Jan. 8, 1935. W. PECHY 1,986,847

CAN HEADING MACHINE

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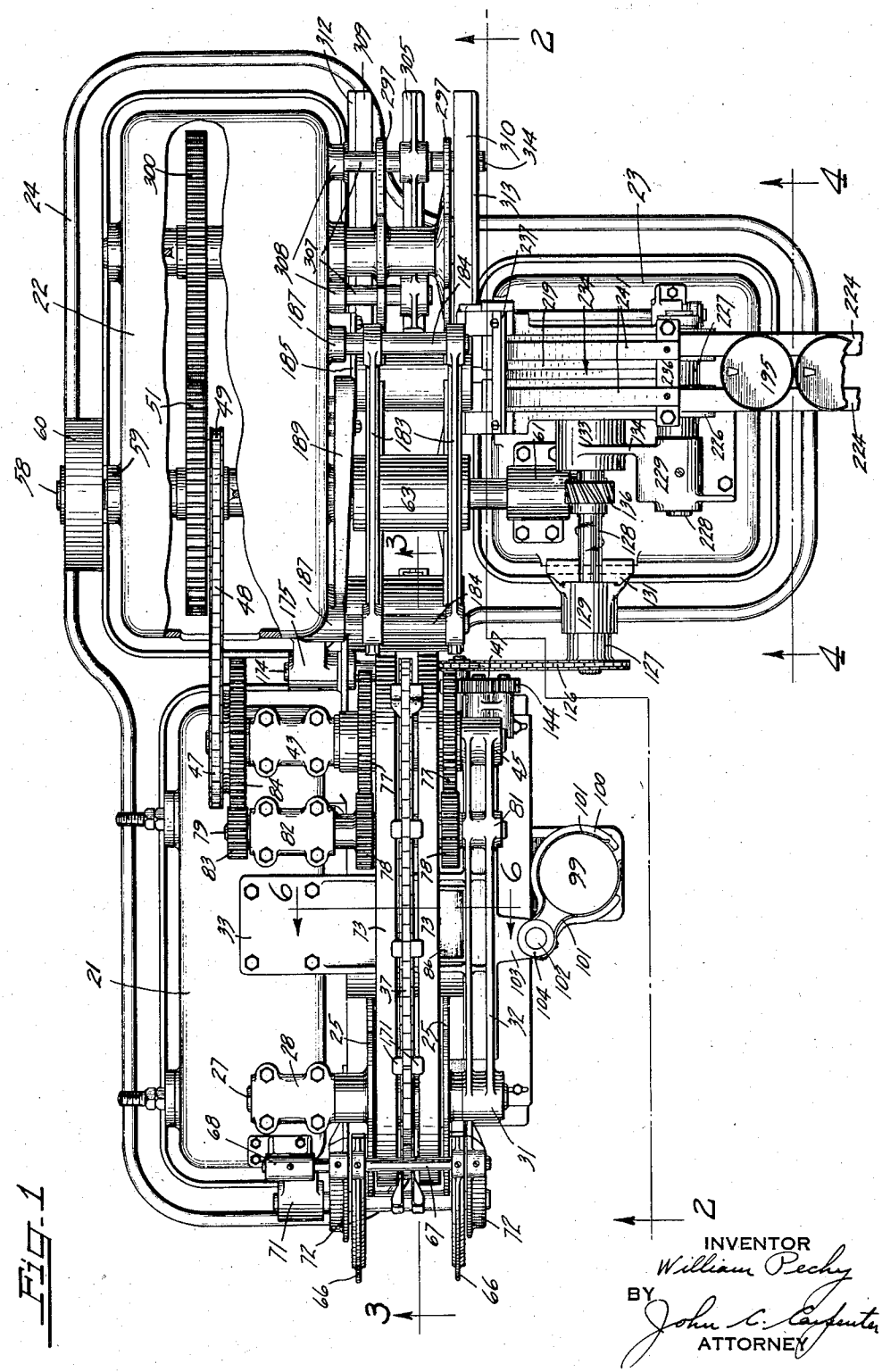


FIG. 1

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CAN HEADING MACHINE

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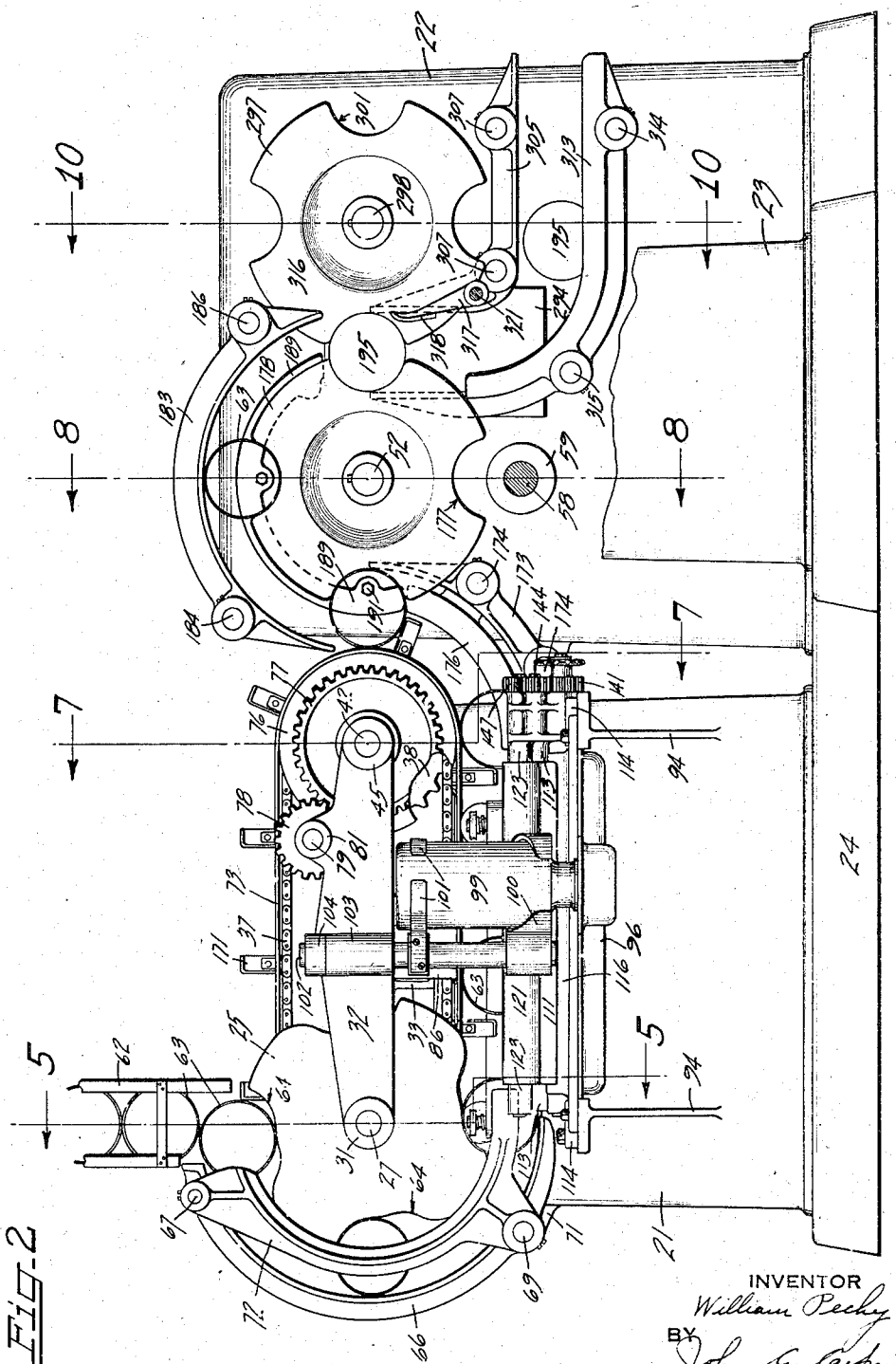


Fig-2

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CAN HEADING MACHINE

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Fig. 3

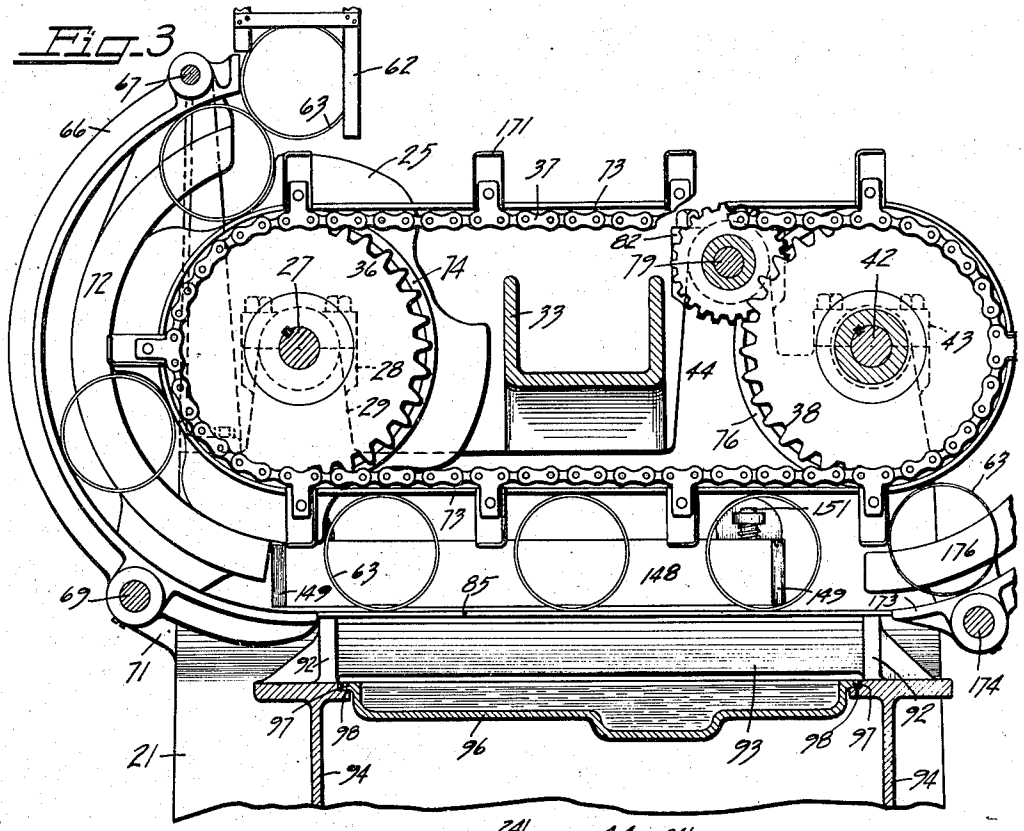
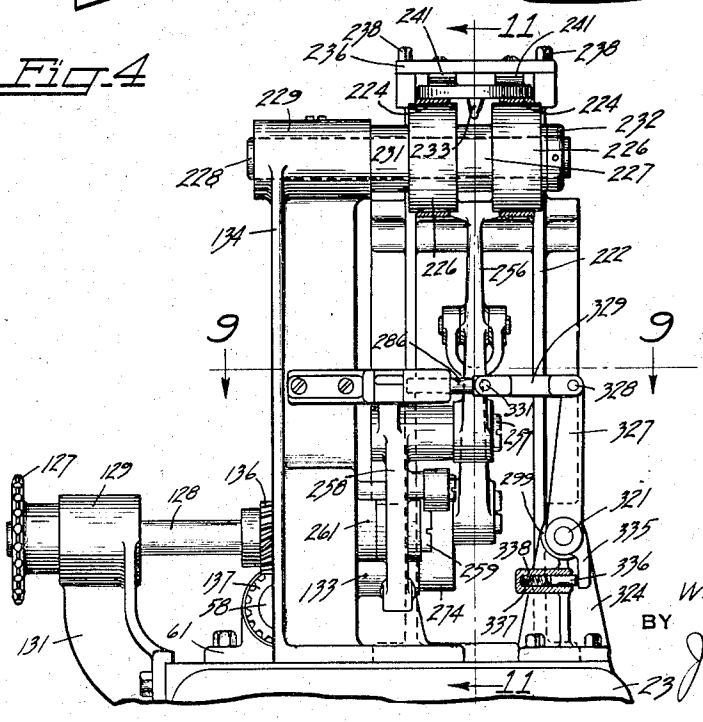


Fig. 4



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CAN HEADING MACHINE

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Fig. 5

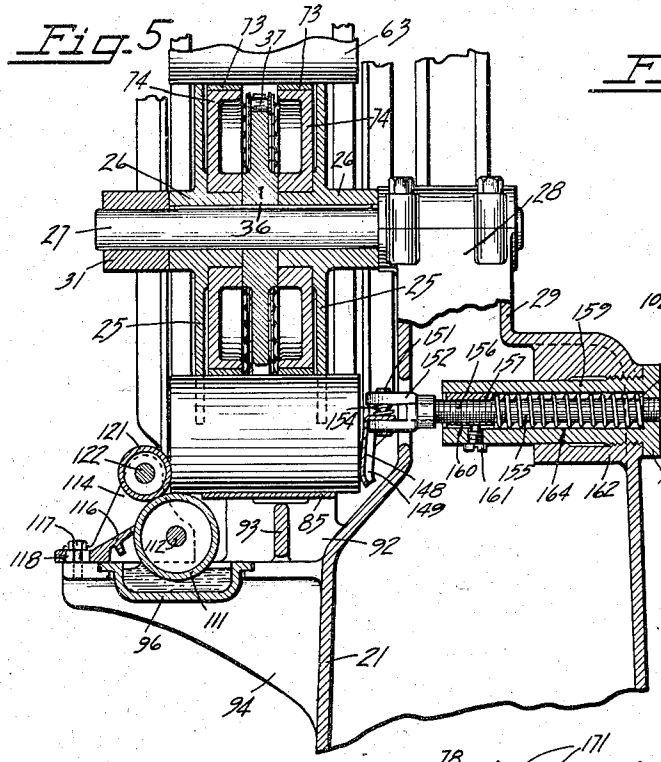


Fig. 6

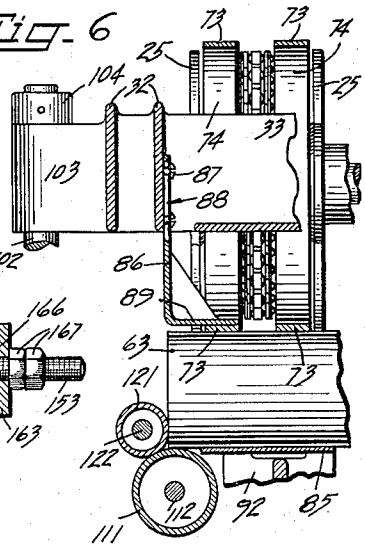
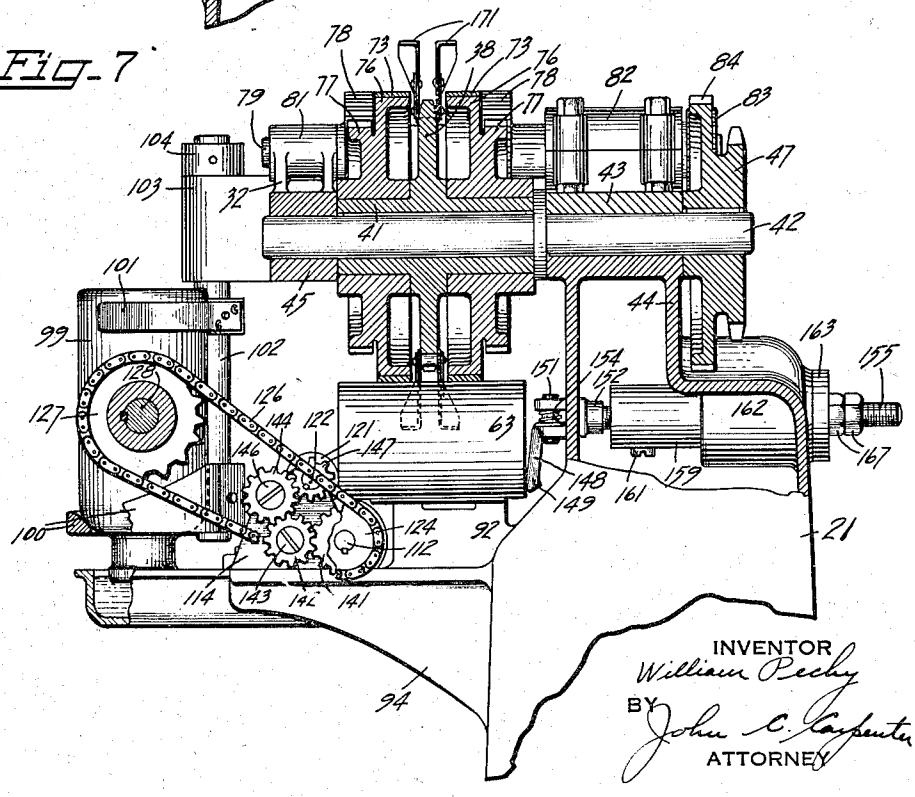


Fig. 7



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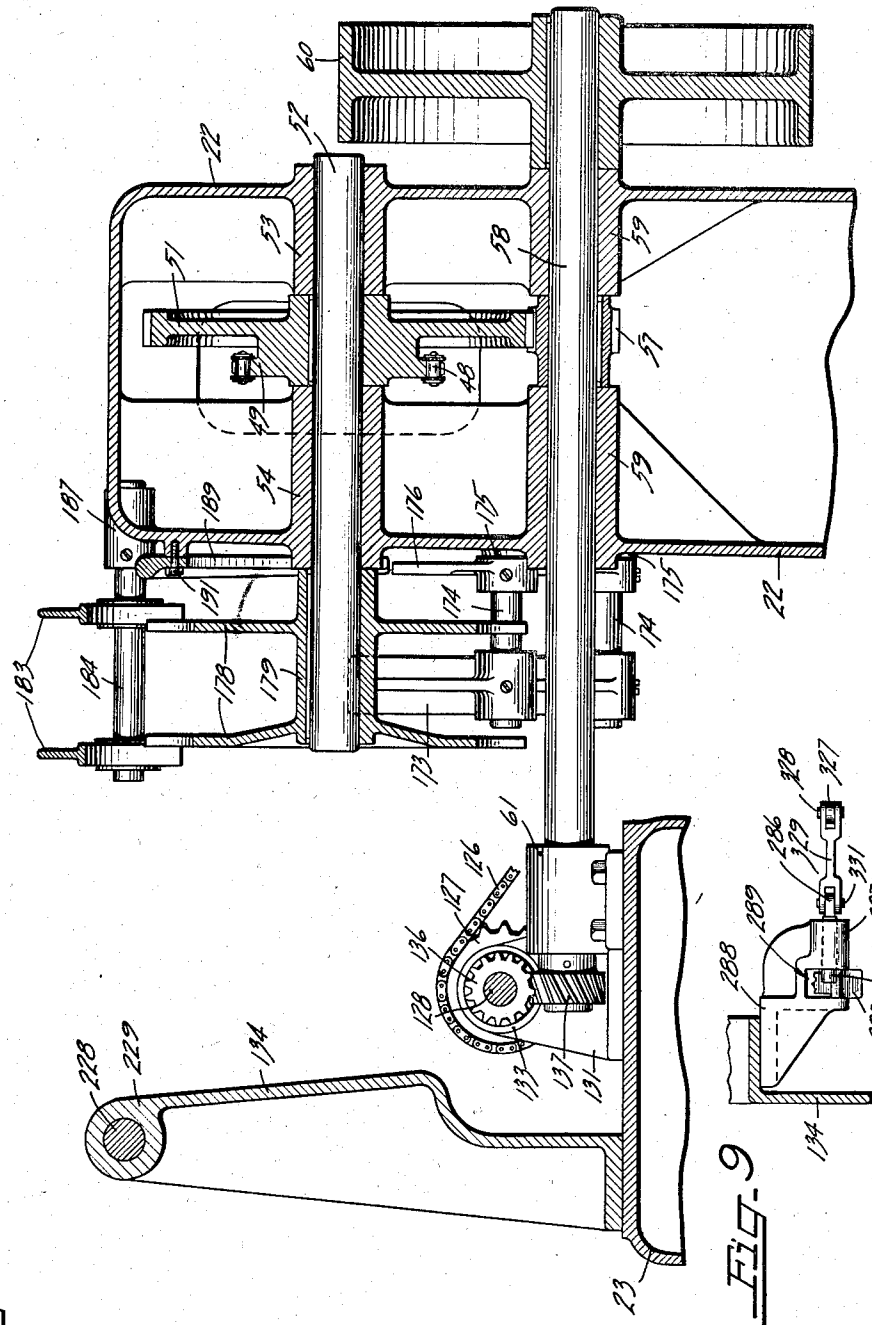


Fig. 8

Fig. 9

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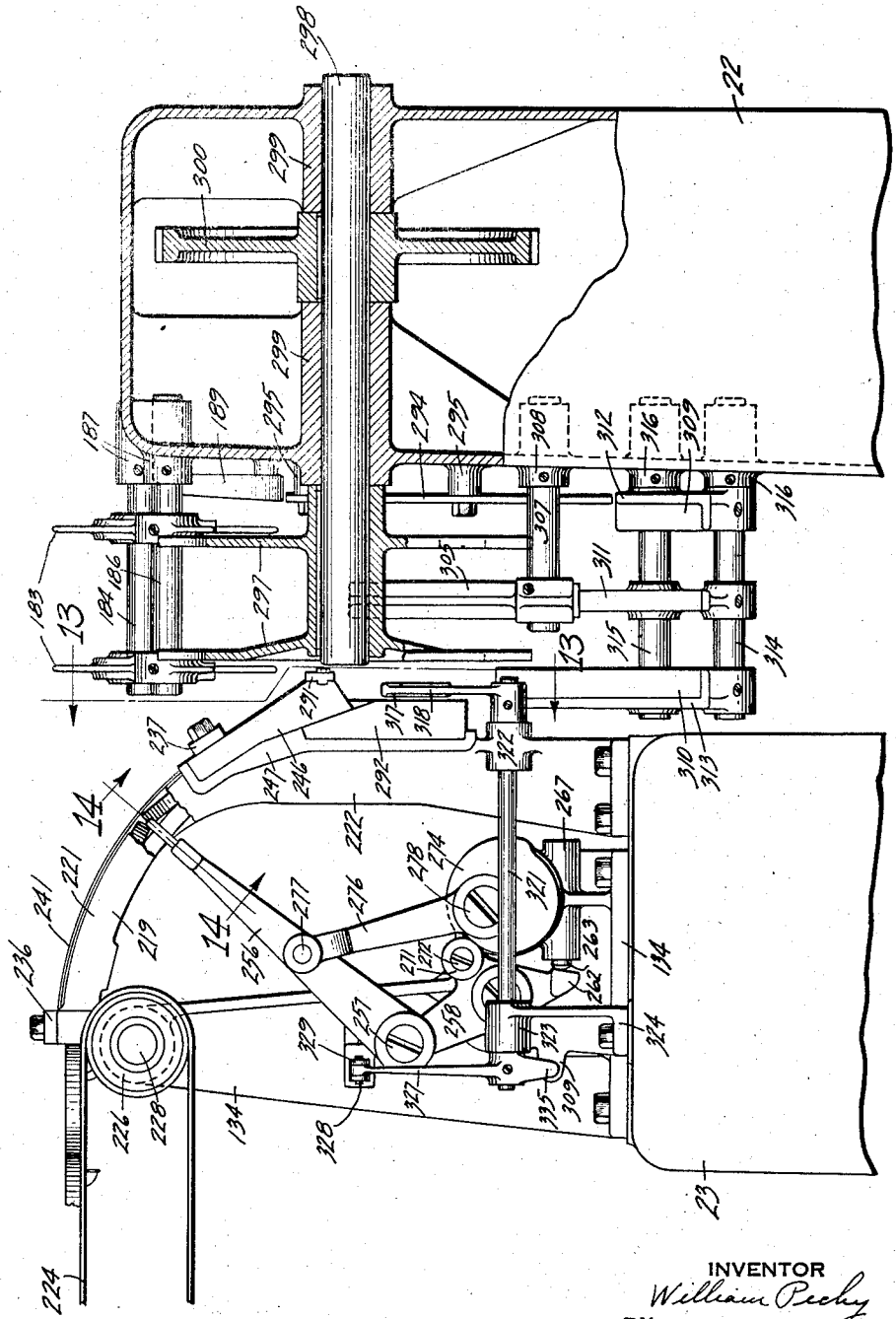


Fig. 10

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Fig. 11

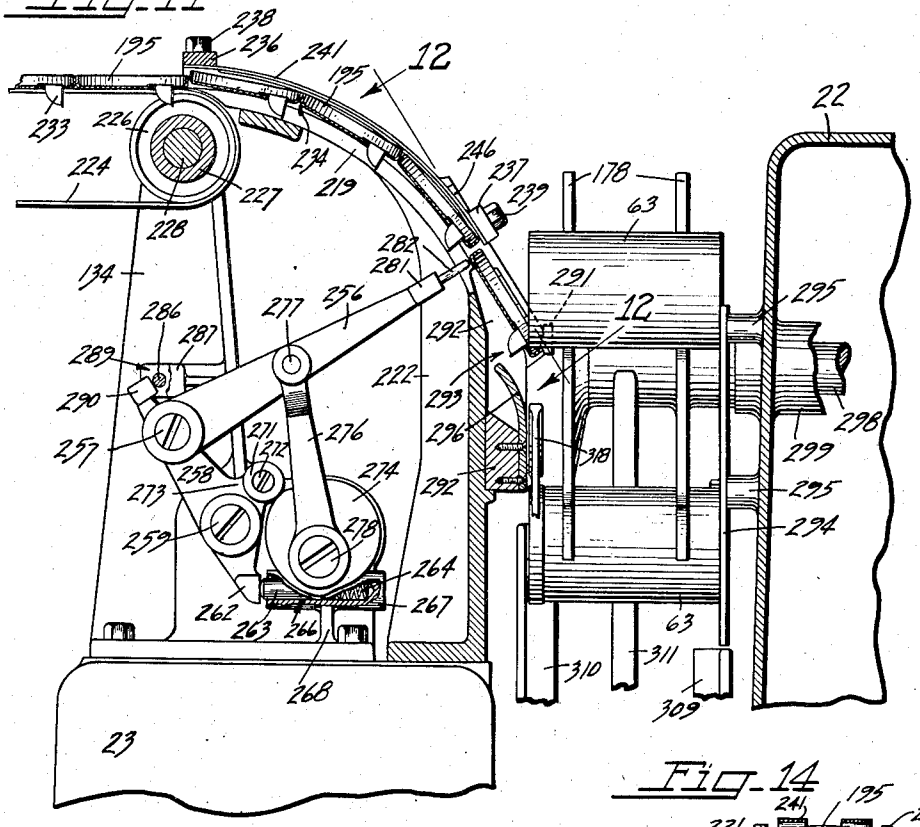


Fig. 14

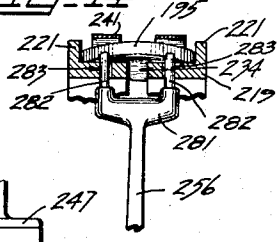


Fig. 12

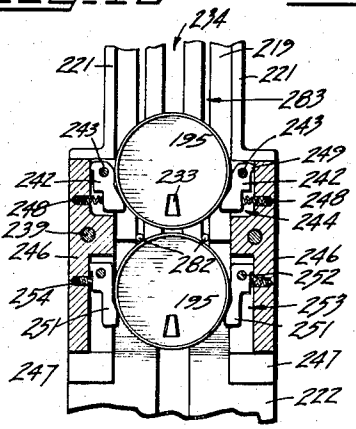
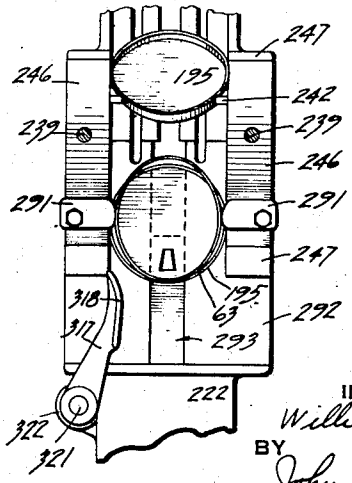


Fig. 13



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Patented Jan. 8, 1935 1,986,847

UNITED STATES PATENT OFFICE

1,986,847

CAN HEADING MACHINE

William Pechy, Elizabeth, N. J., assignor to American Can Company, New York, N. Y., a corporation of New Jersey

Application July 30, 1932, Serial No. 626,390

15 Claims. (Cl. 93—55)

The present invention relates to a can and cover assembling machine and has particular reference to associated devices in such a machine for applying an adhesive to a fibre can and then moving it past a positioned fibre cover with which it is then assembled and attached in a glued joint.

The principal object of the present invention is the provision of a machine for automatically rolling or conveying a can body alongside of adhesive applying devices which apply and evenly distribute a liquid adhesive material on an edge and on a small section of its adjacent body wall, the can being yieldingly held against the adhesive surfaces to insure accurate and uniform distribution.

An important object of the invention is the provision of a machine of the character described which advances a can body through an adhesive applying station and presents it to a can cover which has previously been fed into an assembling position, both can and cover being automatically assembled and glued together.

An important object of the invention is the provision of a control device for a can and cover assembling machine which is operated by the presence of a can body to insure the proper positioning of a can cover for an assembling operation.

An important object of the invention is the provision of a cover feeding device for carrying covers in an arcuate path of travel and a can body feeding device which presents parts of the body to adhesive applying rollers and then carries the can bodies tangent to the positioned can covers, thus effecting assembly of the two.

A still further and important object of the invention is the provision of an apparatus of the character described which is adapted to position fibre flanged covers having pouring spouts onto fibre bodies by providing an adhesive union between the two, the apparatus operating upon the spouts of the covers to move them into final container closing position.

Numerous other objects of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

Referring to the drawings:

Figure 1 is a top plan view, partly broken away, of a can and cover assembling machine, embodying the present invention;

Fig. 2 is a front elevation of the principal parts of the machine, as viewed substantially from a position indicated by the broken line 2—2 in Fig. 1;

Fig. 3 is an enlarged sectional view with parts broken away as taken substantially along the line 3—3 in Fig. 1;

Fig. 4 is an enlarged sectional view of the cover feeding device, taken substantially along the line 4—4 in Fig. 1;

Fig. 5 is an enlarged transverse sectional view taken substantially along the broken line 5—5 in Fig. 2;

Fig. 6 is an enlarged transverse sectional view taken substantially along the line 6—6 in Fig. 1;

Figs. 7 and 8 are enlarged transverse sectional views taken substantially along the broken lines 7—7 and 8—8 in Fig. 2;

Fig. 9 is a fragmentary detail of a part of the mechanism, as viewed along the line 9—9 in Fig. 4;

Fig. 10 is an enlarged part section, part elevation taken substantially along the line 10—10 in Fig. 2;

Fig. 11 is a sectional view of the cover feeding device, taken substantially along the line 11—11 in Fig. 4;

Fig. 12 is a fragmentary sectional detail taken substantially along the line 12—12 in Fig. 11;

Fig. 13 is a fragmentary elevation as viewed from a position indicated by the broken line 13—13 in Fig. 10; and

Fig. 14 is a fragmentary sectional detail taken substantially along the line 14—14 in Fig. 10.

The apparatus disclosed in the drawings for the purpose of exemplifying the invention, comprises a series of interconnected devices for feeding fibre can bodies in a continuous travel, first, separating and spacing the individual bodies as they come from a supply chute and then rolling them along adhesive applying rollers so that one edge and the outside wall part adjacent is supplied with an adhesive material, the rolling can body being yieldingly held downwardly and endwise against the rollers.

Further travel of the can body is effected by a rotating feed turret which receives it in a pocket of the turret and moves it through an assembling station where it receives a cover. At the same time fibre covers are fed into the machine in processional order and are placed so that one of the covers may be positively positioned for engagement with one end of the can body while still within the turret pocket. A cover is not so positioned until a trip device has been actuated by a preceding can that has already received its cover. This will be more fully explained.

As the can body in the turret is about to engage the positioned cover it is sprung out of its cylindrical shape into an oval shape so that its forward edge will be sure to pass to the inside wall of the cover flange. When so engaged the moving can forces the cover out of its seat. The can with its engaged cover then passes between closing plates at the assembling station which force the cover home upon the open end of the can. At this same time the walls of the can, which are no longer held in oval shape, are

rounded up and brought to true form by a mating turret cooperating with the feed turret, this being at the assembling station.

The closing plates referred to may be so shaped and so arranged as to perform an additional function when covers having hinged spouts are used. The apparatus disclosed is arranged for the feeding of these covers with the spout in forward position and to give an unobstructed inner engaging cover wall for engagement with the can bodies. These spouts are swung back in open position for assembly but are automatically closed when the can and cover are united.

The can with its glued cover is then released from the turrets and is dropped into a discharge runway through which it rolls out of the machine. The trip device previously referred to is a no-can body no-cover mechanism and a part of this mechanism is arranged in the discharge runway and is actuated by the can as it is being carried into the runway by the two mating turrets.

This trip device actuates the cover feeding mechanism which places another cover into position for engagement by the next succeeding can body. Following actuation of the trip movement and after a single feeding stroke of the cover feeding devices, cover engaging elements, carried by the feeding devices, are withdrawn from the zone of covers and are then further prevented from engaging succeeding covers until the positioned can cover is removed by the next can body.

The machine constituting the preferred embodiment of the invention, as shown in the drawings, comprises three main sections. These sections include operating parts which are carried in an adhesive applying housing or frame 21 (Figs. 1 and 2), a drive or main housing 22 and a cover feeding housing 23. All of these housings are mounted upon and secured to a common base 24.

The housing 21 carries a can timing device which receives the can bodies and presents them to the adhesive applying station. This timing device comprises a pair of spaced starwheels 25 (Figs. 3 and 5) having hubs 26 carried on a horizontal shaft 27. This shaft is journaled in a rear bearing 28 formed in a projecting section 29 of the frame 21 and in a front bearing 31 formed in a web-like extension 32 of a bracket 33 which is bolted on top of the frame 21 (Figs. 1 and 2).

The starwheels 25 are continuously rotated by a sprocket 36 which is mounted on and keyed to the shaft 27 in between the starwheels as best shown in Fig. 5. This sprocket is driven through a can feed chain 37 which passes over it and over a second sprocket 38 (Figs. 3 and 7). The can feed chain is used to carry the cans away from the adhesive applying station as will be hereinafter fully described.

The sprocket 38 is formed with an elongated hub 41 extending out on both sides and which is keyed to a horizontal shaft 42. The shaft 42 is journaled in a rear bearing 43 formed in a projecting section 44 of the frame 21 and in a front bearing 45 formed in the web section 32 of the bracket 33.

Shaft 42 receives its rotation by connection with driving parts carried by the main frame housing 22. For this purpose the shaft 42 carries a sprocket 47 keyed to its rear end beyond the bearing 43. Sprocket 47 is driven through a chain 48 which passes over it and also over a second sprocket 49 (Figs. 1 and 8) formed integrally with a gear 51 keyed to a turret shaft 52. Shaft 52 is journaled in bearings 53, 54 formed in the main drive housing 22.

The gear 51 meshes with a pinion 57 keyed to a drive shaft 58 journaled in bearings 59 formed in the main frame 22. One end of the shaft 58 extends beyond the frame bearings and carries a pulley 60 adapted to receive driving power from any suitable source. The drive shaft at its opposite end extends over to the cover feed housing 23 where it is journaled in a bearing formed in a bracket 61 bolted to and resting upon that housing. The starwheels 25 are rotated from the drive shaft by the connections just described.

For the purpose of feeding can bodies to the machine and into the starwheels 25, a runway 62 may be employed, as shown in Figs. 2 and 3. The lower or discharge end of this runway terminates directly over the axis of the starwheels and holds a stack of the can bodies, designated by the numeral 63, the lowermost can body resting on the upper edges or peripheries of the starwheels. The can bodies 63 roll by gravity through the runway and have their axes parallel to the axis of the shaft 27.

The two starwheels 25 are provided with equally spaced and aligned can pockets 64 and as the wheels are rotated (in a counterclockwise direction, Figs. 2 and 3) the lowermost body 63 falls into each pocket 64 as presented and is carried around an arcuate path for delivery to the adhesive applying station.

A pair of spaced arcuate guide rails 66 retain the cans in their arcuate travel. Both rails are supported at their upper ends on a rod 67, secured in a bracket 68 (Fig. 1) bolted to and carried on top of the frame 21. At their lower ends they are carried on a rod 69 (Figs. 2 and 3) which is secured in a bracket 71 formed integral with and projected from the side of the frame 21. A pair of arcuate side guides 72 are also supported on the rods 67, 69 and these are located on opposite sides of the ends of the bodies as the latter are carried around with the starwheels 25. These guides prevent any longitudinal displacement of the bodies while being carried in the starwheels.

The starwheels 25 deliver the can bodies 63, at the end of the guides 66, 72 to a pair of continuously moving parallel belt conveyors 73 (Figs. 3, 5 and 7). Each belt is carried by and extends over separate pulleys 74 and 76. The two pulleys 74 are idler pulleys and are mounted for rotation on the hubs 26 of the starwheels 25. The sprocket 36 is in between these idler pulleys and rotates at a different speed from the speed of the pulleys for a definite purpose which will be explained in the description to follow.

The two pulleys 76 are the drive pulleys for the belts 73 and are mounted for rotation upon the hub extensions 41 (Fig. 7) of the sprocket 38. Each pulley 76 has a gear toothed section 77 which meshes with and receives rotation through a pinion 78. There being two gears 77 and two pinions 78, each pulley 76 is positively driven, the two pulleys rotating at the same speed.

Both pinions 78 (Figs. 1 and 7) are keyed to a horizontal shaft 79 journaled at one end in a bearing 81 formed in the web section 32 of the bracket 33 and at the other end in a bearing 82 formed in the frame section 44. A gear 83 is keyed to this end of the shaft 79 and meshes with a gear part 84 formed integrally with the sprocket 47.

The lower runs of the moving belts 73 engage above the can bodies 63, as delivered by the star-

wheels 25 and roll them over and along a table surface 85 (Fig. 3) and through the adhesive applying station. There is considerable distance between the supporting pulleys 74, 76 and an intermediate support for the can body engaging part of the forward belt has been found desirable. Such a support acts as a belt tightener and applies pressure through the belt to the forward ends of the rolling can bodies passing through the adhesive applying station. It is on this forward body end that the adhesive is placed.

An adjustable bracket 86 (Figs. 1 and 6) is secured to the web section 32 of the bracket 33 by screws 87 extending through a slot 88 in the adjustable bracket. This bracket extends rearwardly in a horizontal part 89 which is directly over the top surface of the lower run of the front belt 73. This part 89 provides a presser foot which extends laterally a substantial distance along the belt and which exerts the desired pressure for the adhesive applying operation and provides proper traction between the can bodies and the belts and table.

The table 85 (Figs. 3 and 6) extends the length of the adhesive applying station and provides the ground support for the rolling can bodies. It is supported on two spacer blocks 92 connected by a web 93, the former extending upwardly from brackets 94 (see also Fig. 2) projected from the front side of the frame 21.

A tank or adhesive bath 96 is disposed beneath the table 85 and is adapted to hold a liquid adhesive. This tank is provided with end lugs 97 which engage in recesses 98 formed in the brackets 94 and this construction holds the bath in fixed position while permitting its easy removal.

A constant supply of liquid adhesive is obtained in the bath and a constant level maintained by means of an inverted bottle fountain supply. Such a bottle 99 is inverted in a well know manner with its open end immersed beneath the level of the adhesive in the bath and as liquid is removed by the rolling can bodies the supply is replenished from the bottle.

A holder for the bottle 99 comprises an open ring 100 (Figs. 1, 2 and 7) in which the lower part of the inverted bottle rests and spring fingers 101 which clamp around and hold its upper end. Both ring and fingers are carried by a vertical stud or rod 102 held in a boss 103 projecting from the face of the web section 32 of the bracket 33. A collar 104, pinned to the top end of the rod 102 prevents it falling out of the boss.

The liquid adhesive in the bath 96 is lifted from the tank and applied to the forward ends of the can bodies 63 as they roll over the table 85 and through the adhesive applying station. This is effected by an adhesive applying roller 111 (Figs. 2, 5 and 6) mounted on and rotating with a horizontal shaft 112 extending longitudinally of the table 85. The top of the roller 111 is flush with the top of the table and is just in front of the table edge and its bottom dips into the adhesive liquid in the bath and raises a film of liquid as it rotates. Shaft 112 is journaled for rotation in bearings 113 formed in brackets 114 supported on the brackets 94.

As the can body 63 rolls across the table 85 its forward end, which projects forward of the table edge, contacts the film of adhesive on the applying roller and a coating of adhesive is applied and adheres to the peripheral wall of the can body. This coated part of the body will engage the inside wall of the flange of an applied cover and will provide for a glued joint between cover and body. A scraper 116 regulates the thickness of the film of adhesive on the roller 111. This scraper extends substantially the length of the roller and is fastened to the brackets 94 by bolts 117 passing through adjusting slots 118 formed in the scraper body.

Provision is made for not only applying adhesive to the cylindrical wall of the body but also to its edge. This is done by a second roller 121 mounted on and rotating with a shaft 122 which is journaled in bearings 123 also formed in the brackets 114. This roller 121 is mounted parallel to, forward of and above the roller 111 with which it has tangential contact. A quantity of the adhesive carried by the roller 111 adheres to this roller 121 and a film of liquid from the roller is distributed on the body edge as the body is rolled over the table.

These rollers 111, 121 receive rotation from the drive shaft 58. For this purpose the shaft 112 of roller 111 is provided with a sprocket 124 (Fig. 7) over which a chain 126 operates, this chain passing over a sprocket 127 (see also Figs. 4 and 8) keyed to a horizontal shaft 128. This shaft provides a connection between the frame sections 21 and 23. One end of the shaft 128 is journaled in a bearing 129 formed in a bracket 131 bolted to the side of the housing 23. The other end of the shaft is journaled in a bearing 133 (Figs. 1 and 4) formed in a bracket 134 bolted to the top of the frame housing 23.

A helical or spiral gear 136 is mounted on the shaft 128 adjacent the bearing 133 and meshes with a similar gear 137 mounted on the drive shaft 58 adjacent the bracket 61. Rotation of the drive shaft 58 is transmitted through the gear and sprocket train to rotate the shaft 112 in a clockwise direction, as viewed in Figs. 5 and 6. This applies the adhesive with a wiping stroke onto the cylindrical wall part of the can body.

Tre roller 121 is rotated in a counterclockwise direction (Figs. 5, 6 and 7) and for this purpose there is provided a gear 141 which is keyed to the shaft 112 adjacent the sprocket 124. This gear meshes with an idler gear 142 mounted on a stud 143 threadedly secured to the side of the bracket 114 (see also Fig. 2). Gear 142 meshes with a second idler gear 144 mounted on a stud 146 also threadedly secured in the side of the bracket 114. This gear 144 meshes with a gear 147 keyed to the shaft 122 of the roller 121.

The can bodies 63 as they roll along the top of the table 85 and engage the adhesive applying rollers 111, 121 are pressed forward and endwise by a flexible pressure plate 148 (Figs. 3 and 5) which bears against the rear edges of the rolling bodies and gently pushes their forward edges into the adhesive film on the roller 121.

This pressure plate 148 is made from relatively thin sheet metal which is bent into angle form. A vertical leg of the angle engages the rolling can edge and its two ends are beveled as at 149. A horizontal leg of the angle extends rearwardly at the top and is pierced with two holes, one near each end.

A stud 151 held in a yoke 152 and spanning the space between the forked ends of the yoke extends through each hole and provides a loose mounting for the plate. The horizontal leg of the plate thus rests upon the lower fork of each yoke and is spaced below the upper fork yoke end. A spring 154 surrounds each stud 151 and is interposed between the upper leg of each yoke 152 and the horizontal leg of the plate, these two

springs yieldingly holding the pressure plate in place.

Each yoke is carried on the forward end of a horizontal sliding rod 155 which is threadedly connected at 156 near its yoke end to a short bushing 157 which is mounted for longitudinal movement in a stationary sleeve 159. Rotation of the bushing 157 within its sleeve 159 is prevented by a screw 161 which threadedly engages the sleeve and has a reduced end which projects into a groove 160 cut in the under surface of the bushing.

Sleeve 159 is threadedly secured in a boss 162 formed in the frame 21. A head 163 of the sleeve projects outside of the boss and permits turning of the sleeve into fixed position within its support.

A helical spring 166 surrounds each rod 155, being wholly confined inside of the sleeve 159 between one end of the bushing 157 and the bearing head 163. These springs 166 urge the rods and the pressure plate 148 toward the left (Fig. 5) or against the rolling can bodies 63. Adjusting and locknuts 167 are secured to the rear ends of the rods 155 beyond the head 163 and these nuts limit the forward movement of the pressure plate unit.

The belts 73 which cause the can bodies 63 to roll over the table 85 and through the adhesive applying station have a lineal movement substantially twice that of the movement of the chain 37 in order to effect the proper rolling action of the cans. In other words, this increased speed of travel of the belts is required to cause the centers of the rolling can bodies to move substantially at the same rate of travel as the conveyor chain 37, since application of the propelling contact of the belts is made on the upper tangent points of the can body wall.

The chain 37 is provided with spaced flights 171 (Figs. 2 and 3) and during the travel of the can bodies with the starwheels 25 and during their further rolling movement the chain flights are out of action, being located vertically in between adjacent can bodies. This relative position between chain flights and can bodies is maintained at such time by reason of the uniform speed of advance of the starwheels 25, the conveyor chain 37 and the can body 63.

The can body 63, after passing through the adhesive applying station and with its adhesive on its one edge and on the cylindrical wall adjacent, is now ready for transfer to an assembling station where it will be supplied with a cover. As a part of such transfer, the belts 73 roll the can body off of the end of the table 85 and onto the lower end of an arcuate guide 173. This guide allows the can body to disengage the belts and, as it momentarily pauses, the chain flight 171, just back of the body, catches up with and sweeps the body along the guide member.

Guide 173 is mounted on studs 174 (Fig. 8) projecting from the front face of the frame 22 and these studs are held in bosses 175 formed in the frame. The can bodies 63 are retained in longitudinal alignment and are guided by a curved guide plate 176, also carried on the studs 174.

These members 173, 176 direct the can body 63 into one of four pockets 177 of a turret 178 (Figs. 2 and 8) which is formed by a pair of spaced discs united by a tubular hub 179 which is mounted upon and keyed to the forward end of the shaft 52. This turret 178 is revolved in a clockwise direction (Fig. 2) and takes the can body 63 away from the chain 37 and moves it along a pair of spaced arcuate guides 183 which hold it in the turret pocket 177.

These guides are supported upon and secured to rods 184, 186 held in bosses 187 formed in the front wall of the frame 22. An arcuate plate 189 is secured to the face of the frame by screws 191 and provides a gauge for locating the can body 63 endwise within the turret pocket 177. This plate 189 is thicker at one end (Fig. 8) and when the can body is moved along the thick section it is pushed forward and located longitudinally in its turret pocket for the cover assembling operation. At the same time a can cover 195 is brought into place just ahead of the assembling station and is positioned to be engaged by the moving can body. This positioning of the cover will now be described.

The cover feeding mechanism is for the most part contained in and about the cover feed housing 23, previously mentioned and embodies an arcuate cover chute 219 (Figs. 1, 10 and 11), having side flanges 221. This chute is formed in the upper end of a bracket 222 which is mounted upon the housing 23. It provides a runway which directs the covers from a source of supply and delivers them singly into the proper can body engaging position.

A source of cover supply is exemplified in Figs. 1 and 10 by a pair of endless conveyor belts 224 which are horizontally disposed and are driven to convey the covers into the machine. These belts, at the machine end, pass over a pair of idler pulleys 226 spaced apart by a collar 227 and mounted on a stationary shaft 228, held in a boss 229 formed in the upper end of the bracket 134 (see also Figs. 4 and 8). Another spacing collar 231 keeps the pulleys properly spaced from the boss 229 and a retaining collar 232 pinned to the free end of the shaft prevents displacement.

The can covers 195 on the conveyor belts 224 are carried in processional order and are delivered to the upper end of the chute 219 and these covers pushing one against the other move down the arcuate path to a position from which place they are positively fed after a trip device has been actuated by a capped can, as will be hereinafter described.

Two spaced belts are shown in the drawings to permit handling can covers which are supplied with hinged pouring spouts 233. The chute 219 is centrally slotted as at 234 so that the spouts of such can covers may hang down or in open position within the slot as the cover moves along its course. A can with such a spout cover is generally used for salt or for other granular materials and is herein illustrated to show the adaptability of the machine to different kinds of can covers.

Connecting cross bars or straps 236, 237 span the slotted part of the chute 219 and are bolted to the side flanges 221 by bolts 238, 239. A pair of arcuate top guides 241 (Figs. 1 and 4) are secured to these straps and enclose the chute at its top and prevent displacement of the covers as they are moved down the chute.

The covers 195 are moved along the chute 219 by the belts 224 crowding the covers forward and the foremost cover strikes against and is caught between and is held by fingers 242 (Figs. 12 and 13). These fingers are pivoted at 243 and operate in recesses 244 formed in blocks 246 (see also Fig. 10) set into and bolted on a widened web section 247 of the bracket 222, which is formed at the lower ends of the chute. The inner and lower ends of these fingers 242 nor-

mally project into the path of the covers, being so held by springs 248. A stop 249 is formed on the opposite end of each finger and limits its spring movement. These fingers yieldingly hold a cover until it is positively moved by a cover feeding device or by hand in setting the machine for operation.

Preferably in starting the machine the foremost cover in the chute is manually forced past the fingers 242, against the resistance of the springs 243, and is advanced to the next or can body engaging station. The fingers 242 hold back the remaining covers by engagement with the cover immediately following. Movement of succeeding covers from the fingers 242 will automatically continue after the machine has started, this first manual movement being merely a priming action to prevent the can body going through without a cover. This will be better understood as the description proceeds.

The advance cover 195 at the can engaging station is now engaged and held by a second pair of fingers 251 (Fig. 12). In its held position the lower forward edge of the flange of the cover projects into the path of the can bodies carried by the turret 178. The spouts 233 of the covers are open and present a clear unobstructed inner cover surface so that the can body edge may freely pass into engagement. Fingers 251 are pivoted at 252 and operate in recesses 253 formed in the blocks 246 adjacent to and just below the recesses 244, being normally projected into the cover path by springs 254.

A cover feeding lever 256 (Figs. 4, 10 and 11) is an element in the automatic cover feeding device shown in the drawing and is located beneath the chute 219. This lever 256 is pivoted at 257 to one end of a cam oscillated lever 258 pivoted on a stud 259 screwed into a boss 261 formed in the bracket 134. The opposite end of the lever 258 is provided with a head 262 which engages a press pin 263 backed up by a spring 264. Both pin and spring are confined in a horizontal bore 266 located in a boss 267 formed in an enlarged section 268 of the bracket 134. The spring 264 pressing through the pin 263 against the lever end 262 tends to move it on its pivot 259 in a clockwise direction.

The cam actuating mechanism for the lever 258 comprises a cam roller 271 carried on a stud 272 supported on an extension 273 of the lever. Roller 271, when the lever 258 is free to move under the influence of the spring 264, engages a cam 274 mounted on the end of the shaft 128 opposite to the end having the sprocket 127.

This cam 274 oscillates the lever 258 on its pivot and longitudinally moves the lever 256 bodily with its pivotal connection 257. At the same time, another movement which is a pivotal rocking movement, is imparted to the lever 256 through a link 276 indirectly actuated by the rotating shaft 128. The upper end of the link is bifurcated and pivoted to the lever 256 at 277. The lower end is pivoted on a stud 278 eccentrically mounted on the side of the cam 274. The rotating shaft 128 imparts a crank motion to the lower end of the link resulting in a constant rocking motion of the lever 256 on its pivot 257.

The rocking movement of the lever 256 causes its upper end to sweep through an arc beneath the arcuate chute 219, but this is merely an idle movement unless the lever 258 is also moving under its cam control. When the lever 258 moves clockwise (Fig. 11) it projects the lever 256 forwardly and endwise, or toward the right. The idle movement is then transformed into a cover feeding operation as will be further described.

The free end of the lever 256 is bifurcated at 281, as best shown in Fig. 14, and carries two spaced pins 282, one in each leg of the forked end. These pins 282 at all times project into slots 283 (Figs. 11, 12 and 14) formed in the floor of the chute 219, the slots being disposed one on each side of the central slot 234.

The pins 282 sweep back and forth along the slots during the movement of the lever 256 on its pivot 257, and when the lever 258 is held back and not following the cam 274, the pins pass freely beneath the can covers without moving them. When the lever 258 oscillates the pins are thrust beyond the floor of chute and in between adjacent can covers. The timing of this action is such as to cause the pins to move into place just above the cover which is held by the fingers 242. Figs. 10 and 12 show such a position.

A locking device is provided to hold back the lever 258 and to hold the roller 271 out of contact with the cam 274. This locking device (Figs. 4, 9 and 11) comprises a pin 286 slidably mounted in a bearing 287 formed in a bracket 288 secured to the bracket 134. The bracket 288 is slotted at 289 and the end of the pin 286 projects into the slot when it is in locking position. A projecting head 290 is formed on the upper end of the lever 258 and is just wide enough to move freely in the slot 289.

During the idle movement of the cover feeding lever 256 the head 290 rests against the projecting pin 286 and the roller 272 is held away from the cam 274. Such idle movements continue as long as a can cover 195 remains held in the fingers 251 at the can body engaging station. Attention is now again directed to the movement of the can body 63 while being carried in its pocket 177 of the turret 178.

A can body 63, while being carried around its arcuate path by the turret 178, is brought into engagement with the waiting can cover 195 at the can engaging station, as shown by the upper can body 63 in Fig. 11, and by the body and lower cover in Fig. 13. Just prior to this engagement the can body is caused to pass between two distorting blocks 291 which are arranged on opposite sides of the cover chute 219 and are bolted to the upper faces of the blocks 246.

The inner ends of these distorting blocks extend inwardly on opposite sides of the chute a sufficient distance to spring or distort the cylindrical can body wall into an oval shape, as shown in Fig. 13, and this makes the curve of the lower front part of the body smaller so that it will more readily engage the cover flange. Upon engagement the cover is swept downwardly from the end of the cover chute and out of the fingers 251. Can body and cover then move into the cover assembling station.

As the engaged can body and cover move downwardly the latter is pivoted around its lower point of contact by the upper front face of a block 292 which is shaped in front and at the top to provide a curved track which is an extension of the cover chute arcuate track. Block 292 is inserted in and connected with the enlarged web section 247 of the bracket 222, its upper end engaging beneath and being held by the blocks 246. The block 292 is slotted centrally at 293 and this slot registers with the slot 234 in the chute 219 and permits continued unobstructed passage of the hinge spout 233 of the cover 195 as the latter moves downwardly into the assembling station.

The curved track thus provided for the can cover gradually places it over the end of the moving body which is first backed up by the curved guideway 189 and later, after the moving body passes beyond the end of the guide, by a vertically disposed plate 294 (Figs. 2, 10 and 11). The plate 294 is bolted to bosses 295 projecting forwardly from the front wall of the housing 22.

As can and cover approach the assembling station, the cover spout 233 moves into engagement with a curved plate 296 which is secured to the block 292 with its upper end extending into the slot 293 of the block. This curved plate hinges the spout into closed position on its cover so that when the cover is fully assembled with the can body the cover end is fully closed.

A rounding up turret 297 (Figs. 2 and 10) cooperates with and is located adjacent to the turret 178, being keyed to a horizontal shaft 298 journaled in bearings 299 formed in the frame 22. This shaft 298 is parallel to the other turret shaft 52 and rotates at the same speed but in a reversed direction of travel. A gear 300 is keyed to the shaft 298 intermediate its bearings and meshes with and receives rotation from the gear 51 (Fig. 1). In this way the turret 297 is rotated in a counter clockwise direction, as viewed in Fig. 2.

The turret 297 is provided with pockets 301 and one of these pockets cooperates with the pocket 177 containing the newly engaged can and cover. The cooperating turret pockets form half-molds for the can body and round it up and hold it to its cylindrical shape, this being immediately after the can body has passed by the blocks 291, the complete rounding up taking place at the assembling station.

From the assembling station the can body with its fully applied cover passes into a runway where it operates a trip lever connected with the can cover feed and then rolls out of the machine. This runway is formed by a single right angle side and top rail and by three right angled side and bottom rails. The legs of these rails are joined by curved sections as illustrated in the drawings. The former, a guide rail 305 (Figs. 1 and 2), is located in a vertical plane passing centrally of the can bodies in the turrets 178, 297. This rail is supported upon horizontal stationary posts 307 which project from bosses 308 formed in the front wall of the housing 22. The vertical leg of the rail 305 forms an outer side guide for the cans and its horizontal leg provides the top guide.

The opposite side of the runway is formed by an inner short rail 309, an outside rail 310 and a central rail 311. The vertical legs of these three rails provide the inner part of the runway while their horizontal leg sections form the bottom or supporting part. Rails 309 and 310 are also formed with vertical side flanges 312, 313 between which the can bodies are retained laterally during their passage along the runway. The rails 309, 310, 311 are carried on posts 314, 315 which project forward from bosses 316 formed in the housing 22.

The continued rotation of the turrets 178, 297 forces the can and cover downwardly into the upper part of the runway and as the pockets 177, 301 of the respective turrets separate, the can is freed and falls by gravity, passing first through the vertical section of the runway, thence around the curved part and finally along the horizontal section and out of the machine.

It is while the can body is being positively lowered by the cooperating action of the turrets 178, 297 that the trip lever device is operated to effect the feeding of a can cover 195 so that it will be ready for the next succeeding can body. This trip lever device is directly connected with the pin 286 and will now be described.

This trip device comprises a rocking lever arm 317 (Figs. 2, 10 and 13) having a contact head 318 which projects into the upper end of the runway and into the path of travel of the can body. As the can body passes between the vertical legs of the runway the lever arm is actuated.

The lever arm 317 is secured to one end of a horizontal rock shaft 321 which is mounted in a bearing 322 formed in the bracket 222 and in a bearing 323 formed in a bracket 324 mounted upon and bolted to the housing 23.

The opposite end of the rock shaft 321 carries an arm 327 (Figs. 4, 9 and 10), the upper end of which is pivotally connected at 328 to a link 329 pivoted at 331 to the rear end of the rod 286.

The arm 327 is formed with an extension 335 which projects downwardly below the shaft 321 and engages a spring pin 336 which is slidingly mounted in a tubular boss 337 formed in the bracket 324. This spring pin 336 is backed up by a spring 338 which urges the pin 336 toward the right, as viewed in Fig. 4, and this normally causes the arm 327 to move the pin 286 into its lever locking position. The shaft 321 is also moved by the spring 338 and this normally holds the trip lever 317 into the path of travel of the capped can bodies.

The engagement of the upper end or head 318 of the trip lever 317 by a can body and the resulting oscillation of the shaft 321 effects the movement of the arm 327 against the action of the spring 338 and this withdraws the pin 286 from locking position and allows the cooperation of cam roller 271 and cam 274 to project the pins 282 into cover feeding position as previously described.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. A can and cover assembling machine comprising in combination, adhesive applying devices, an assembling mechanism, a conveyor for rolling a can body through said adhesive applying devices, an adhesive-applying roll arranged to operate on the end portion only of the cylindrical surface of the can body, auxiliary conveying means for advancing said can body to said assembling mechanism, and cover feeding devices located adjacent said assembling mechanism for presenting a cover to said can body.

2. A can and cover assembling machine comprising in combination, a conveyor for rolling a can body through an adhesive applying station, a roller located at said station for engaging said can body and for applying an adhesive to one of its edges, auxiliary conveying means for advancing said can body to an assembling station, and cover feeding devices located adjacent said assembling station for presenting a cover to said can body while carried by said auxiliary conveying means.

3. A can and cover assembling machine comprising in combination, a conveyor for rolling a

can body through an adhesive applying station, a roller located at said station beneath the path of travel of said can bodies for engaging the same and for applying an adhesive to an exterior side wall adjacent an edge thereof, means for turning said roll in a direction towards that end of the can on which the adhesive is to be applied, auxiliary conveying means for advancing said can body to an assembling station, and cover feeding devices located adjacent said assembling station for advancing a cover into the path of travel of said can body.

4. A can and cover assembling machine comprising in combination, a conveyor for rolling a can body through an adhesive applying station, and a plurality of rollers located at said station for engaging said can body and for applying an adhesive to one of its edges and to the adjacent exterior side wall.

5. A can and cover assembling machine comprising in combination, a conveyor for rolling a can body through an adhesive applying station, a plurality of rollers located at said station for engaging said can body and for applying an adhesive to one of its edges and to the adjacent exterior side wall, auxiliary conveying means for advancing said can body to an assembling station, and cover feeding devices located adjacent said assembling station for moving a cover into the path of travel of said can body while in said auxiliary conveying means.

6. A can and cover assembling machine comprising in combination, a conveyor for rolling a can body through an adhesive applying station, a rotary adhesive-applying member at said station for applying adhesive to said rolling can body, and means for applying pressure to the exterior of the top cylindrical part of said rolling can body to insure a positive rolling action.

7. A can and cover assembling machine comprising in combination, a conveyor for rolling a can body through an adhesive applying station, adhesive applying devices located at said station for depositing an adhesive on said can body, said devices including a roll engaging the cylindrical outer surface of said body and engaging only the end part of said surface, and a scraper mounted adjacent said applying means for regulating the quantity of adhesive deposited on said can body.

8. A can and cover assembling machine comprising in combination, a conveyor for rolling a can body through an adhesive applying station, a roller located at said station for engaging said can body and for applying an adhesive to one of its end edges, and flexible pressure instrumentalities acting against the opposite can body edge for forcing said can body into engagement with said roller.

9. A can and cover assembling machine comprising in combination, an adhesive applying roller, a conveyor belt for rolling can bodies over said adhesive applying roller, and pressure means for engaging said conveyor belt with said rolling can bodies so that the latter proceed through the machine at substantially a uniform rate of travel which is less than the rate of travel of said conveyor belt.

10. A can and cover assembling machine comprising in combination, a conveyor for rolling a can body through an adhesive applying station, auxiliary conveying means for advancing said can body to an assembling station, transfer devices for moving said can body from said conveyor to said auxiliary conveying means, and actuating means for operating said conveyor at a different speed from the speed of said transfer devices so that said can body proceeds through the machine at substantially a uniform rate of travel.

11. In a can and cover assembling machine, the combination of conveying means for advancing a can body to an assembling station, an arcuate chute for receiving a supply of can covers and for directing them individually toward said station, feeding devices for intermittently positioning each of said covers into the path of travel of said can body while in said conveying means, said devices including a roll engaging the cylindrical outer surface of said body and engaging only the end part of said surface, and yielding elements for holding said positioned cover until it is engaged by said can body.

12. In a can and cover assembling machine, the combination of conveying means for advancing a can body through an assembling station, a roll engaging the cylindrical outer surface of the can body and only the end part of said surface, an arcuate chute for receiving a supply of can covers and for directing them individually to said station, feeding devices for intermittently positioning a said can cover into the path of travel of said can body, yielding elements for holding said positioned cover until it is engaged by said can body and retaining devices for holding said remaining covers in said chute until acted upon by said feeding devices.

13. In a can and cover assembling machine, the combination of a guideway for can bodies, conveying means for advancing a can body through said guideway and into an assembling station, a roll engaging the cylindrical outer surface of the can body and only the end part of said surface, distorting means in said guideway for pressing on opposite sides of said can body during its passage therebetween to spring it from circular into substantially elliptical shape in cross section, an arcuate chute for receiving a supply of can covers and for directing them individually into said assembling station, feeding devices for separating a cover from the supply of covers in said chute and for positioning it into the path of travel of said can body moving through said guideway, yielding elements for holding said positioned cover so that it will be engaged by said distorted can body, and means at said assembling station for fully uniting said can body and cover.

14. In a can and cover assembling machine, the combination of conveying means for advancing a can body to an assembling station, an arcuate chute for receiving a supply of can covers and for directing a said cover into said station, feeding devices for intermittently moving said cover into the path of travel of said can body and into engaging position so that both can and cover move together into said station, means in said station for uniting said can and cover, locking means for locking said feeding devices in non-feeding position after each feeding movement, and a trip device actuated by an assembled can and cover for releasing said locking means to effect a subsequent cover feeding operation.

15. In a can and cover assembling machine, the combination of conveying means for advancing a can body to an assembling station, a chute for receiving a supply of can covers having open pouring spouts and for directing a said cover into said assembling station, means at said station for uniting can and cover, and means associated with said chute for engaging and closing said cover spout in said assembled can body and cover.

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