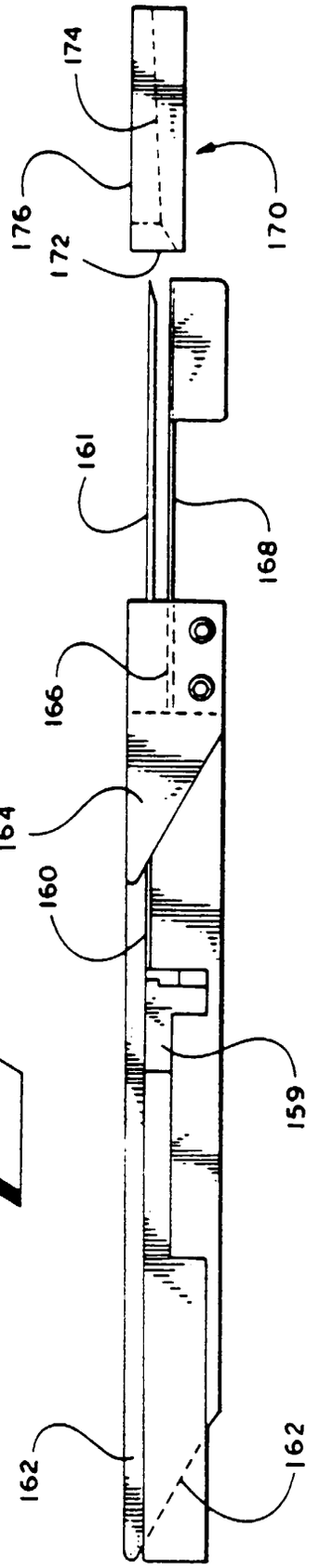
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Fig. 35