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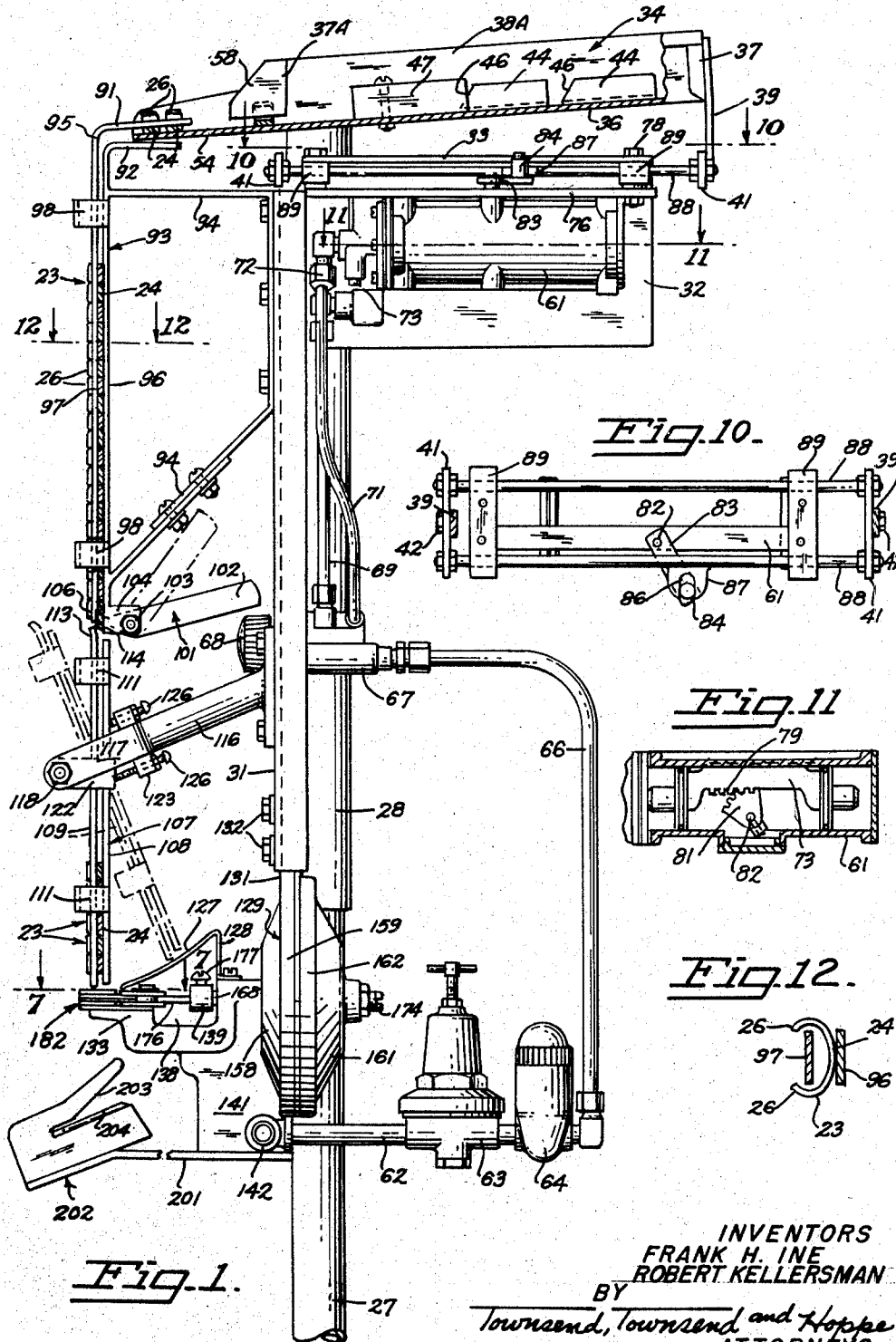
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2,907,494

AUTOMATIC PACKAGING CLIP FEEDING AND FASTENING DEVICE

Filed Jan. 27, 1956

3 Sheets-Sheet 1



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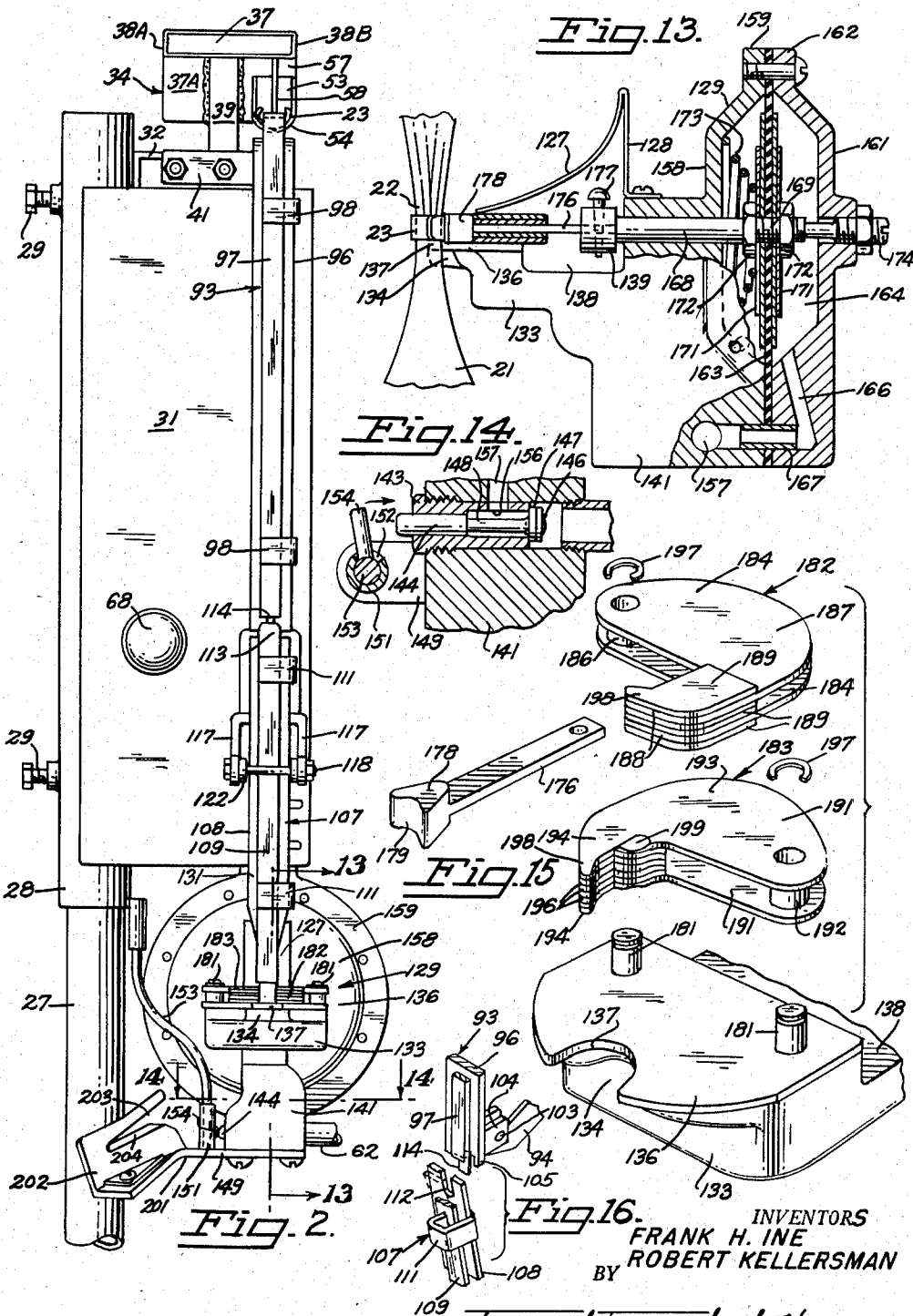
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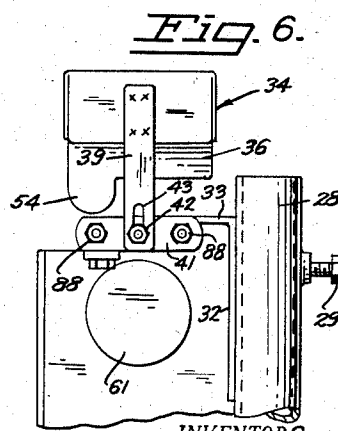
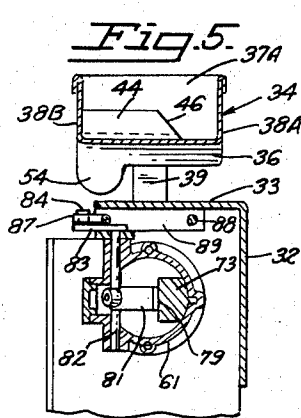
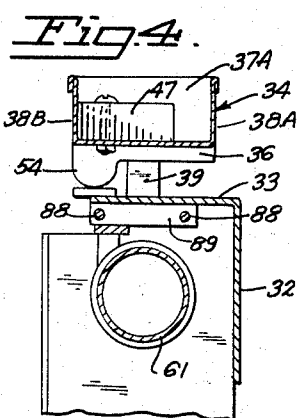
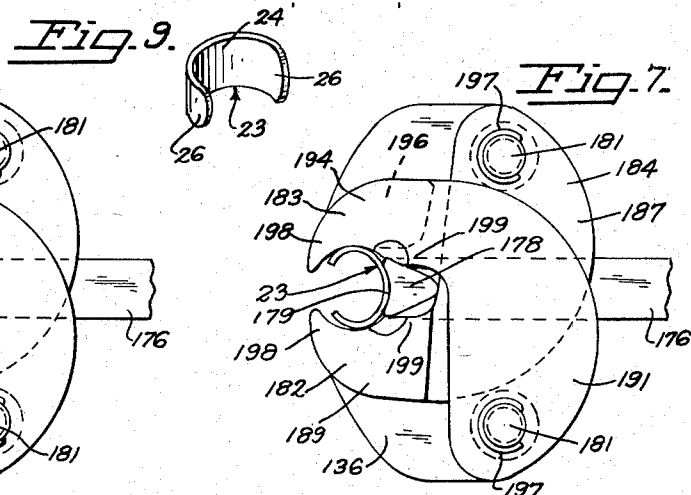
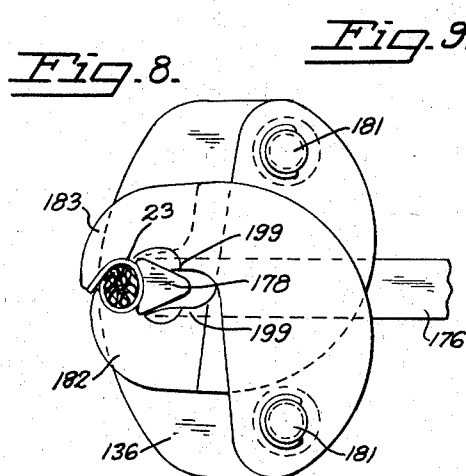
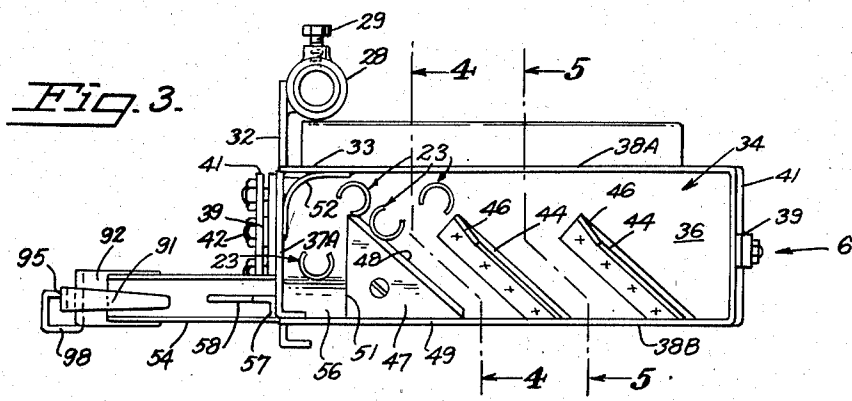
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2,907,494

AUTOMATIC PACKAGING CLIP FEEDING AND FASTENING DEVICE

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Application January 27, 1956, Serial No. 561,732

5 Claims. (Cl. 221—156)

This invention relates to a new and improved automatic packaging clip feed structure for use with a clip fastener.

More particularly, the invention relates to a machine which fastens a metal clip around the closed neck of a bag in order to secure the bag in closed position and seal the contents thereof. The clips employed are formed of heavy gauge sheet metal and substantially C-shaped in original condition and are bent by the apparatus hereinafter described into a substantially circular shape with one of the arms of the C overlapping the other and with the twisted, closed neck of the bag clamped tightly inside the clip.

A principal feature and advantage of the invention is the provision of a hopper in which clips are deposited at random and which operates in conjunction with a mechanism for agitating the hopper to move the clips into a magazine with the arms of the clip in the same direction and properly aligned for eventual feed into the jaws of the clip-fastening mechanism. This feature facilitates use of the machine in that the clips need not be aligned prior to being placed in the hopper, thus reducing both manufacturing and operational costs to the ultimate user of the machines.

Another feature of the invention is the provision of pneumatically actuated means to actuate the hopper in order to align the clips and also to close the jaws by movement of the plunger.

Other objects of the present invention will become apparent upon reading the following specification and referring to the accompanying drawings in which similar characters of reference represent corresponding parts in each of the several views.

In the drawings:

Fig. 1 is a side elevation of the device with the clips in the magazine broken away in section;

Fig. 2 is a front elevation;

Fig. 3 is a top plan;

Figs. 4 and 5 are transverse, vertical sectional views taken substantially along the lines 4—4 and 5—5 of Fig. 3, respectively;

Fig. 6 is a fragmentary end elevation viewed as indicated by the arrow 6 in Fig. 3;

Fig. 7 is a fragmentary enlarged top plan view of the jaws at the commencement of a clip closing cycle as viewed along the line 7—7 of Fig. 1;

Fig. 8 is a view similar to Fig. 7 at the completion of the closing operation;

Fig. 9 is a perspective view of a clip;

Fig. 10 is a horizontal sectional view taken substantially along the line 10—10 of Fig. 1;

Fig. 11 is a fragmentary horizontal sectional view taken substantially along the line 11—11 of Fig. 1;

Fig. 12 is a transverse vertical sectional view through

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the mechanism taken substantially along the line 12—12 of Fig. 1;

Fig. 13 is an enlarged fragmentary vertical sectional view taken substantially along the line 13—13 of Fig. 2;

Fig. 14 is a fragmentary horizontal sectional view taken substantially along the line 14—14 of Fig. 2;

Fig. 15 is exploded perspective view of the jaws and associated parts; and

Fig. 16 is an enlarged, fragmentary perspective view of the upper magazine latch.

The present invention is employed in closing bags 21 such as plastic bags used to package meat products and the like. Preferably, by means forming no part of this invention, the bags 21 are air-evacuated and the necks 22 are manually twisted. The apparatus hereinafter described clamps a sheet metal clip 23 around twisted neck 22 in order to hold the same in tightly crimped condition and prevent air from entering the evacuated bag. The clip 23 thus employed is shown in Fig. 9 in its initial position. Viewed in top plan the clip is essentially C-shaped with a rounded base 24. The outer extremities of the arms 26 of the C are also rounded to prevent injury to the bag when the clip is applied.

The apparatus which is the subject of this invention is preferably mounted on a vertical stanchion 27 so that the height of the equipment may be adjusted depending upon the height of the bag being closed. Accordingly, there is provided a sleeve 28 which slides on stanchion 27 carrying a pair of set screws 29 which may be tightened to lock the apparatus at proper elevation. Welded or otherwise suitably fastened to sleeve 28 is vertical plate 31 which extends substantially the entire height of the machine and supports the other parts thereof. Adjacent the top of the machine and likewise secured to sleeve 28 is an angular hopper mounting plate 32, the top flange 33 of which is horizontally disposed slightly above the level of the top edge of vertical plate 32.

Positioned above top flange 33 is hopper 34 which is substantially rectangular, having a bottom 36 and perpendicular ends 37 and sides 38. Hopper 34 is positioned with bottom 36 downwardly forwardly inclined by means of depending legs 39 which are fastened to horizontal transverse links 41 by means of bolts 42. Slots 43 are formed in legs 39 so that the elevation and inclination of the hopper may be adjusted. By means hereinafter described in greater detail links 41 are horizontally vertically reciprocated in unison, thereby imparting to the hopper a rapid horizontal reciprocating or oscillating motion so that when clips 23 are deposited in the hopper in random position the rocking or vibrating motion of the hopper biases them forwardly. In order to direct clips 23 toward the outside side 38A of the hopper 34 there are positioned on the hopper bottom 36 a pair of baffles 44 disposed approximately at a 45° angle to the near side 38B of the hopper, baffles 44 being constructed of sheet metal angles and having their outer corners 46 beveled. In addition, adjacent the forward end of the hopper there is positioned a triangular block 47 having its hypotenuse 48 parallel to the upstanding flanges 44 of the baffles. One of the legs 49 of block 47 is disposed near side 38B of hopper 34 and the other leg 51 is located parallel to the front end thereof and spaced from the front end a distance slightly wider than clips 23. A fillet 52 is disposed in the forward far corner of the hopper to prevent clips from stacking or accumulating therein. The near side of the front 37A of hopper 34 is formed with an aperture 53 extending upwardly from the bottom a

distance slightly greater than the height of arms 26 of the clips and this aperture merges into a trough 54 which projects forwardly from the hopper. Bottom 36 between aperture 53 and block 47 is indented with a depression 56 having a curvature merging with the bottom of trough 54. Supported above the bottom of trough 54 by means of a bracket 57 secured to front end 37A is a clip-aligning guide 58. The bottom edge of guide 58 is spaced above the bottom of trough 54 a distance slightly greater than the thickness of base 24 of clip 23. Accordingly, guide 58 prevents clips from entering trough 54 in any position other than with arms 26 extending upwardly and parallel to the side walls of the trough.

Reciprocation of the hopper is accomplished by means of a compressed air motor 61 or similar electric or vacuum operated device. As illustrated herein, a compressed air motor 61 of the type used to actuate windshield wipers for trucks is employed. Such a motor is illustrated and described in Patent No. 2,727,494 issued December 20, 1955. Compressed air is introduced through pipe 62, pressure regulating valve 63, oiler 64 and pipe 66 to valve 67 secured to the rear of vertical plate 31. Control knob 68 for valve 67 projects through the front of plate 31. By adjustment of knob 68 the flow of compressed air through valve 67 may be adjusted or closed. A pair of pipes 69-71 lead from valve 67 to a fitting 72 on the front end of motor 61 and by valve constructions and ducts in the interior of motor 61 which form no part of this invention and are not illustrated or described herein, the internal piston 73 in motor 61 is caused to rapidly reciprocate or oscillate horizontally. Motor 61 is mounted on a horizontal support 76 which, in turn, is supported from top flange 33 by means of screws 78. As shown particularly in Fig. 11, a portion of piston 73 is formed in a rack 79 engaged by a segmental gear 81 pivotally mounted in motor 61 by stub gear shaft 82, the upper end of which projects out through the top of motor 61 and carries horizontal link 83. Hence, as piston 73 reciprocates, link 83 oscillates. The upper surface of the outer end of link 83 carries roller 84. Roller 84 fits within slot 86 in lug 87 and the latter projects horizontally outwardly from one of the horizontal reciprocating rods 88. Rods 88 project through holes in horizontal guides 89 which are fastened to the underside of top flange 33. The outer ends of rods 88 carry links 41 to which legs 39 of hopper 34 are secured.

The forward edge of trough 54 fits between the horizontally rearwardly extending extremities 91-92 of the upper magazine 93, the bottom of trough 54 being spaced from the base supporting or rearwardly disposed magazine member 92 and being spaced substantially below the outer or arm-separating member 91 of the upper magazine. The length of the horizontal extremities 91-92 are at least equal to the length of stroke of hopper 34. Brackets 94 attached to vertical plate 31 adjustably secure the rear or base supporting portion 96 of the upper hopper magazine 93 in place with rearwardly extending upper extremity 91 properly aligned immediately above the forward or discharge end of trough 54 and the main or vertical stretch of the magazine in proper vertical position, there being a rounded corner 95 at the bend of upper magazine 93. A pair of supports 98 are fastened to base supporting portion 96 and locate the forward or arm separating portion 97 spaced from base portion 96 a distance slightly greater than the thickness of base 24 of a clip. Accordingly, clips 23 discharged from trough 54 (and which have already been aligned with arms 26 extending vertically upwardly and parallel to the sides of the trough) feed into the gap between extremities 91-92 with arm separating extremity 91 holding the clips in proper vertical position and base supporting extremity 92 preventing the base of the clip from slipping out of the magazine. The lower end of the upper magazine carries a latch 101 which comprises a lever 102 pivotally mounted by means of bolt 103 which

fastens through clevis 104 on the back of the lower end of base supporting member 96. A slot 105 is formed in the lower end of member 96 into which the point 106 of lever 102 extends. Point 106 blocks the space between members 96 and 97 and hence prevents discharge of clips from the bottom end of the upper magazine. The portion of lever 102 rearward of bolt 103 comprising a handle of considerable mass and which thus biases point 106 into position to block discharge of clips. However, when lever 102 is lifted manually, point 106 is retracted and permits clips to discharge.

Immediately below upper magazine 93 and constituting an extension thereof is lower magazine 107 which comprises a rearward or base supporting member 108 and a parallel spaced arm separating member 109 secured thereto by means of a pair of supports 111. The upper end of base supporting member 108 is formed with a groove 112 to provide clearance for retraction of point 106 of latch 101. The upper end 113 of arm separating member 109 is beveled and rests upon a depending locking finger 114 on the lower end of upper magazine member 92. Lower magazine 107 is supported from vertical plate 31 by means of bracket 116, the front lower most end 117 of which is bifurcated with pivot bolt 118 passing through the bifurcated ends thereof. Bolt 118 passes through apertures in the outer ends of the legs 117 of a U-shaped member 122 fastened to rear or base supporting member 108 of lower magazine 107. Lugs 123 on arm 116 carry adjustable screws 126, the outer ends of which engage base supporting member 108 and hence adjustably limit the swinging movement thereof as the lower magazine is swung about pivot bolt 118 as a center. Below lower magazine 107 is an arcuately shaped sheet metal retainer 127 which is formed with a leg 128 fastened to valve housing 129 which in turn is supported from vertical plate 31. The center of curvature of arcuate retainer 127 is the center of pivot bolt 118 and hence as the lower magazine is swung from the full line position shown in Fig. 1 to the dotted line or retracted position, retainer 127 prevents clips from being dislodged therefrom.

Forward valve housing 129 is irregularly shaped and is adjustably connected to the lower end of vertical plate 31 by means of leg 131 and bolts 132. The front portion thereof is formed with a horizontal table 133 having an arcuate recess 134 in the front edge and surmounted by a jaw wear plate 136 likewise formed with an arcuate recess 137 in the front. The purpose of the arcuate recesses 134 and 137 is to receive neck 22 of bag 21. The size of arcuate recess 134 in wear plate 136 is such that clip 23 deposited thereon as it drops off the lower end of lower magazine 107 does not pass through, but is held on the upper surface partially surrounding neck 22 (see Figs. 8 and 13). Rearwardly of table 133 housing 129 is formed with a downwardly, recessed portion 138 which provides clearance for horizontal reciprocation of collar 139 as hereinafter appears. Below and rearwardly of recessed portion 138 is a valve body 141. Valve body 141 has a threaded connection on one side which receives a compressed air intake line 142 which branches into pipe 62. Threaded through the opposite side of valve body 141 is a valve guide 143 and horizontally reciprocably in the restricted bore of valve guide 143 is valve stem 144 which projects through guide 143 to the exterior. The inner end of stem 144 carries a valve head 146 provided with a washer 147 which seats against the end of valve guide 143 to close the valve. Intermediate valve head 146 and its outer end valve stem 144 is formed with a restricted diameter portion 148. On the bottom of valve housing 129 is a horizontal plate 149 and projecting upwardly from said plate is a sleeve 151 having a cutout 152 on the rear thereof. Sleeve 151 receives the lower end of an elongated S-shaped valve handle 153, the lower end of which is further provided with a contacting lug 154. Lug 154

is positioned to contact the outer end of valve stem 144 when the upper end of handle 153 is swung to the right as viewed in Fig. 2. Normally, force of the compressed air holds head 146 against guide 143 to close the valve. When the handle 153 is turned to the right, however, as viewed in Fig. 14, washer 147 unseats, permitting communication between compressed air intake line 142 and a port 156 formed in the valve guide 143 which is aligned with a duct 157 in valve body 141.

The rearward end of housing 129 comprises the front chamber forming portion 158 which is surrounded by a substantially annular flange 159. On the back of portion 158 is a rear chamber forming portion 161 with a peripheral substantially annular flange 162. Gripped between flanges 159 and 162 is a resilient diaphragm 163 in chamber 164 between portions 158 and 161. Duct 156 communicates with a rearwardly extending duct 166 which in turn opens into rear portion 161 behind diaphragm 163. A resilient sleeve 167 is positioned in ducts 157 and 166 to prevent spreading of diaphragm 163 from closing off communication therebetween.

Housing 129 is formed with a horizontal bore substantially concentric with diaphragm 163. Slidable in this bore is a rod 168, the inner end 169 of which is threaded and passes through a central aperture in diaphragm 163. On either side of the diaphragm 163 concentric with the central aperture are metallic stiffener members 171 and nuts 172 threaded on rod end 169 on opposite sides of stiffener members 171 secured rod 168 to diaphragm 163 for movement therewith. Forwardly of diaphragm 163 within chamber 164 is a spiral spring 173, one end of which bears against the wall of chamber forming portion 158 and the opposite end of which bears against stiffener member 171, thereby biasing diaphragm 163 to the right as viewed in Fig. 13. Threaded into the wall of rear chamber forming member 161 is adjustment screw 174, the inner end of which bears against the end of rod 168 and limits its inward movement. Accordingly, when handle 153 is turned, the pressure of air behind diaphragm 163 moves rod 168 frontwardly or to the left as viewed in Fig. 13.

The forward end of rod 168 carries collar 139 and collar 139 likewise receives the rearward end of rectangular plunger rod 176. Screw 177 passing through collar 139 and an aperture in the end of rod 176 secures rod 176 for movement with rod 168. The forward end of plunger rod 176 carries a triangular shaped plunger 178, the forward surface of which is formed with an arcuate recess 179 conforming to the curvature of the back of base 24 of clip 23. Hence when handle 153 is opened, plunger 178 moves the clip 23 disposed on wear plate 136 forwardly.

Projecting upwardly from wear plate 136 on opposite sides and spaced rearwardly of recess 137 are a pair of studs 181 which form pivots for the jaws 182—183. Right-hand jaw 182 is pivoted to left-hand stud 181 and vice versa. Right-hand jaw 182 is laminated. It is provided with a pair of vertically spaced apart laminae 184 which are apertured in their rearward end and carry a spacing sleeve 186 aligned with the aperture and surrounding left stud 181. In plan the laminae 184 have a semi-circular portion 187 and on the forward end of the side opposite stud 181 are formed with gripping portions 188. Similarly, laminae 189 which are identical in shape with gripping portion 188 are fastened between laminae 184 and on the outside thereof so that a composite of six laminae provides right-hand jaw 182. Left jaw 183 is likewise provided with two irregularly shaped laminae 191 which are parallel and spaced apart a greater distance than laminae 184 of the right jaw, the space between providing clearance for movement of the jaws. Laminae 191 are likewise apertured and provided with an aligned sleeve 192 which surrounds right stud 181. In plan left jaw laminae 191 are likewise formed in a semicircular portion 193 and a forwardly extending

gripper portion 194. Between gripper portions 194 are additional laminae 196 of similar size and shaped identical with the gripper portions of laminae 191. The upper ends of studs 181 are grooved to receive retainer washers 197 which lock the jaws on studs 181.

The outer ends of the jaws are curved inwardly. The inner edges conform to the curvature of arms 23 of a clip except that the forward points 198 of the gripper portions project inwardly inside the ends of arms 23 of the clip. Accordingly, when plunger 178 moves forward and pushes clip 23 forwardly, the ends of arms 24 engage points 198. By reason of the fact that the jaws are pivoted at studs 181, the forward movement of clip 23 produces an inward pivotal movement of the jaws which compresses the same. Thus, it should be emphasized that there is no direct movement of jaws 182—183 except insofar as they are moved by the presence of a clip 23 therebetween and that the sole movement of the jaws is accomplished by movement of plunger 178. Inwardly extending point 198 of the right jaw is disposed rearwardly of the corresponding point of the left jaw (see Fig. 7). Hence, the right jaw is contacted and moved first, which causes it to lead the left jaw in closing movement. Accordingly, right arm 24 of clip 23 is closed slightly ahead of the left arm which results in the overlapping of the two arms best shown in Fig. 8. Jaws 182—183 are further formed with inwardly extending retraction points 199 so located that after jaws 182—183 are closed, when plunger 178 is retracted the triangular head thereof engages retraction points 199 and opens the jaws.

Below and to one side of the plate is an angularly disposed extension 201 which carries a cutoff 202 having a notch 203 in which is positioned a cutting edge 204. After bag 21 has been sealed, the unused portion on neck 22 is put in notch 203 and the excess material cut off.

Operation

The attendant from time to time places a quantity of clips 23 in hopper 34 in random positions. Knob 68 is turned, opening valve 67 and causing motor 61 to rapidly oscillate and thereby cause hopper 34 also to oscillate or vibrate. Baffles 44 and block 47 direct the clips forwardly and to outer side 38A of the hopper. On reaching front end 37A of the hopper, the clips turn and move along the face of the front end until they reach depression 56 which causes them to fall with their arms 26 uppermost. Guide 58 extending in trough 54 ensures proper positioning of the clips with arms 26 up and parallel. Clips 23 pass down trough 53 in such position and slip between top and bottom extensions 91—92 of forward and rearward members 97—96 of upper magazine 93. Clips 23 pass around corner 95 and fall down to the bottom of upper magazine 93 where they are retained by latch 101. From time to time the attendant releases latch 101 by raising handle 102, making sure that lower magazine 107 is in vertical position at the time of release. A quantity of clips passes from the upper to the lower magazine until the latter is filled, whereupon latch handle 102 is released and no more clips are discharged from the upper magazine.

Through manipulation of knob 68 hopper 34 may be vibrated intermittently and as required to fill the upper magazine.

Assuming that a supply of clips 23 is installed in lower magazine 107, the operator then evacuates a bag 21 by means not shown and twists neck 22 thereof, placing the twisted portion of the neck in recesses 134 and 137 of table 133 and wear plate 136. Meanwhile, the lowermost clip in the lower magazine will drop down between jaws 182—183 being supported by wear plate 136. Thereupon the attendant moves the handle 153 which unseats valve head 146 so that compressed air deforms diaphragm 163 to the left, as viewed in Fig. 13, causing plunger 178 to move forward. Plunger 178 engages the back of base

24 of clip 23 forcing the arms 26 of the clip forward against points 198 of jaws 182—183. Right jaw 182 is contacted first and this results in inward pivotal movement of right jaw 182 ahead of left jaw 183. Accordingly, the right arm is bent inside the other and the force of the compressed air is sufficient to tighten clip 23 securely around neck 22 of bag 21 and seal the same. On release of valve handle 153 on completion of the closing operation, spring 173 retracts plunger 178 which, in turn, engages retraction points 199 of jaws 182—183 and causes the jaws to open. The operator then removes the bag, cuts off the unused portion of the bag by inserting the same in notch 203.

It will be noted that when the operator pushes the neck of the bag into recess 134 in rear plate 136 he engages with his hand the lower end of lower magazine 107 causing it to pivot rearwardly about pivot bolt 113 to its dot-and-dash line retracted position shown in Fig. 1. Retainer 127 which the lower end of magazine 107 slidably contacts throughout its swingable movement from clip feeding position to retracted position and vice versa, prevents clips from falling off the end of the magazine. When the sealed bag is removed, gravity causes the lower magazine to return to the vertical or full line position of Fig. 1, whereupon the next clip in order falls between jaws 182—183 onto wear plate 136, thereby completing the operational cycle.

Although the foregoing invention has been described in some detail by way of illustration and example for purposes of clarity of understanding, it is understood that certain changes and modifications may be practiced within the spirit of the invention and scope of the appended claims.

What is claimed is:

1. In a mechanism for delivering C-shaped clips from random positions to oriented positions, the combination comprising, a frame, a motor on said frame, a hopper, means slidably mounting said hopper on said frame, drive means for shaking said hopper upon actuation of said motor, said hopper being inclined and apertured at its lowermost end, a delivery trough communicating with the aperture in said hopper to receive clips, means comprising a depending guide arm and the walls of the trough for restraining discharge of clips through said trough except in oriented position, a magazine to receive clips from said trough, said hopper formed with a curved depression in its bottom adjacent said aperture, said depression merging with the bottom of said trough and having a curvature substantially equal to that of the base of said clip whereby clips entering said depression upon actuation of said motor assume a position with the opposite legs of each clip projecting upwardly therefrom and with the axis of the clips parallel with said trough.

2. The combination of claim 1 and wherein said aperture is located adjacent a first side of said hopper and wherein said hopper is provided with at least one baffle on the bottom of said hopper extending angularly toward said lowermost end and the other side of said hopper and terminating short of the latter a distance slightly greater than the largest dimension of a C-shaped clip.

3. In a mechanism for delivering C-shaped clips from random positions to oriented positions, the combination comprising, a frame, a motor on said frame, a hopper, means slidably mounting said hopper on said frame, drive means for shaking said hopper upon actuation of said motor, said hopper being inclined and apertured at its lowermost end, a delivery trough communicating with the aperture in said hopper to receive clips, said trough formed to receive said clips in a slidably nested condition in said trough with the opposite legs of each clip projecting upwardly therefrom and with the axis of the clip disposed parallel with the axis of the trough, a guide arm depending downwardly into said trough to a position in spaced relation with the bottom of the trough a distance slightly greater than the thickness of the base of

the clips to restrain clips from passing said guide arm in other than parallel alignment with the axis of the trough, and a substantially vertically disposed magazine to receive the discharge from said trough comprising a first and a second member, said members being parallel and spaced a distance slightly greater than the thickness of the base of a clip, said first member engaging the back of the base of a clip and said second member engaging the back of the base of a clip and said second member being located between the arms of said clip, the space between said first and second members comprising a slideway for clips from end to end of said magazine, said trough discharging clips into said magazine oriented with each clip having its base on top of said first member and its arms on opposite sides of said second member, a second magazine below said first magazine, means pivotally mounting said magazine on said frame for swinging movement from a first position with its upper end adjacent said first mentioned magazine to a second position with its upper end remote from said first magazine, and a latch mechanism associated with the lower end of said first magazine releasably restraining passage of clips from said first magazine to said second magazine.

4. In a machine for feeding C-shaped clips to a work station, the combination: a clip-dispensing hopper, and a vertical elongate clip-magazine guide for feeding clips from said hopper to said station; said hopper being inclined and apertured at its lowermost end; a trough communicating said aperture of said trough with said magazine guide; said trough formed with an interior cross-section conforming with the base of a clip; the bottom of said hopper adjacent said aperture being formed with a curved depression merging with the bottom of said trough and having a curvature conforming with the base of a clip; said magazine guide including an upper stationary section and a lower pivotally-mounted section; said upper section mounted to receive and downwardly guide under influence of gravity clips dispensed from said hopper; a releasable latch mechanism provided adjacent the lower end of said upper section operable in latched position to stop gravity flow of clips beyond the lower end of said upper section, and operable in unlatched position to permit free gravity flow of clips from said upper section; said lower section pivotally supported for swingable movement from a first position whereat the upper end of said lower section is in registry with the lower end of said upper section to receive and guide clips discharged by the latter and whereat said lower section is vertically aligned with said station to feed a clip thereon; said lower section being swingable to a second position whereat the lower end of said lower section is moved out of vertical alignment relative to said station and whereat the upper end of said lower section is remote from said upper section; means independently operable from said work station for periodically actuating said dispensing hopper to cause loading of said upper magazine section with clips; and means for actuating said latch mechanism to unlatched position when said lower section occupies its first position to allow gravity flow of clips from said loaded upper section to said lower section.

5. In a mechanism for delivering C-shaped clips from a random position to an oriented position, the combination comprising, a hopper apertured adjacent one end corner, means for vibrating said hopper, said hopper inclined whereby the corner adjacent the apertured end of said hopper is disposed lower than the opposite end, at least one baffle in said hopper angularly disposed to direct clips toward the side of said hopper opposite the apertured end of said hopper, a delivery trough below said hopper and communicating with the aperture in said hopper to receive clips, said trough formed to align clips within said trough so that the axis of each clip is parallel with the axis of the trough and with the opposite legs of each clip projecting upwardly therefrom, said hopper formed with a curved depression in its bottom adjacent said aper-

ture, said depression merging with the bottom of said trough and having a curvature substantially equal to that of the base of said clip whereby clips entering said depression upon vibration of said hopper assume a position with the opposite legs of each clip projecting upwardly therefrom and with the axis of the clips parallel with said trough, and a guide arm projecting downwardly from a centermost position into said trough and terminating in spaced relation to the bottom of said trough a distance slightly greater than the thickness of the web of the clips to restrict passage of clips past said guide arm in other than the aligned position.

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