United States Patent [19]

Lubersky

[11] **3,709,110**

[45] **Jan. 9, 1973**

[54] **APPARATUS AND METHOD FOR APPLYING COLLARS TO CONTAINER BLANKS**

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[21] Appl. No.: **96,143**

[52] **U.S. Cl.**.....**93/36.6,** 156/556

[51] **Int. Cl.**.....**B31b 17/00**

[58] **Field of Search**.....93/36.6, 54 R; 156/556, 557; 118/211, 411

[56] **References Cited**

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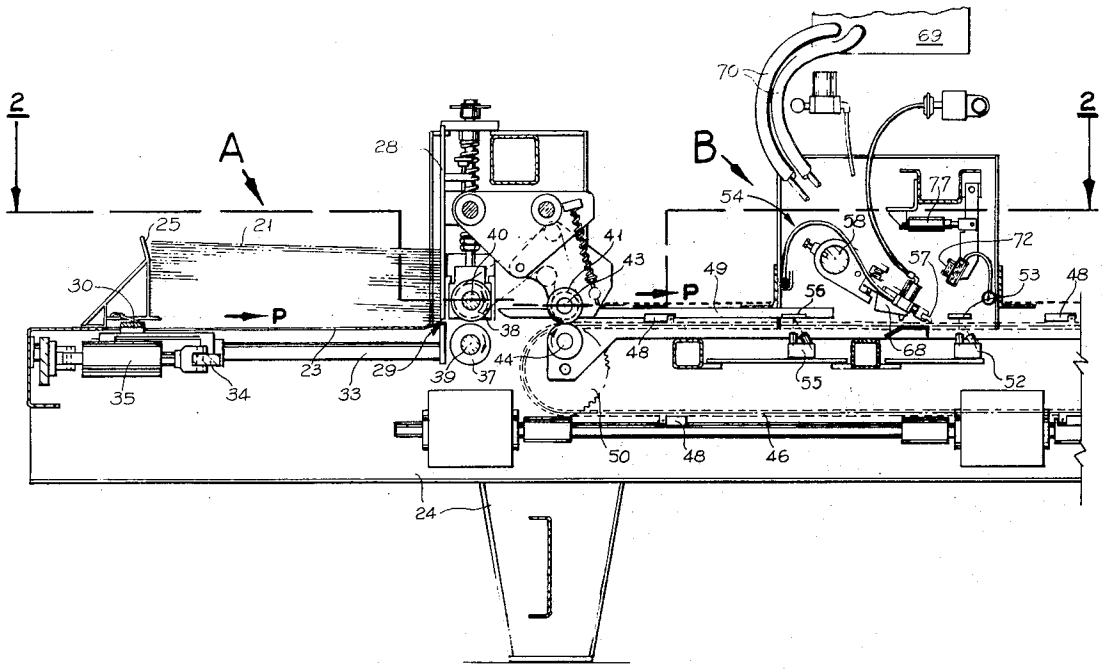
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[57] **ABSTRACT**

An apparatus comprises a first feeding station for transferring a container blank to a main conveyer for movement along a linear path. The blank is conveyed to an adhesive application station wherein glue applicators are pivoted into contact with selected portions thereof. A second feeding station transfers a collar blank to a secondary conveyer for movement toward the container blank. A combining station then functions to accelerate and precisely position the collar blank on the container blank. The combined blanks then pass through a compression station to secure them together.

17 Claims, 21 Drawing Figures



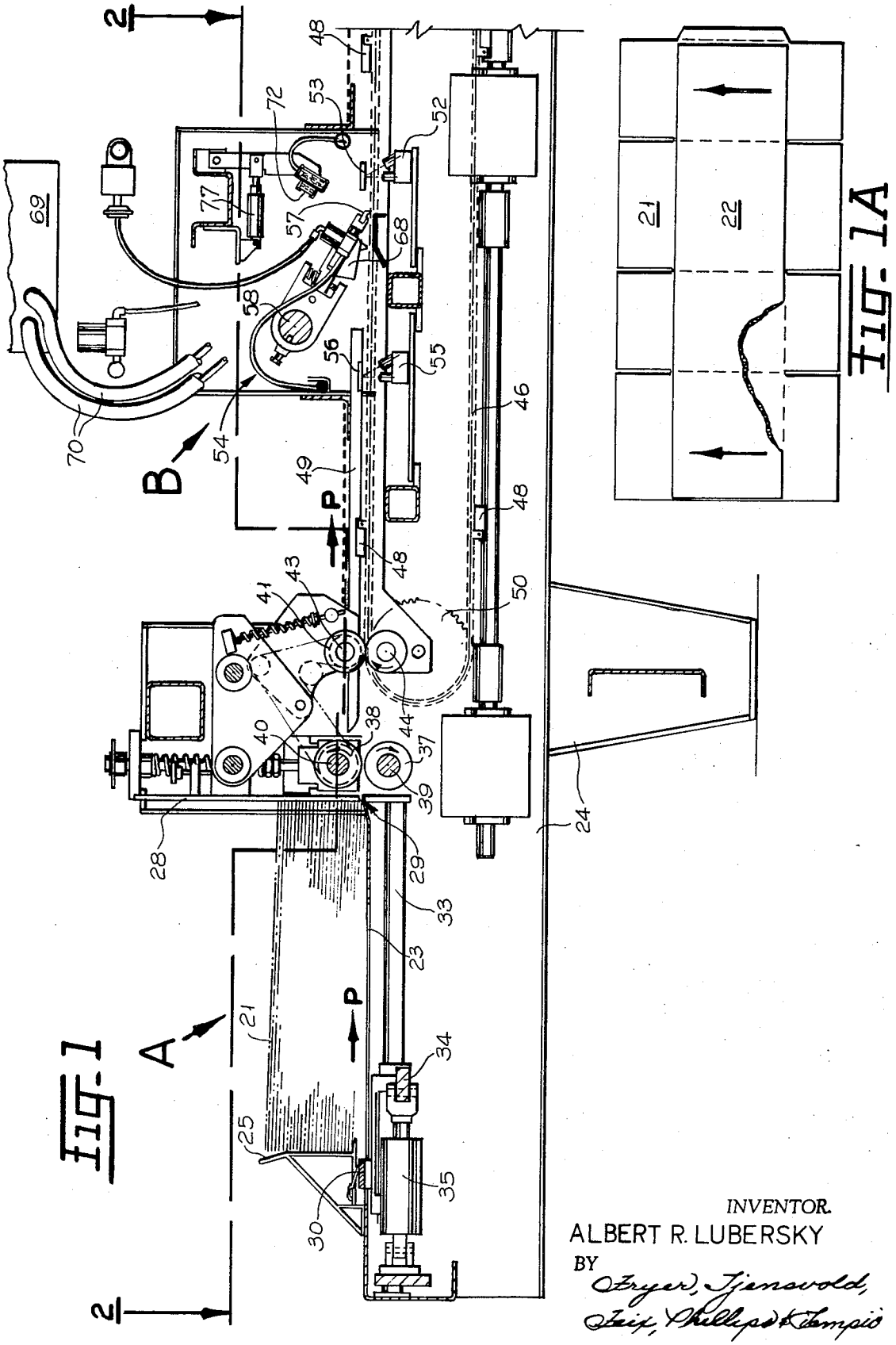


FIG. 1

FIG. 1A

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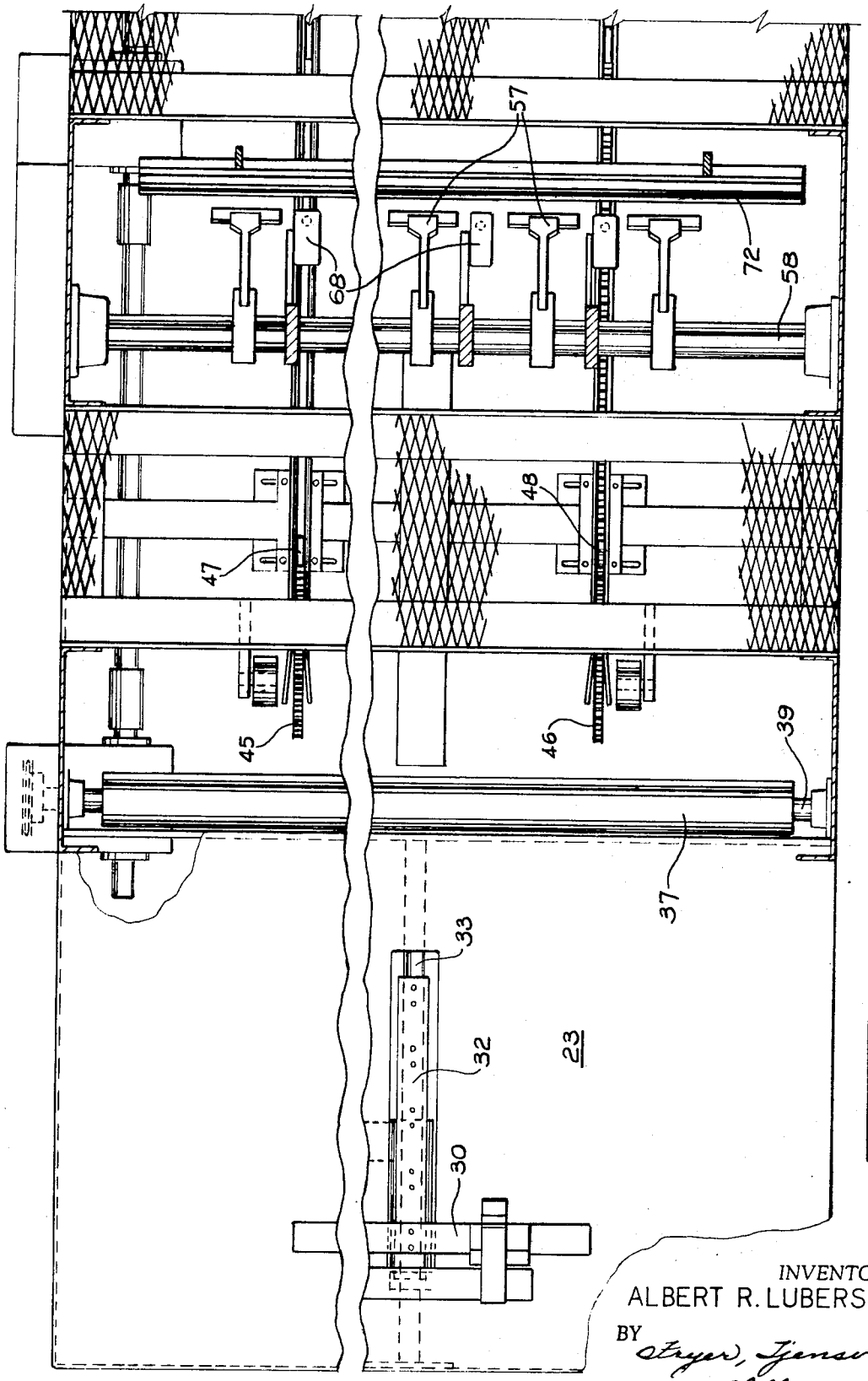


FIG. 2

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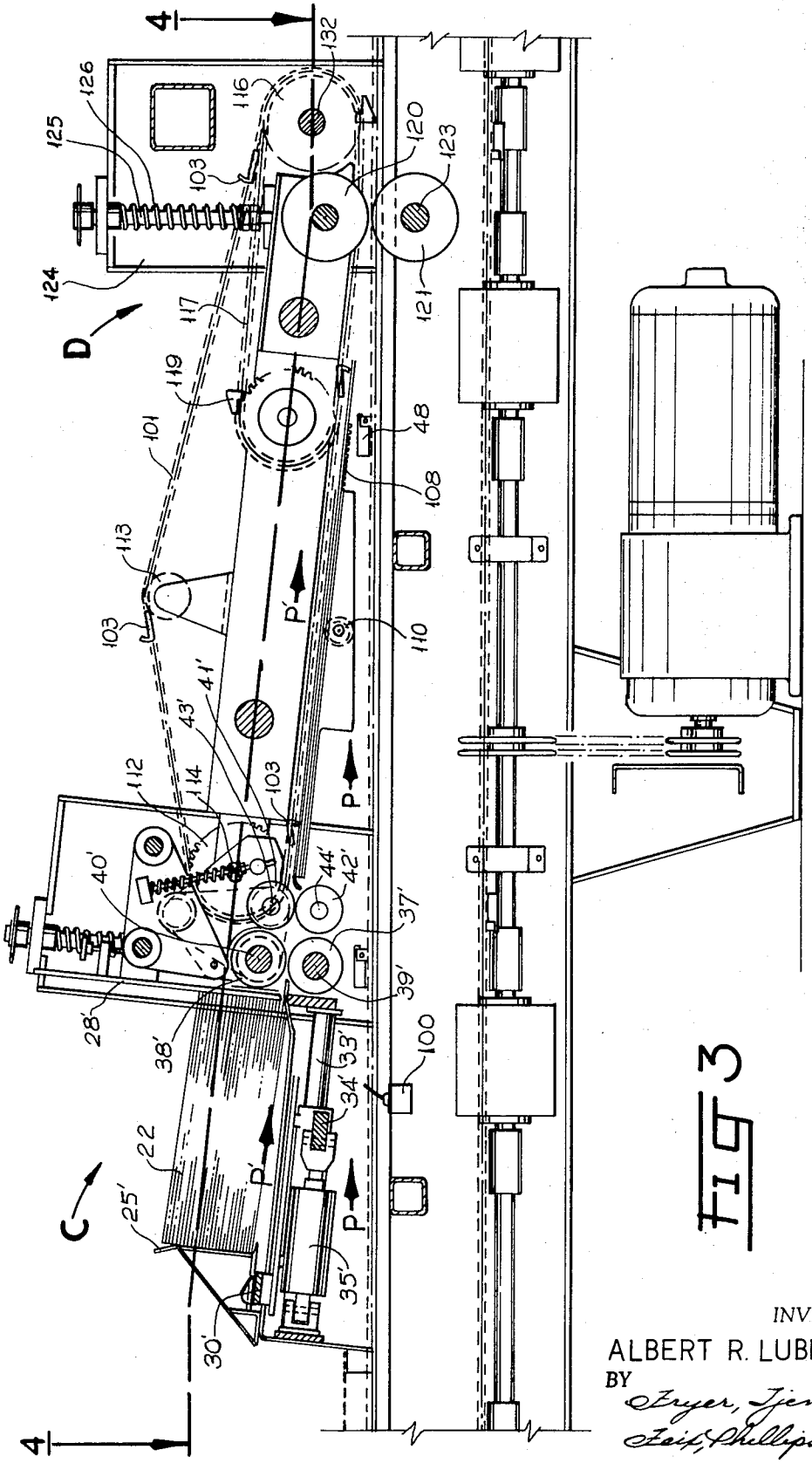


FIG 3

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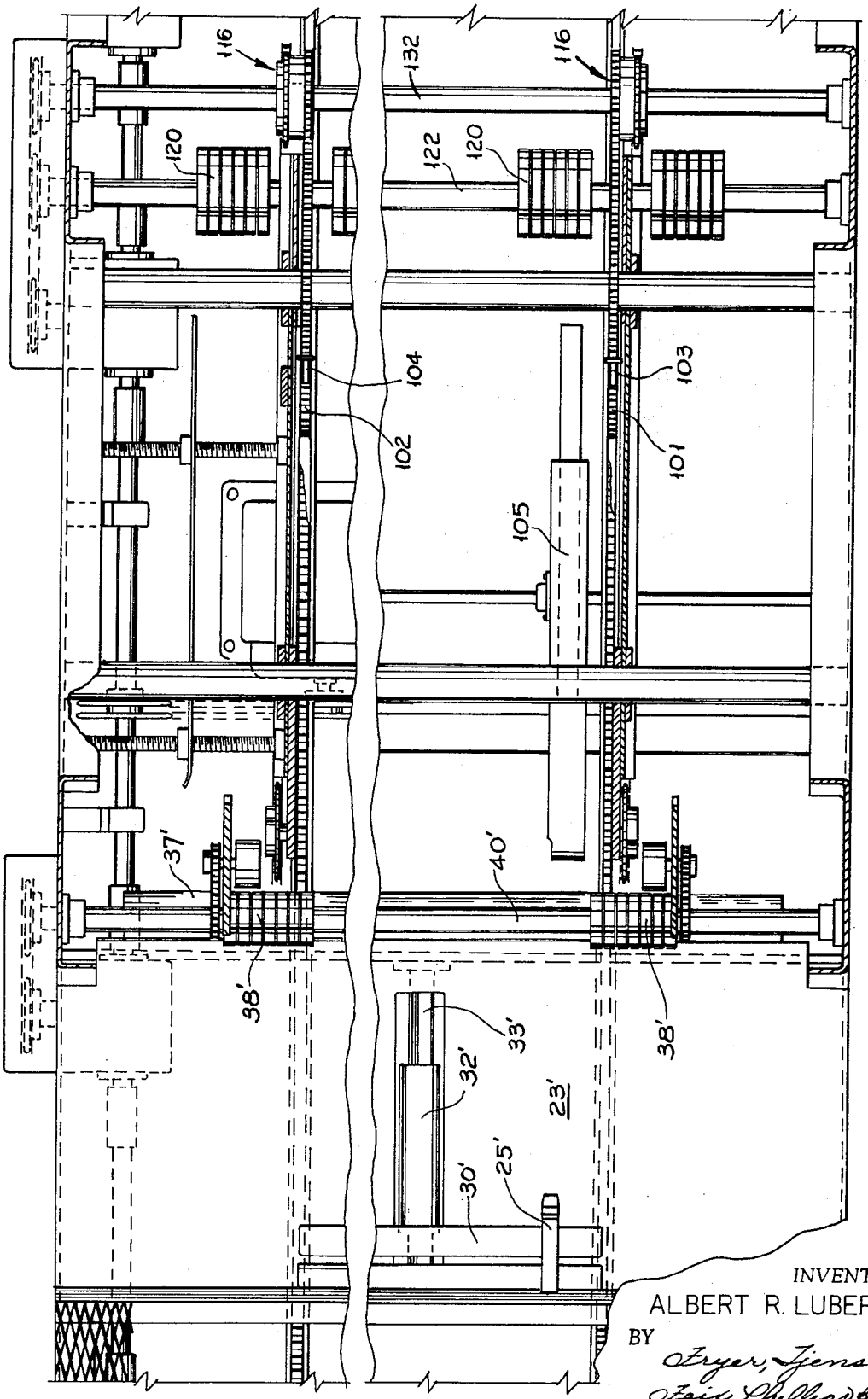


FIG. 4

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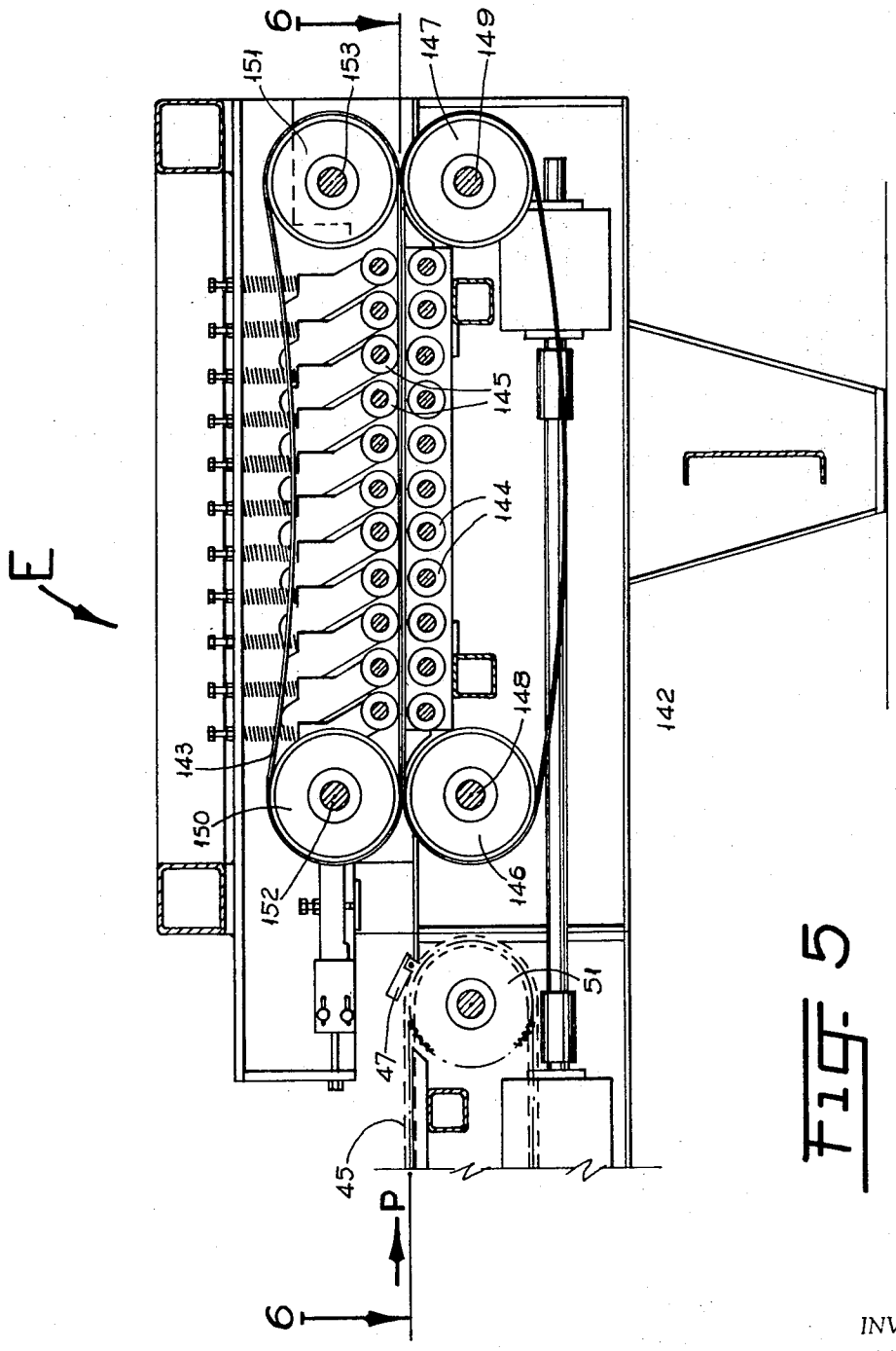


FIG. 5

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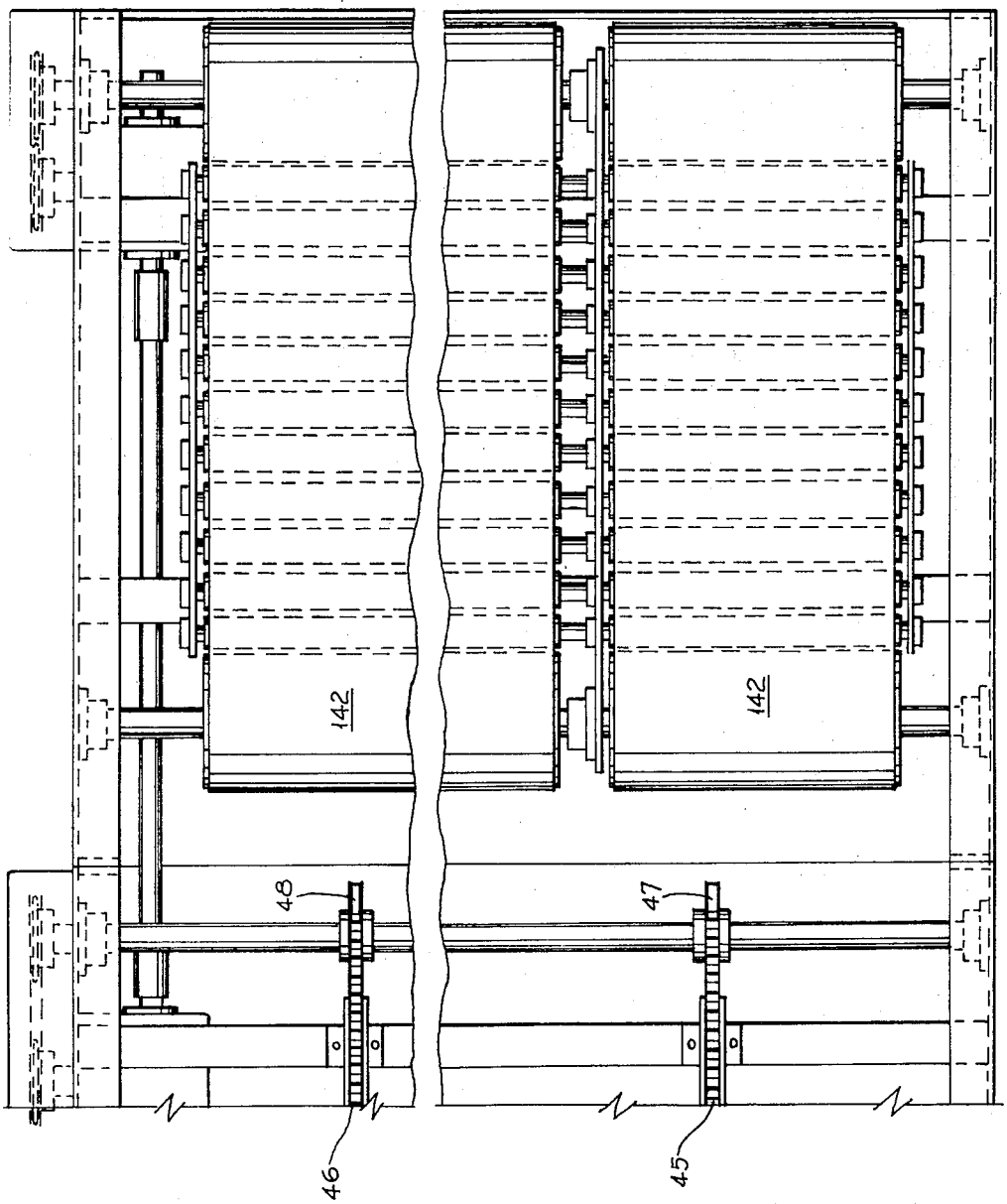


FIG. 6

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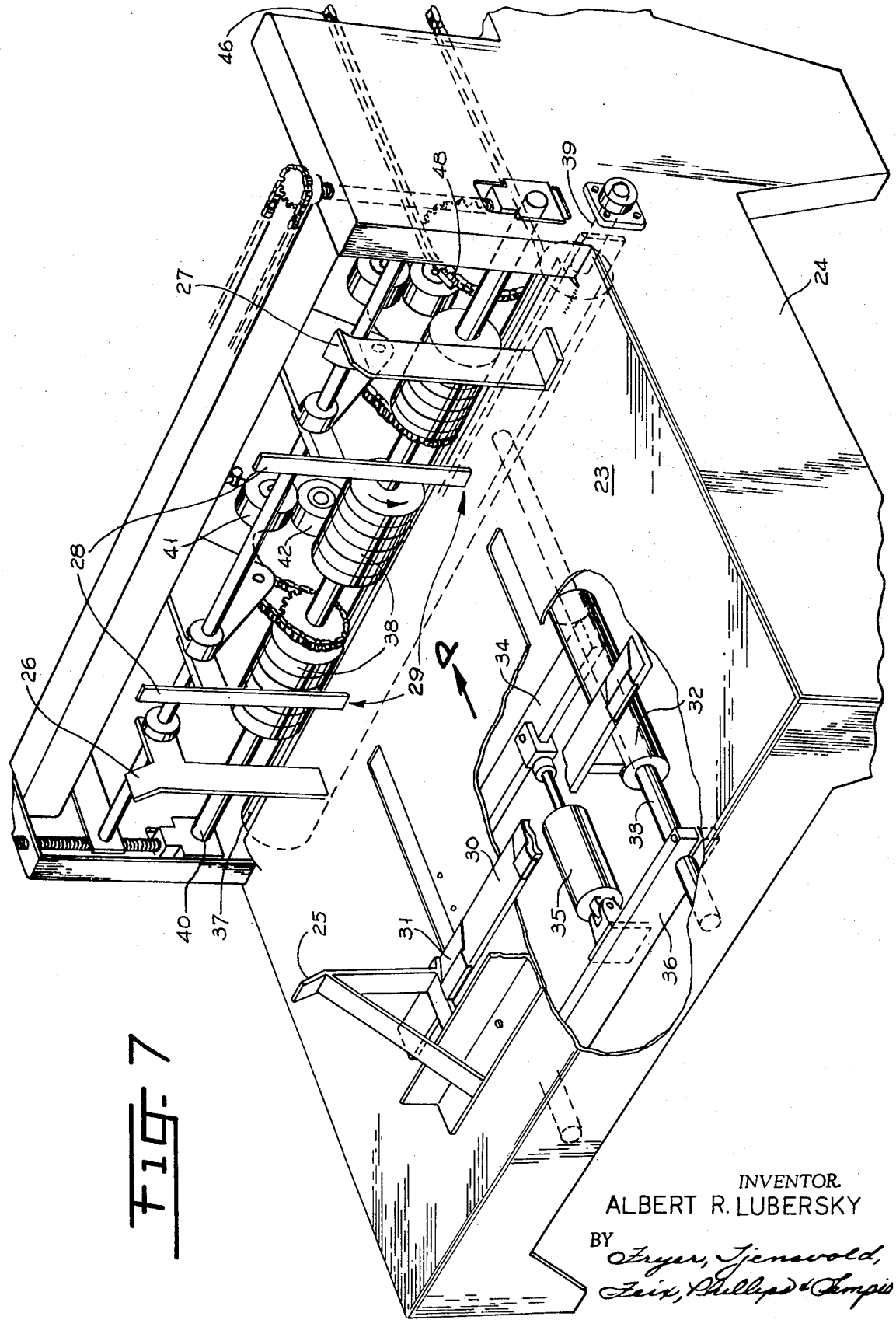


FIG. 7

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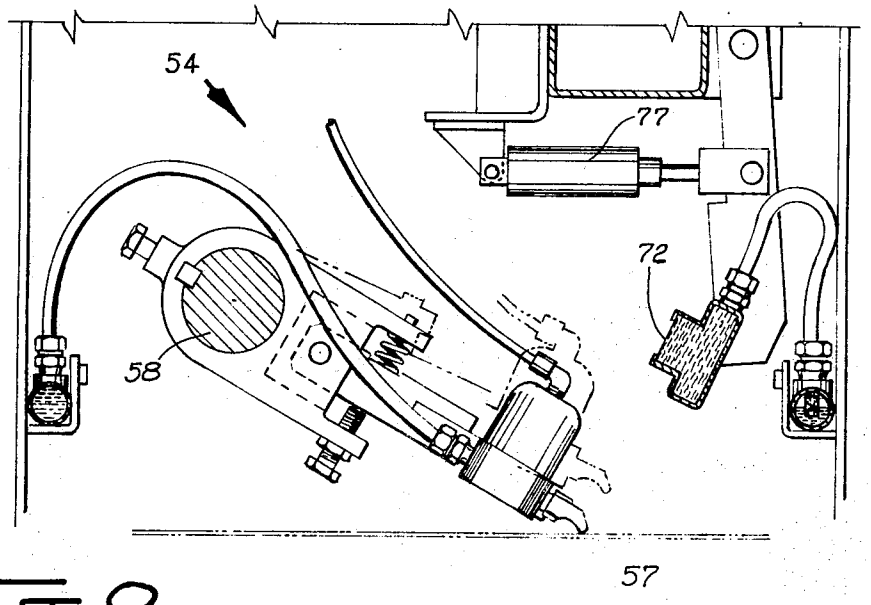


Fig 9

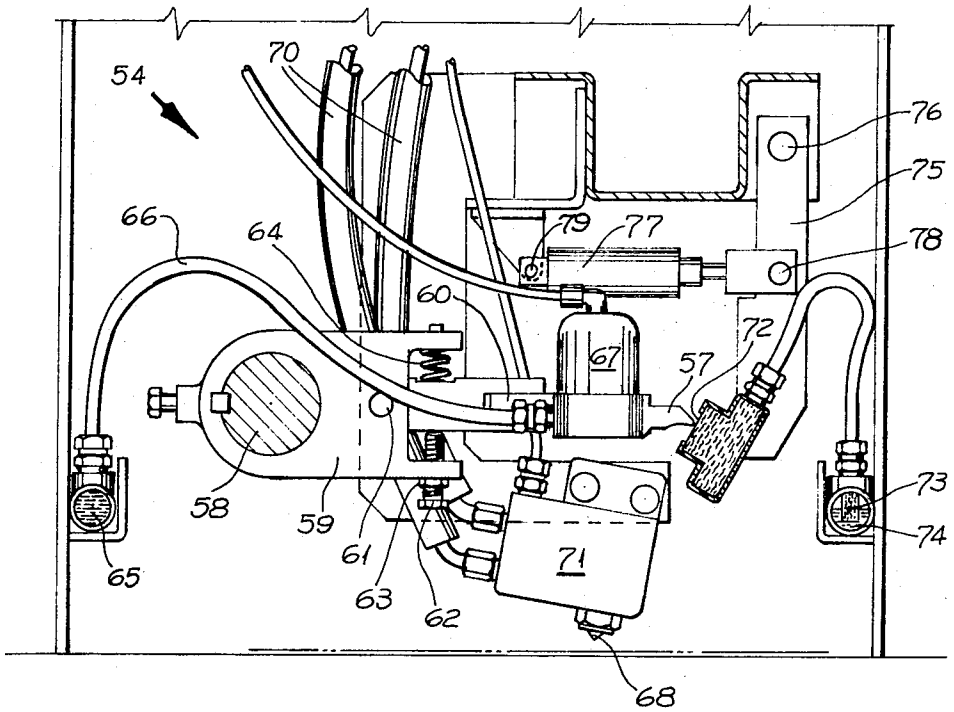


Fig 8

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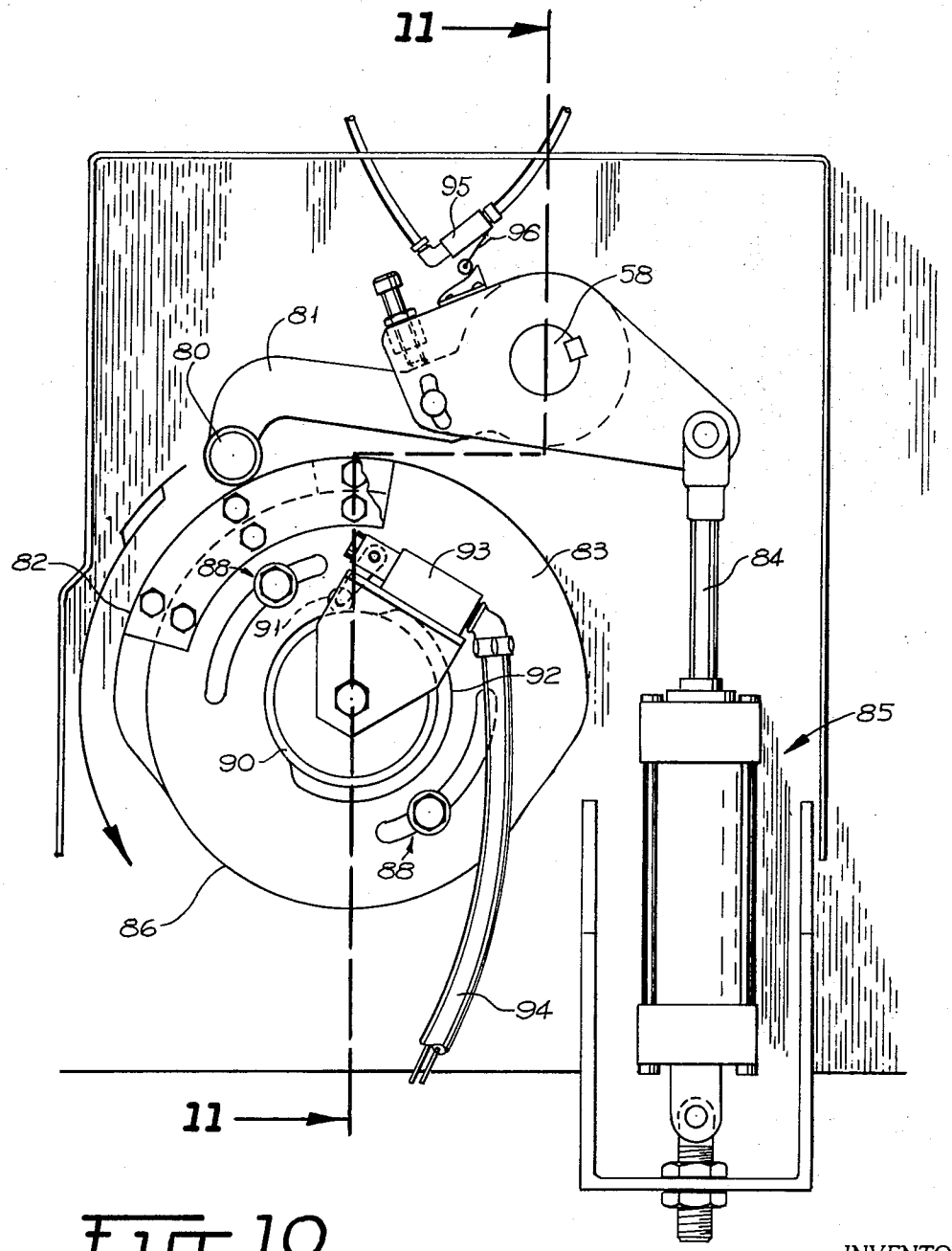


Fig. 10

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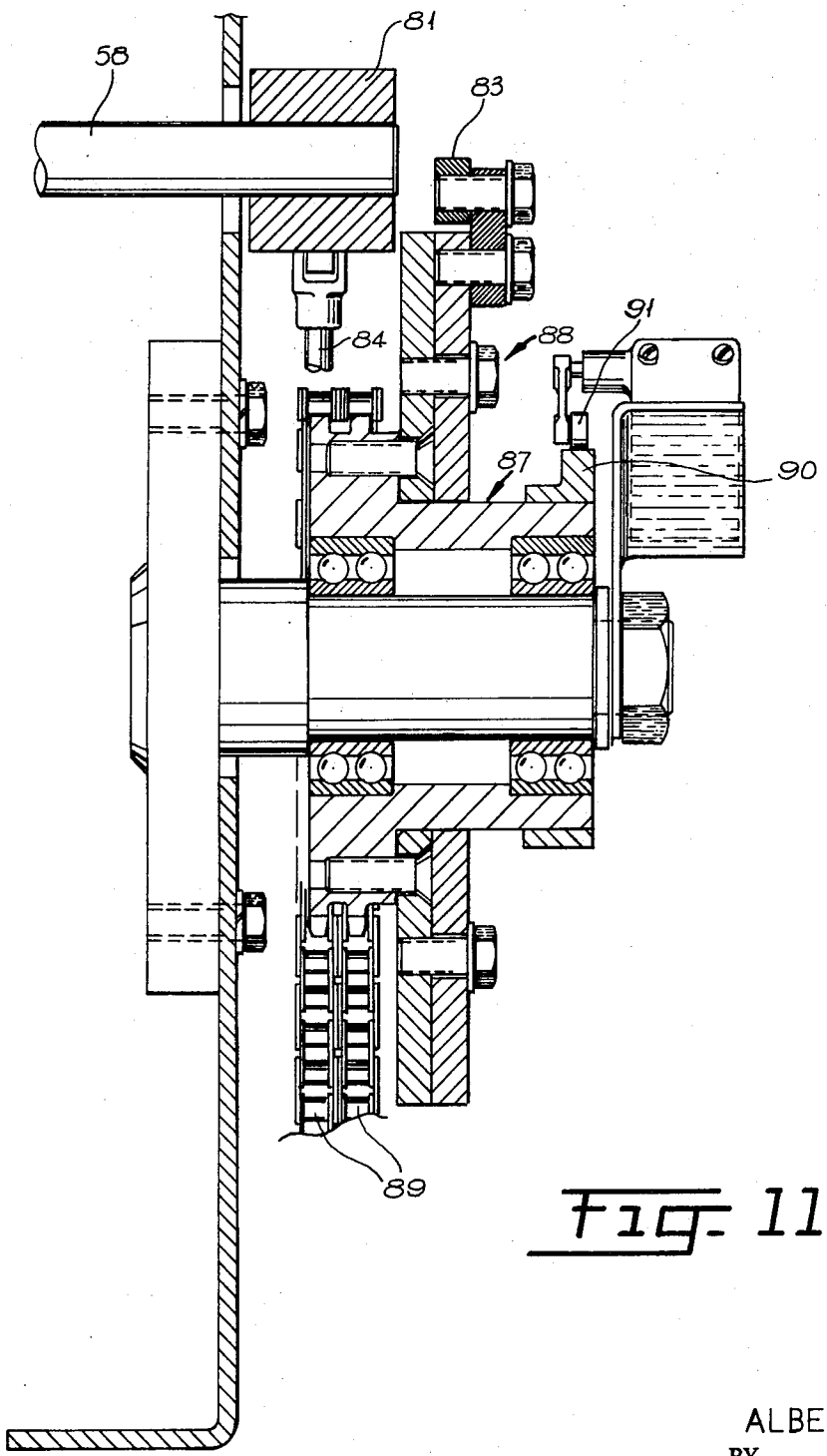


Fig. 11

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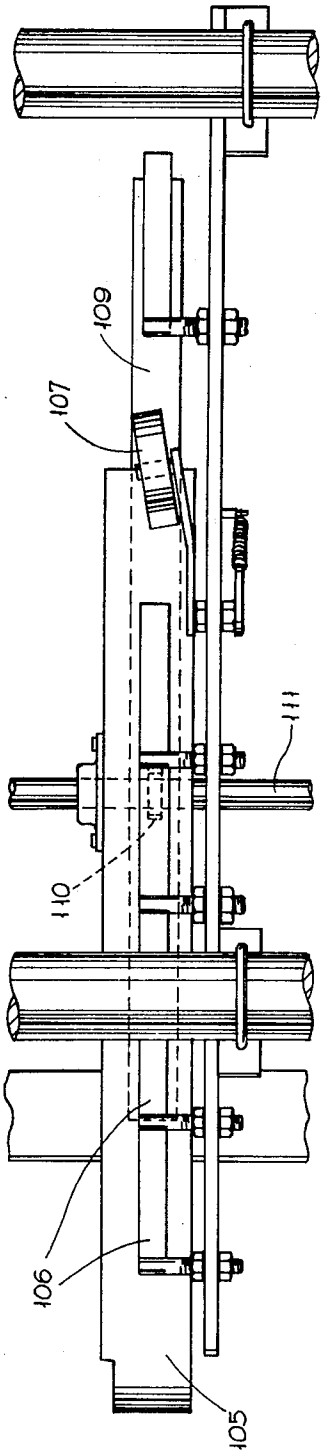


FIG. 12

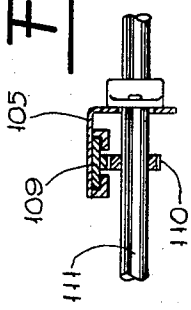


FIG. 12A

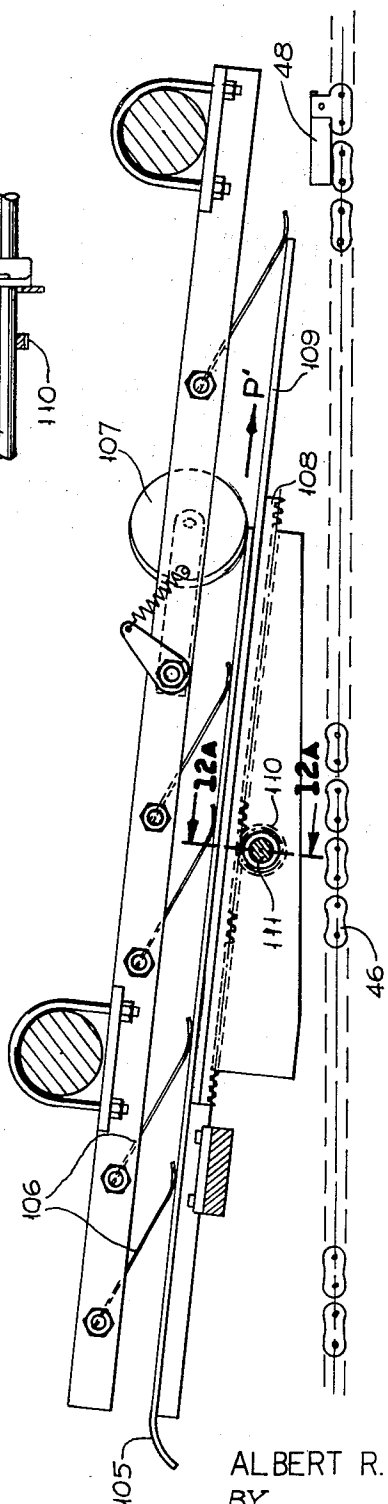


FIG. 13

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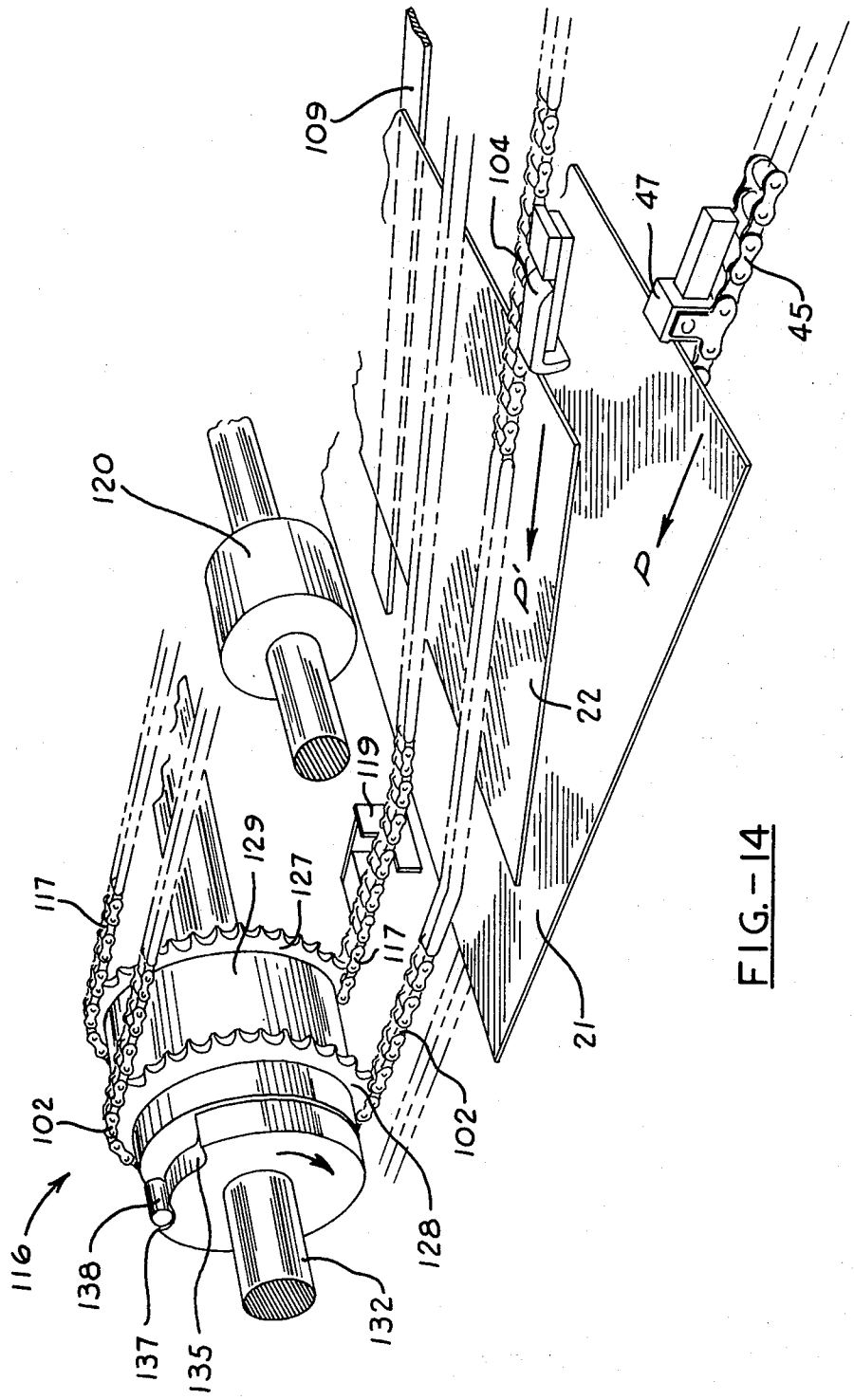


FIG.-14

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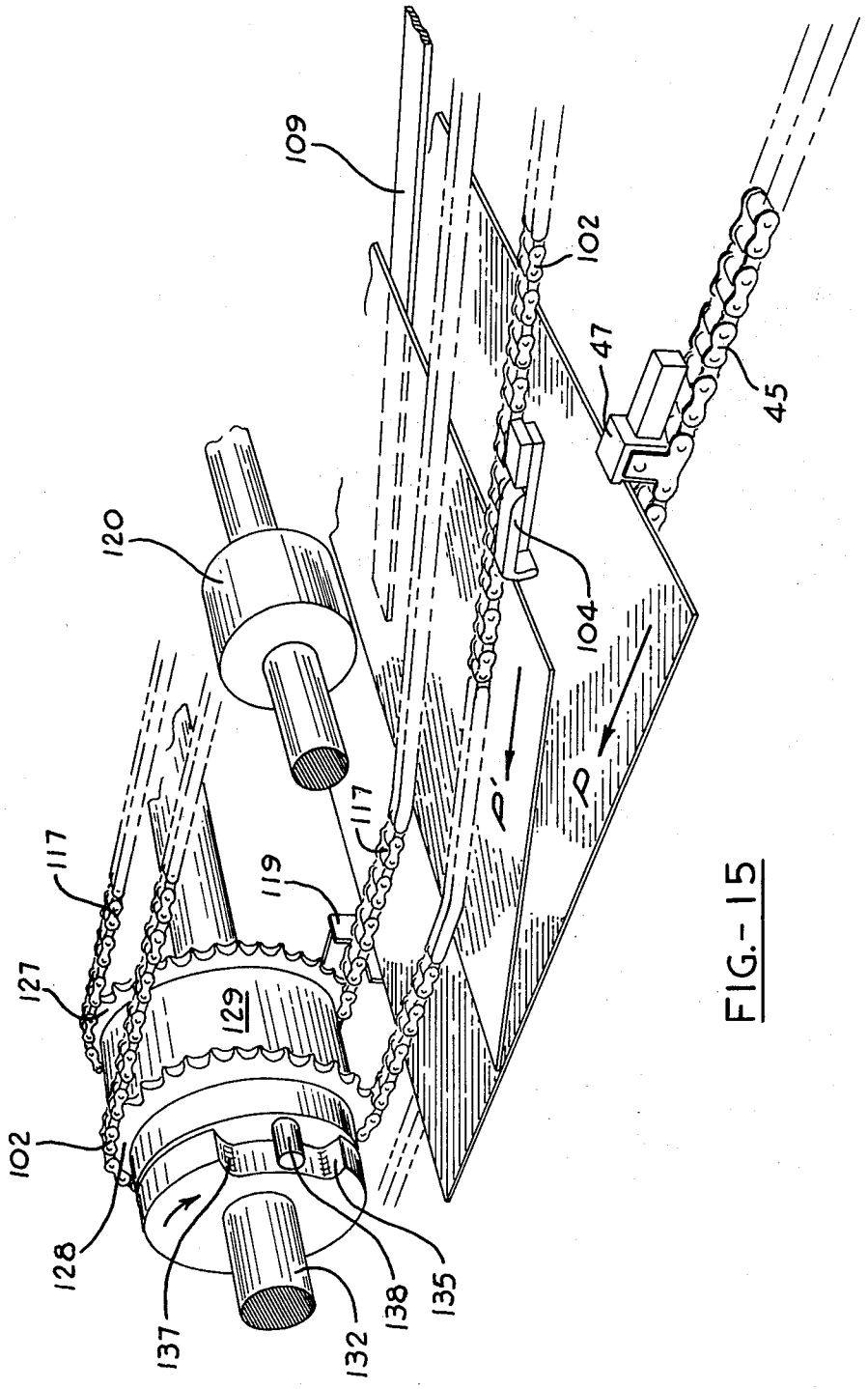


FIG.-15

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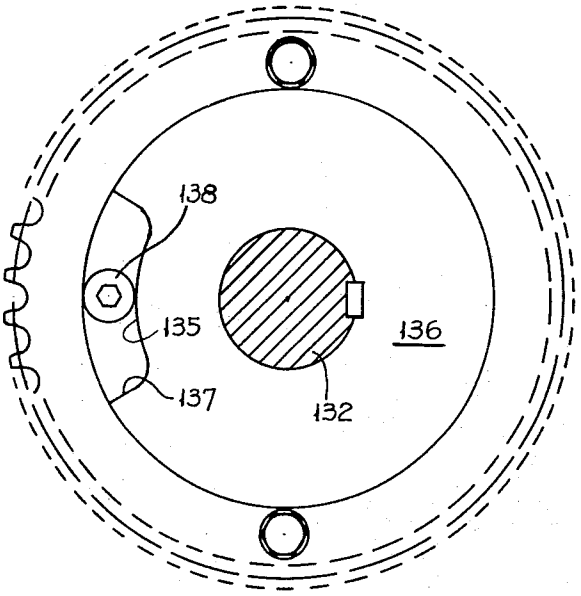


Fig. 16

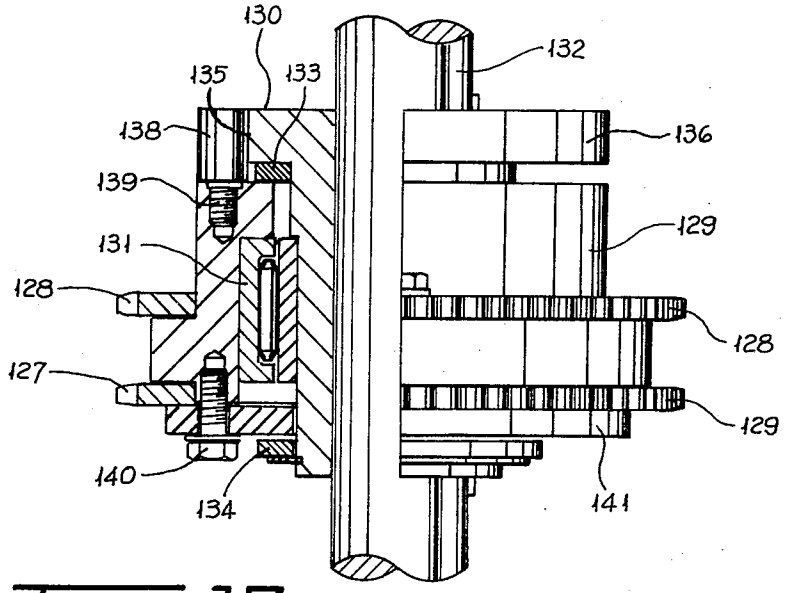


Fig. 17

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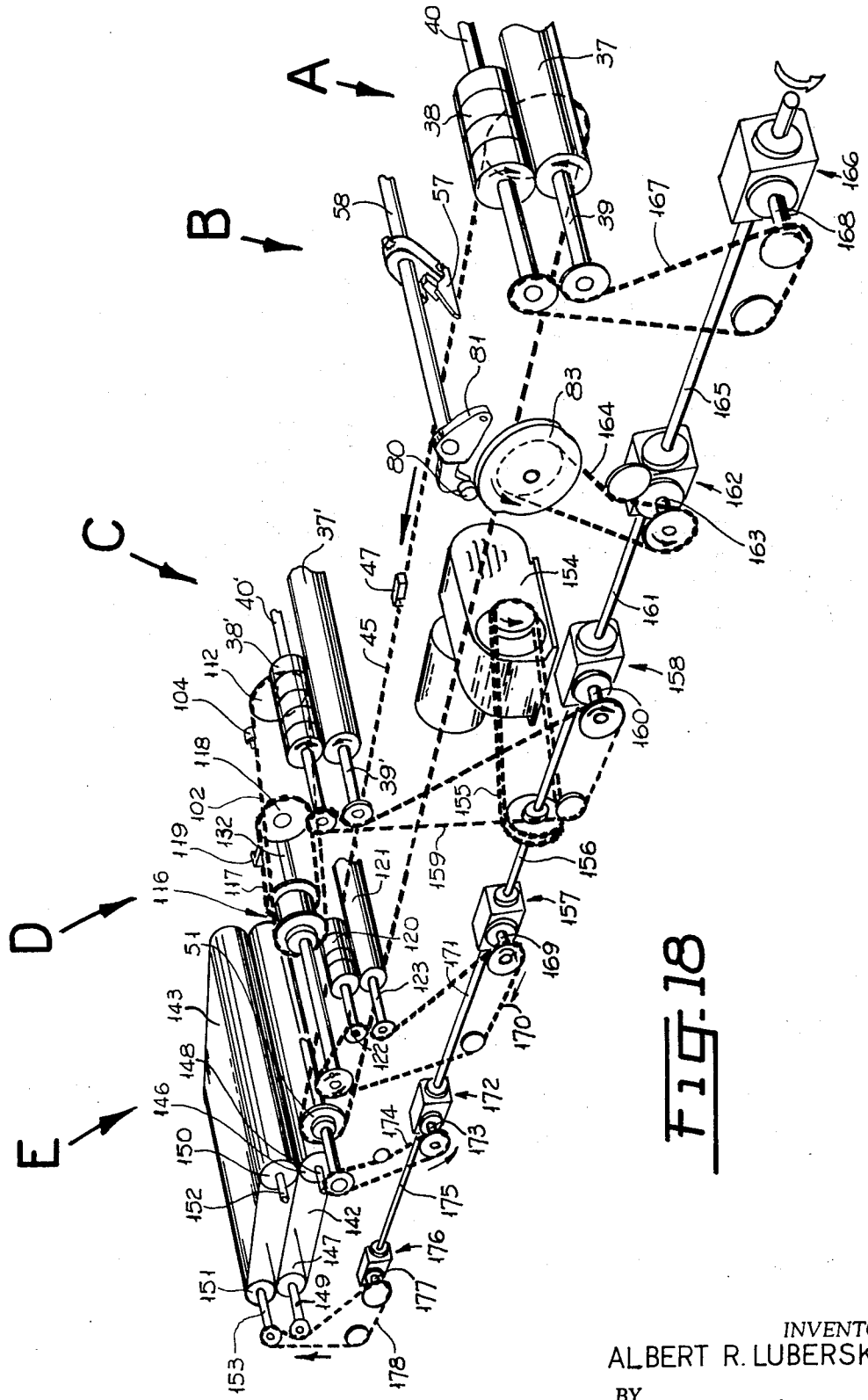


FIG. 18

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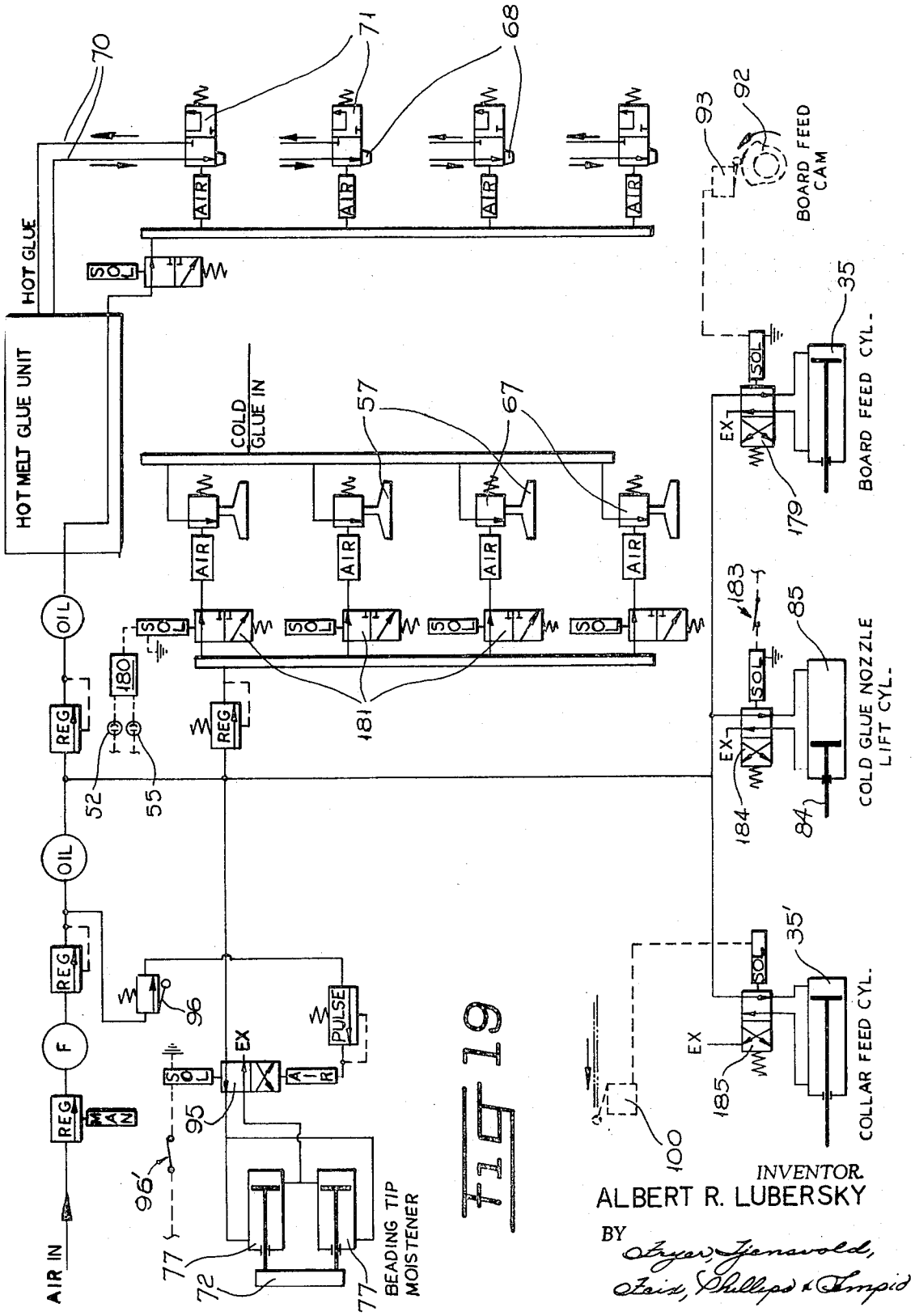


FIG 19

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APPARATUS AND METHOD FOR APPLYING COLLARS TO CONTAINER BLANKS

BACKGROUND OF THE INVENTION

Corrugated cases or containers may have a reinforcing collar, divider partition or the like attached therein to provide various reinforcing and product dividing functions. Conventional apparatus and methods normally run the blanks in the direction of their major axes thus giving rise to pattern gluing and related problems. In addition, such apparatus are oftentimes unduly complex and do not provide the desired production speeds and required accuracy for satisfying the ever-increasing consumer requirements.

SUMMARY OF THE INVENTION

An object of this invention is to overcome the above, briefly described problems by providing an apparatus and method, for economically, precisely and expeditiously applying a wide variety of collar, divider and like blanks to a container blank. The apparatus, capable of running the blanks in the direction of their minor axes, comprises a first feeding station for transferring a flat container blank to a first conveying means which moves the blank along a linear path and through an adhesive application station. After glue or other suitable adhesive has been selectively applied to the container blank, a collar blank feeding station transfers a collar or like blank to a second conveying means for registry over the container blank in a combining station. A compression station then positively secures the two blanks together.

One novel feature of this invention includes at least one pivoted glue applicator which is automatically pivoted into and out of contact with the container blank for selectively applying the glue thereto in the glue application station. Another novel feature comprises means employed in the combining station for placing the overlying blanks in proper registry.

BRIEF DESCRIPTION OF THE DRAWINGS

Other objects of this invention will become apparent from the following description and accompanying drawings wherein:

FIG. **1** is a side elevational view of container blank feeding and adhesive application stations employed in an apparatus embodying this invention with parts removed and broken-away for clarification purposes;

FIG. **1A** is a top plan view of typical combined container and collar blanks secured together by the apparatus;

FIG. **2** is a sectional view taken in the direction of arrows **2—2** in FIG. **1** with parts removed and broken-away for clarification purposes;

FIGS. **3** and **4** are side elevational and top plan views, respectively, of collar blank feeding and combining stations employed in the apparatus with parts removed and broken-away for clarification purposes;

FIGS. **5** and **6** are side elevational and top plan views, respectively, of a compression station employed in the apparatus with parts removed and broken-away for clarification purposes;

FIG. **7** is an enlarged isometric view of the FIGS. **1** and **2** container blank feeding station with parts removed and broken-away for clarification purposes;

FIG. **8** is an enlarged, side elevational view of a glue applicator, employed in the FIGS. **1** and **2** glue application station, shown in its raised position;

FIG. **9** is a view similar to FIG. **8**, but showing the glue applicator in its lowered, glue applying position;

FIG. **10** is a side elevational view of a control means for actuating the FIGS. **8** and **9** glue applicator;

FIG. **11** is a sectional view taken in the direction of arrows **11—11** in FIG. **10**;

FIGS. **12** and **13** are side elevational and top plan views, respectively, of a portion of the FIGS. **3** and **4** collar blank feeding station;

FIG. **12A** is a sectional view taken in the direction of arrows **12A—12A** in FIG. **12**;

FIGS. **14** and **15** are isometric views of another portion of the combining station, showing progressive stages of operation thereof;

FIGS. **16** and **17** are side elevational and half-sectioned top plan views, respectively, of a lost motion sprocket arrangement employed in the combining station;

FIG. **18** schematically illustrates the overall drive system for the FIGS. **1–6** apparatus; and

FIG. **19** schematically illustrates the pneumatic and electrical control system for the apparatus.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The apparatus illustrated in FIGS. **1–6** is adapted to convey a flat container blank **21** along a linear path P and adhesively secure a collar blank **22** thereto. The blanks are orientated to be moved in the direction of their minor axes to facilitate pattern gluing and related desiderata. The blanks may each comprise standard multi-layered corrugated paperboard or other suitable materials utilized for packaging purposes. The combined blanks (FIG. **1A**) may be thereafter erected to form a container, such as a reinforced and/or divided corrugated shipping case.

The apparatus sequentially comprises a container blank feeding station A, a glue application station B, a collar blank feeding station C, a combining station D and a compression station E. Container blank or first feeding station A functions to transfer the container blank to a main conveyer which moves the blank along linear path P throughout the entire length of the apparatus. The blank is moved through adhesive application station B whereat selected patterns of glue are applied to upper surface portions of the blank prior to its transfer to combining station D. A collar blank **22** is removed from a collar blank or second feeding station C and moved along a secondary path P', disposed at an acute angle relative to main path P. The collar blank is superimposed over the container blank and tacked thereto in the combining station. The combined structure is then conveyed through compression station E to secure the two blanks together.

CONTAINER BLANK FEEDING STATION A

The container blank or first feeding station comprises a horizontally disposed table **23** suitably secured to stationary frame **24** of the apparatus (FIGS **1, 2** and **7**). Stacked container blanks **21** are retained on the table by laterally spaced stationary back guides **25** (one shown) and side guides **26** and **27**. A pair of stationary

caliper guides 28 may be adjusted vertically to define the desired opening 29 between the lower ends thereof and table 23. Such opening will be slightly larger than the thickness of blank 21 to permit it to freely pass therethrough, but to prevent egress of the next following blank.

Each successive lower blank is moved in the direction of linear path P by means of reciprocal kicker bar 30, having a raised ledge 31 positioned to engage the rear edge of such blank. The kicker bar is attached to spaced slides 32 (one shown) each slidably mounted on a stationary, adjustable guide bar 33. A cross-bar 34 is secured to slides 32 to reciprocate same by means of a double-acting air cylinder 35 pivotally attached to a stationary bar 36 which also mounts guide bars 33 thereon. The overall control and drive systems for the apparatus will be hereinafter described with reference to FIGS. 18 and 19.

When kicker bar 30, shown in its retracted position in Figs. 1 and 7, is actuated to move a container blank along path P, the forward edge of the container blank passes through opening 29 and is picked up by pinch or feed rolls 37 and 38. Lower pinch roll 37 is mounted on a rotatable shaft 39 whereas upper pinch rolls 38 are mounted on a common, rotatable shaft 40, both preferably driven as will be hereinafter explained. The forward end of the blank is subsequently picked up by second sets of pinch or auxiliary feed rolls 41 and 42, positioned downstream of the first set of pinch rolls (FIG. 1). In the preferred embodiment, pinch rolls 41 are mounted on and driven by a rotatable shaft 43 whereas pinch rolls 42 are mounted on a rotatable idler shaft 44.

The pinch rolls function to transfer the container blank from the above-described first feeding means onto a main conveying means shown in the form of spaced and identical conveyer chains 45 and 46 having lugs 47 and 48 attached thereto, respectively (FIG. 2). The lugs engage the rear edge of the blank and cooperate with a stationary hold-down bar 49 to move and guide the blank towards glue application station B. Each endless chain is mounted on an idler sprocket 50 (FIG. 1) and a driven sprocket 51 (FIG. 5).

ADHESIVE APPLICATION STATION B

The adhesive or glue application station comprises a first electric eye or sensing means 52 (FIG. 1) cooperating with a stationary mirror 53 positioned thereabove to detect when the leading edge of the blank passes thereby. Such electric eye means functions to automatically communicate glue to application means 54 when it is in its operative FIG. 9 position via suitable control means (FIG. 19). A second electric eye means 55 cooperates with a stationary mirror 56 to detect when the trailing edge of the blank passes thereby to automatically stop such glue communication.

As more clearly shown in FIGS. 8 and 9, the glue application means comprises a plurality of identical cold resin glue tips or first application means 57, each mounted on a common rockable shaft 58 by means of a bracket 59 and tip holder 60. Holder 60 is pivotally mounted on the bracket by a pin 61 and may be vertically adjusted thereon by means of a set screw 62 and lock-nut 63 and counter-acting coil spring 64. Tip 57 may comprise any suitable nozzle, fibrous pad or bristle-like material adapted to receive and apply a first adhesive, such as glue, to upper surface portions of blank 21. A suitably composed and standard cold resin glue 65 may be suitably stored in a pressurized reservoir (not shown) and communicated to tip 57 by means of a flexible conduit 66 and suitably associated control means, including an air actuated valve 67 (FIGS. 8 and 19).

Suitably spaced stationary nozzles or second application means 68 are mounted adjacent to glue tips 57 to deposit a suitably composed hot melt, second adhesive onto selected portions of blank 21 (FIGS. 1 and 8). The latter adhesive provides a quicker tack or set between blanks 21 and 22, than the first adhesive, to prevent relative movement therebetween during the time interval required to compress and set the first adhesive discharged by tips 57. The hot melt adhesive may be selectively communicated to nozzles 68 from a reservoir 69 via conduits 70. The integrated control means therefor is schematically illustrated in FIGS. 1 and 19 and includes an air-controlled valve 71.

FIG. 8 illustrates glue tip 57 in its raised and stored position when the apparatus is not running. In such position, the glue tip engages a moistening means shown in the form of a water moistened felt pad 72 of a moistening unit which terminates in a wick 73 immersed in water 74. Capillary action functions to maintain the felt pad in a moistened condition to prevent the glue on tip 57 from drying up when not in use. The moistening unit is secured to a bracket 75 pivotally mounted by a pin 76 on stationary frame 24 of the apparatus. A double acting air cylinder 77 is pivotally mounted between the frame and bracket, by pins 78 and 79 respectively, to selectively pivot the moistening unit between its FIGS. 8 and 9 positions.

FIGS. 10 and 11 illustrate a portion of the control means utilized to synchronize various machine movements, including the rocking of shaft 58 to control the operative position of glue tip 57 between its full and dotted line positions in FIG. 9. In the control position shown, a roller 80, mounted on an adjustable arm of bell crank 81, engages a raised portion 82 of a cam 83 to rock shaft 58 to its dotted line position in FIG. 9. A rod 84 of a double acting air cylinder 85 is pivotally attached to a second end of bell crank 81 to function as an air spring to constantly maintain roller 80 in contact with the cam and to raise the tip to its FIG. 8 position when the apparatus is not operating.

Upon continued counter-clockwise rotation of the cam, roller 80 will engage a reduced cam portion 86 to pivot the glue tips to their lowered, full line position in FIG. 9. Cam 83 is mounted for rotatable adjustment on a collar assembly 87 by releasable bolt and slot means 88 (FIG. 11). The collar assembly is continuously rotated by endless chains 89.

A multi-faced cam 90, also attached to the collar assembly, engages a roller 91 to continuously control feeding of container blanks 21. In particular, when the roller engages a raised portion 92 of the cam, a microswitch 93 is activated to actuate air cylinder 35 (FIG. 1) via electrical cable 94.

When the apparatus is not running and glue tips 57 are pivoted upwardly to their FIG. 8 stored position by air cylinder 85 (FIG. 10), cylinder 77 of the tip moistening unit is actuated to pivot bracket 75

clockwise about pivot 76. Such pivoting is effected by means of an air valve 95, the switch 96 of which is tripped by engagement with bellcrank 81 when it is pivoted clockwise in FIG. 10 to disengage roller 80 from cam 83. Such mode of operation will be hereinafter more fully discussed with reference to the integrated control system of FIG. 19.

COLLAR BLANK FEEDING STATION C

After the glue has been applied in station B, blank 21 continues to move along path P by means of conveyers 45–46 and lugs 47–48. Simultaneously therewith, collar blank or second feeding station C (FIGS. 3 and 4) functions to sequentially remove the lowermost collar blank 22 and convey it along a secondary path P' disposed at an acute angle relative to primary path P. The collar blank feeding station is substantially identical to container blank feeding station A and, therefore, like numerals are employed to depict corresponding parts with the numerals depicting part employed in the collar blank feeding station being accompanied by a prime (') symbol.

Collar blank 22 is moved along path P' by a kicker 30' which is actuated by a double acting air cylinder 35' in response to tripping of a micro-switch 100 (FIG. 3) by the leading edge of container blank 21. The collar blank is picked up by pairs of pinch rolls 37'–38' and 41'–42πo to deliver the blank to spaced secondary conveyer chains 101 and 102. Lugs 103 and 104 are connected to chains 102 and 102, respectively, to engage the rear edge of the collar blank to move it over stationary supports 105 positioned therebetween.

Spring-like finger members 106 (FIGS. 13 and 14) engage the top of the blank to maintain it on the supports and cooperate with an offset roller 107 to maintain correct alignment of the blank prior to its application to underlying container blank 22. A rack 108 is secured to each telescoped section 109 of each support 105 to selectively adjust the length of the support. The racks each mesh with a respective pinion 110 attached to a common shaft 111 rotatably mounted on the apparatus (FIG. 12A) to effect such adjustment manually.

COMBINING STATION D

Each chain 101 and 102 is mounted on idler sprockets 112 and 113, respectively mounted on shafts 114 and 115, and a driven sprocket assembly 116 of a registry means (FIGS. 3 and 4). The registry chains, each having spaced lugs 119 attached thereto, cooperate with the main and secondary conveyer chains to precisely position the collar blank on the container blank, as described hereinafter.

Pairs of nip rolls 120 and 121 are respectively mounted on driven shafts 122 and 123 to receive and compress the overlying blanks therebetween to initially tack them together by the aforementioned hot melt glue. The nip rolls are positioned suitably close to the free end of adjustable section 109 of support 105 to assure precise reception of the blanks therebetween. The common shaft 122 for top nip rolls 120 is mounted in bearings arranged for vertical movement on a side frame 124 of frame 24. A shaft 125 and spring biasing means 126 are operatively connected to rolls 120 to maintain the desired pressure thereon.

Chain 117 is mounted on a sprocket 127 of sprocket assembly 116 whereas chain 102 is mounted on a sprocket 128 thereof (FIGS. 14–17). The two sprockets are secured to a common, first hub 129 which is freely rotatable, through a sector approximating 60°, on a second hub 130 by means of roller bearings 131. Hub 130 is keyed or otherwise suitably attached to a driven shaft 132, suitably mounted for rotation in the apparatus. Hub 129 is axially retained on hub 130 by spaced thrust bearings 133 and 134.

Hub 130 has a slot 135, formed in a circular end plate 136 thereof, terminating in a trailing driving surface portion 137. Such surface portion normally contacts a pin 138, attached to hub 129 by a screw 139, to drive sprockets 127 and 128. Shaft 132 is preferably arranged to normally drive the sprockets and thus chains 102 and 117 at a linear speed slightly less than the linear speed of main conveyer chains 45 and 46.

As shown in the sequence of operation illustrated in FIGS. 14 and 15, a leading edge of container blank 21 engages lug 119 of chain 117 to accelerate chains 118 and 102 to substantially the same linear speed as that of the main conveyer chains. Collar blank 22 is thus moved into proper registry with underlying container blank 21 due to the lost motion occasioned between groove 135 and pin 138 in the sprocket assembly. Driven rolls 120 and 121 immediately receive and compress the two blanks together to set the hot melt adhesive previously deposited thereon by nozzles 68.

Referring to FIGS. 16 and 17, it should be noted that sprocket 127 may be rotatably adjusted 360° on collar 129 by means of releasable bolts 140 and cooperating clamping plate 141. Also, means are provided (not shown) to rotatably adjust shaft 132 relative to the rotative position of the shaft carrying sprocket 51 to selectively adjust the effective distance between lugs 47 and 104 (FIGS. 5, 14 and 18). Supports 105 may also be adjusted for such various blanks (FIG. 12). Such various adjustment means will thus accommodate the combining station for the reception and delivery of container and collar blanks having different sizes.

COMPRESSION STATION E

Referring to FIGS. 5 and 6, main conveyer chains 45 and 46 thereafter continue to move the superimposed and tacked blanks along path P and into compression station E. The overlying blanks are picked up by identical pairs of compression belts 142 and 143 to fully secure the overlying blanks together. Underlying idler rollers 144 may be employed to back-up the lower belt.

Vertically adjustable spring biased upper rollers 145 may be utilized to impart the desired compression force to the blanks. Belt 142 may be trained on an idler roll 146 and a driven roll 147 mounted on shafts 148 and 149, respectively. Belt 143 may be mounted on an idler roll 150 and a driven roll 151, mounted on shafts 152 and 153, respectively.

APPARATUS DRIVE SYSTEM

FIG. 18 schematically illustrates an overall drive system for the FIGS. 1–6 apparatus except for the drive means for a selected few of the actuated mechanism such as pinch rolls 41–42 and 41'–42'. A main electrical drive motor 154 functions to drive a chain 155 which in turn rotates a shaft 156. The output from such

shaft is split to provide an input to gear boxes **157** and **158**.

Gear box **158** provides a drive input at station C via a chain **159** and takeoff shaft **160**. A third shaft **161** is operatively connected to gear box **158** and a third gear box **162**. The latter gear box has a takeoff shaft **163** which drives an endless chain **164** which in turn continuously rotates cam **83** in gluing station B. A shaft **165** is operatively connected to gear box **162** and a fourth gear box **166** to supply power to pinch roll shafts **39** and **40** via endless chain **167** and takeoff shaft **168**.

Gear box **157** functions to drive a takeoff shaft **169** which in turn actuates an endless chain **170** in combining station D. The latter chain is operatively connected to pinch roll shafts **122** and **123** and shaft **132** having sprocket assembly **116** mounted thereon. As discussed above, the sprocket assembly further drives chain **117** for registering the collar blank to the container blank during the combining function.

A shaft **171** is connected to gear box **157** to provide an input to a fifth gear box **172** having a takeoff shaft **173**. Such takeoff shaft drives an endless chain **174** which in turn drives sprockets **51** having the main conveyer chains **45** and **46** (one shown) mounted thereon. A shaft is operatively connected between gear box **172** and a sixth gear box **176** to drive belts **142** and **143** in compression station E. In particular, a power takeoff shaft **177** drives an endless chain **178** which in turn drives shafts **149** and **153** having rolls **147** and **151** mounted thereon, respectively.

PNEUMATIC AND ELECTRICAL SYSTEM

FIG. **19** schematically illustrates a portion of the integrated pneumatic and electrical control system for automatically and intermittently actuating the above-described double-acting cylinders **35**, **35'**, **77** and **85** and cold glue applicators **57** and hot glue nozzles **68**. When the machine is set in operation, raised portion **92** of cam **90** engages roller **90** (FIG. **10**) to trip switch **93** to energize a solenoid actuated control valve **179** operatively connected to cylinder **35**. It should be noted that a conventional electrical power source, air source and related conventional means are employed to complete the system schematically illustrated in FIG. **19**.

Upon actuation of cylinder **35**, the rod end thereof will extend to remove a lower container blank from the stack of blanks (FIG. **1**) and move it along path P by means of kicker **30**. Upon transfer to and movement by conveying means **45—45**, the leading edge of the container blank breaks the light beam reflected onto mirror **53** by electric eye means **52** to energize a control means **180**. The control means, in turn, functions to energize solenoid actuated air valves **181** to communicate pressurized air to valves **67** and **71** (FIG. **8**).

The valves respectively communicate cold and hot glues to glue applicators **57** and nozzles **68**. When the trailing edge of the container blank breaks the light beam reflected between mirror **56** and electric eye means **55**, control means is energized to reverse the above sequence. In particular, air valves **67** and **71** are actuated to inactivate applicators **57** and nozzles **68** to ready them for glue application to the next-following container blank.

In the FIG. **8** non-operating condition of machine operation, a switch **183** (FIG. **19**) would remain open and a valve **184** would be in its spring-controlled, rightward position. Rod **84** of cylinder **85** will thus be retraced to lift glue tips **57** to their rest position. When lever **81** is pivoted clockwise (FIG. **10**), it trips pneumatic switch **96** to "pulse" valve **95** to in turn retract cylinders **77** which pull moisteners **72** into contact with tips **57**.

When the start button (not shown) is pushed, a switch **96'** is closed to electrically energize the solenoid of valve **95** to move the valve to its FIG. **19** position. Cylinders **77** extend to withdraw moisteners **72** from glue tips **57** (FIG. **9**). The moisteners contact an actuator (not shown) of switch **183** to close same to energize the solenoid of valve **184**. Valve **184** is moved leftwardly to its FIG. **19** position to extend rod **84** of cylinder **85** to further move the glue tips into their FIG. **9** operational position.

Further movement of blank **21** along path P in FIg. **3** functions to engage a leading edge thereof with microswitch **100** (FIGS. **3** and **19**) to energize a solenoid actuated valve **185** to extend cylinder **35'**. The cylinder functions to deliver a collar blank **22** along path P' to coordinate same with the delivery of container blank **21** in combining station D. The blanks are then glued together in the manner aforedescribed and delivered to compression station E wherein they are permanently secured together.

What is claimed is:

1. An apparatus for securing first and second flat blanks together comprising a first blank feeding station, an adhesive application station, a second blank feeding station, a combining station and a compression station,

said first blank feeding station comprising first feeding means for removing a first blank from a stack of blanks and for moving said first blank along a first linear path,

first conveyor means for receiving said first blank from said first feeding means and for moving said first blank along said first linear path at a first linear speed,

said adhesive application station comprising at least one application means for depositing a selected pattern of adhesive on said first blank,

said second blank feeding station comprising second feeding means for removing a second blank from a stack of blanks and for moving said second blank along a second linear path disposed at an acute angle relative to said first linear path to intersect therewith,

a second conveyer means for receiving said second blank from said second feeding means and for moving said second blank along said second linear path at a second linear speed which is less than the first linear speed of said first conveyer means,

said combining station comprising registry means, having means for accelerating said second conveyer means and said second blank to a linear speed substantially equalling said first linear speed, for precisely positioning said second blank on said first blank,

said compression station comprising means for receiving and compressing said first and second blanks together.

2. The invention of claim 1 wherein said first feeding means comprises a kicker bar reciprocally mounted in said apparatus, means for reciprocating said kicker bar, at least one set of pinch rolls rotatably mounted in said apparatus adjacent to said kicker bar for receiving said first blank therefrom and means for driving at least one of said pinch rolls.

3. The invention of claim 2 wherein two sets of said pinch rolls are rotatably mounted in said apparatus.

4. The invention of claim 1 further comprising a stationary hold-down bar means positioned vertically above said first conveyer means for holding said first blank thereon.

5. The invention of claim 1 further comprising sensing means positioned adjacent to said first conveyer means for detecting when said first blank moves thereby for automatically actuating said application means for depositing adhesive on said first blank.

6. The invention of claim 1 wherein said application means is movably mounted in said apparatus for movement toward and away from said first conveyer means.

7. The invention of claim 6 further comprising means for automatically moving said application means into close proximity to a first blank passing thereunder and simultaneously discharging adhesive thereon.

8. The invention of claim 6 wherein said application means is pivotally mounted on a shaft rockably mounted in said apparatus.

9. The invention of claim 6 wherein said application means comprises at least one glue tip and further comprising moistening means positioned adjacent to said glue tip to engage therewith when said glue tip is moved a predetermined distance away from said first conveyer means for maintaining it in a moistened condition.

10. The invention of claim 9 wherein said moistening means is movably mounted in said apparatus and means for automatically moving said glue tip and moistening means into and out of engagement.

11. The invention of claim 1 wherein said adhesive application station comprises first application means for depositing a first adhesive onto said first blank and second application means for depositing a second adhesive, exhibiting quicker setting properties than said first adhesive, onto said first blank.

12. The invention of claim 11 wherein said first application means is movably mounted in said apparatus and said second application means is fixedly mounted in said apparatus.

13. The invention of claim 1 further comprising means for detecting the position of the leading edge of said first blank and for automatically actuating said second feeding means.

14. The invention of claim 1 wherein said second blank feeding station further comprises stationary support means positioned adjacent to said second conveying means to underlie and support said second blank.

15. The invention of claim 14 further comprising means for adjusting the length of said support means.

16. The invention of claim 1 wherein said combining station further comprises roll means for receiving said first and second blanks therebetween for compressing and tacking them together.

17. The invention of claim 1 wherein registry means in said combining station comprises means engageable with a leading edge of said first blank precisely positioning said second blank on said first blank.

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