

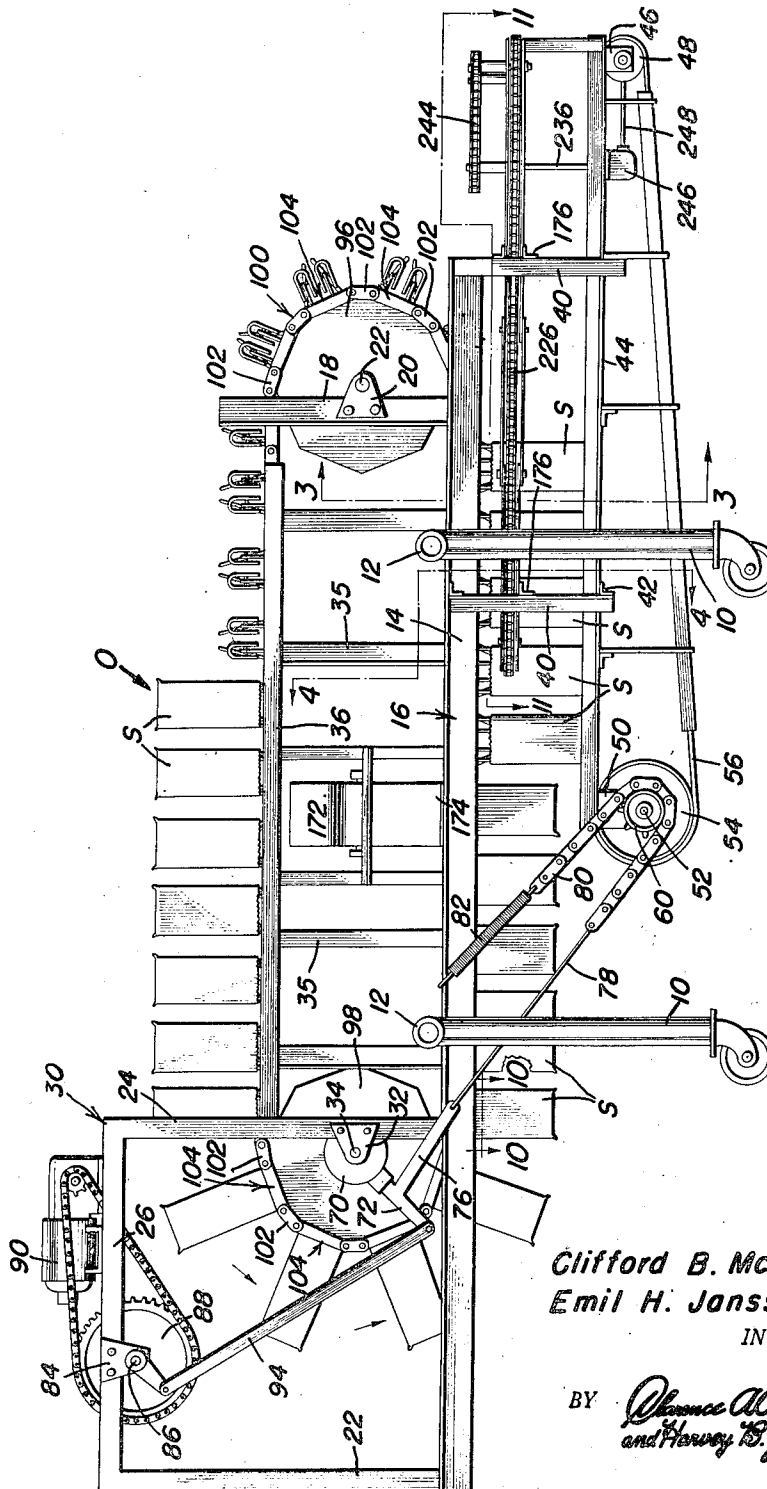
Feb. 12, 1952

C. B. McHALE ET AL
PACKAGING MACHINE

2,585,335

Filed March 14, 1949

6 Sheets-Sheet 1



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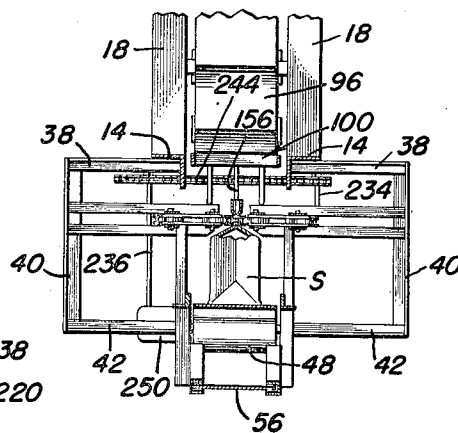
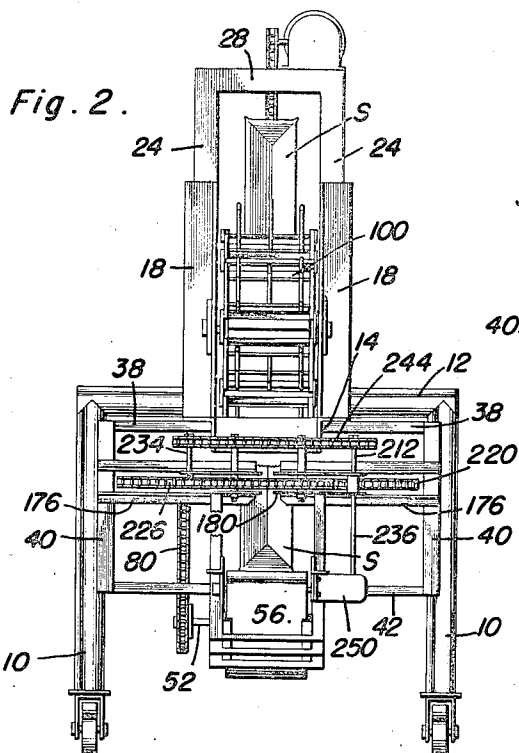
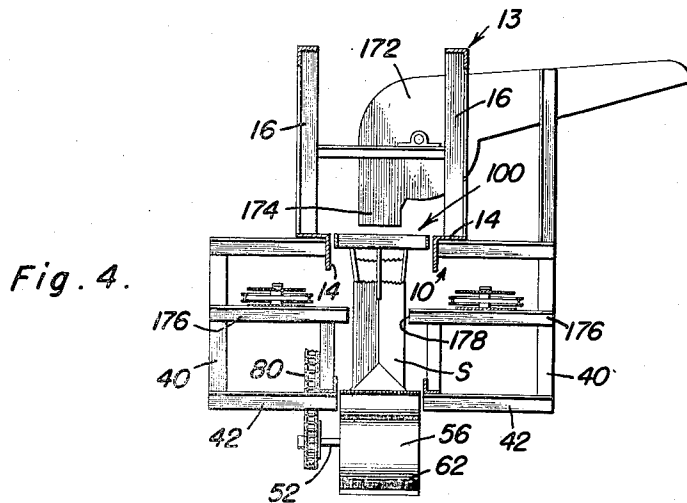
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6 Sheets-Sheet 2



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6 Sheets-Sheet 3

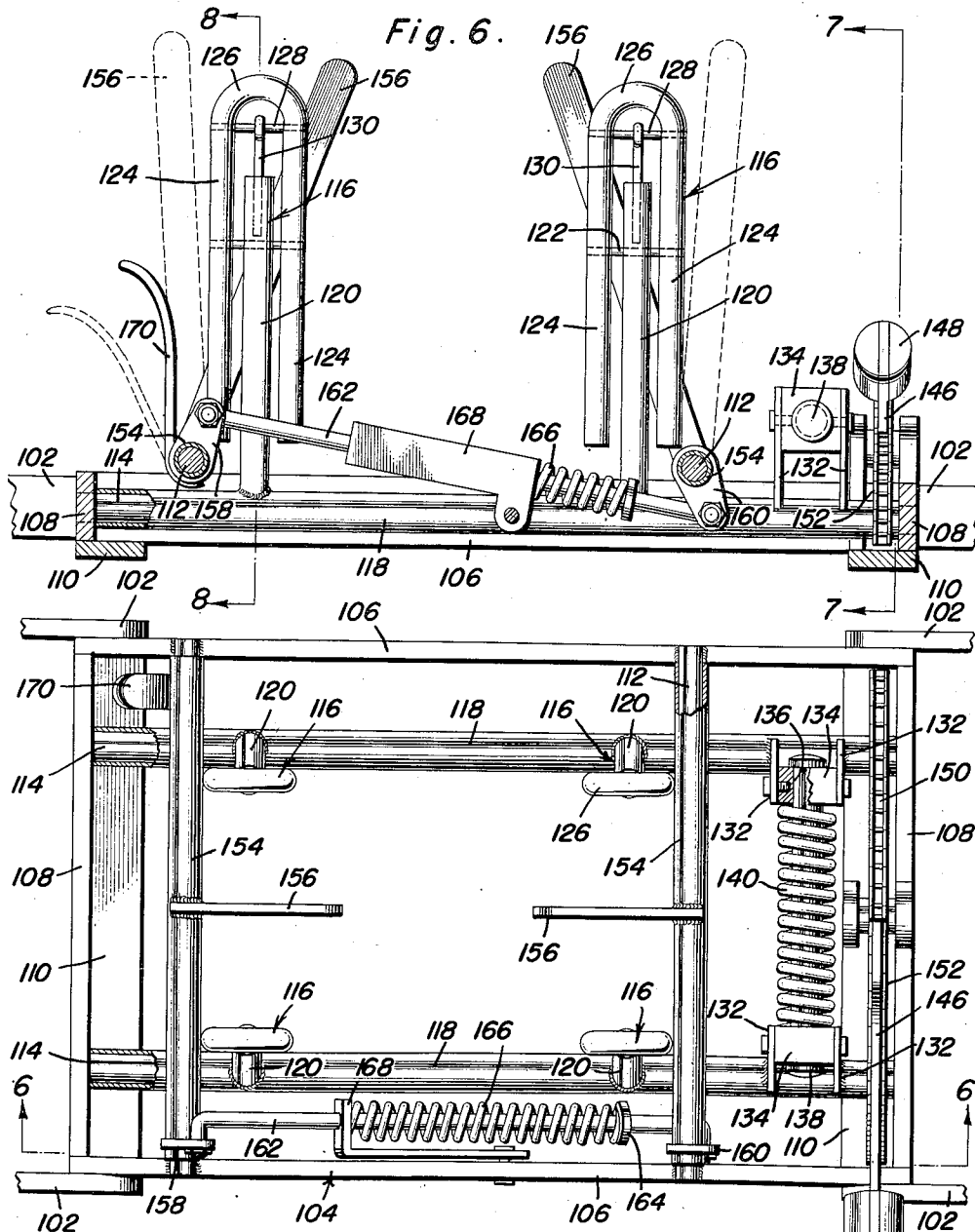


Fig. 5.

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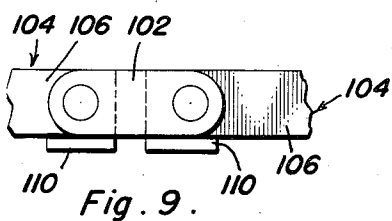
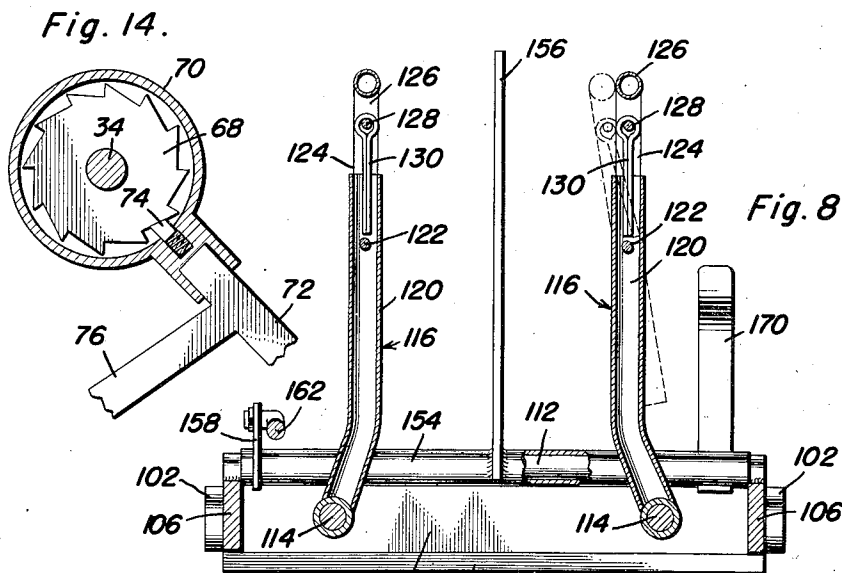
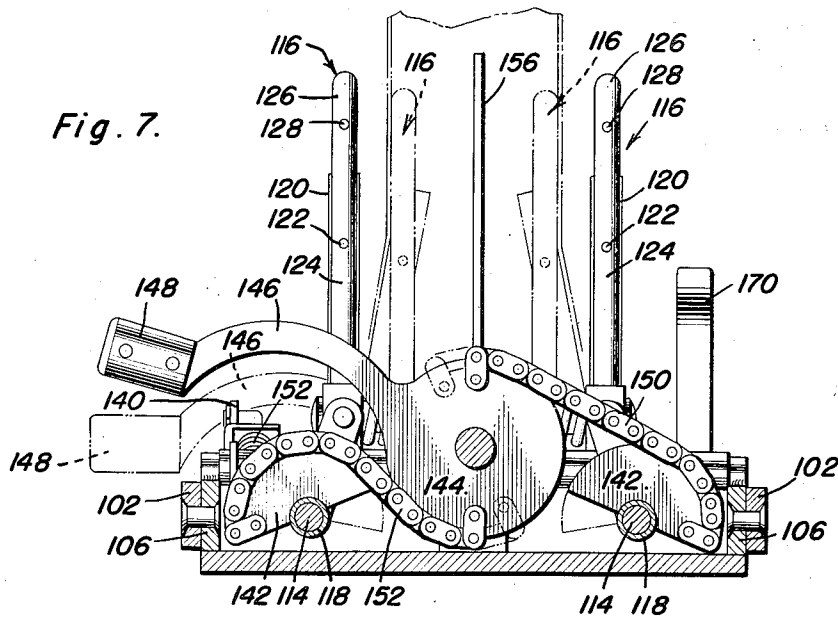
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PACKAGING MACHINE

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6 Sheets-Sheet 4



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PACKAGING MACHINE

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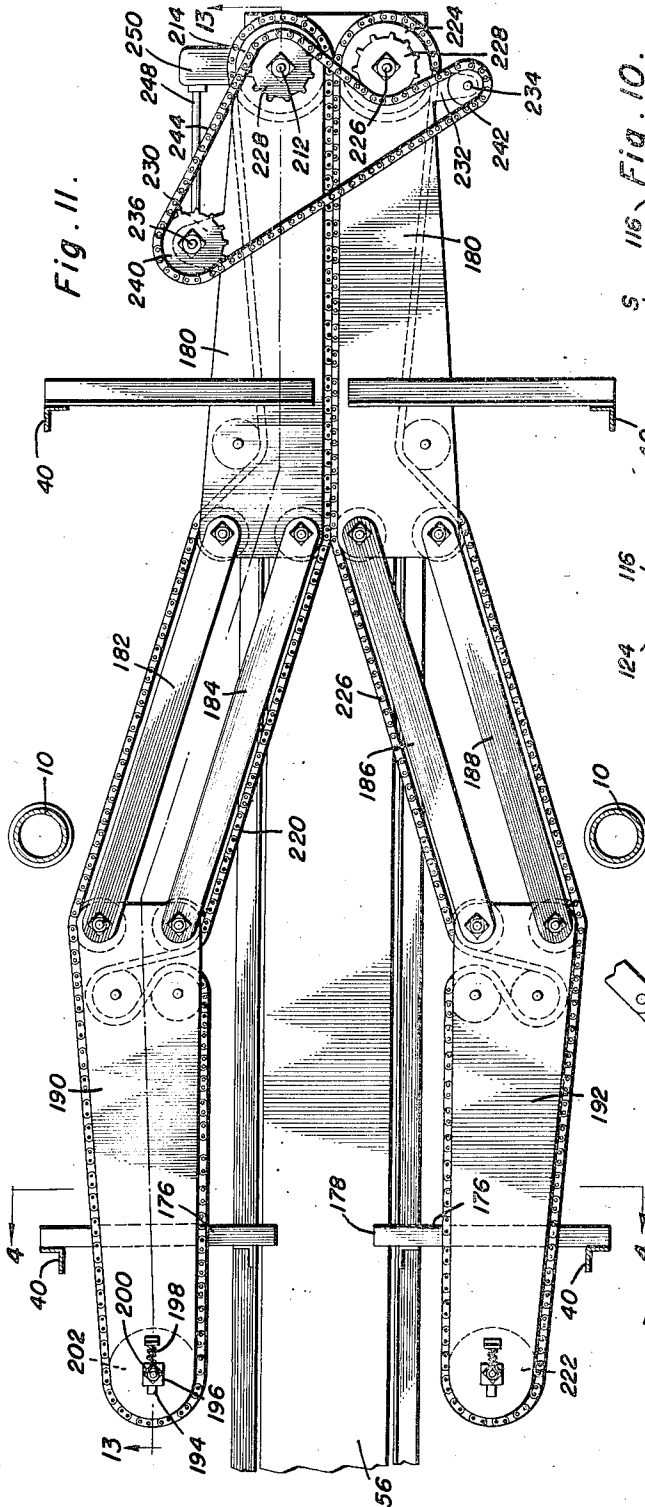


Fig. 11.

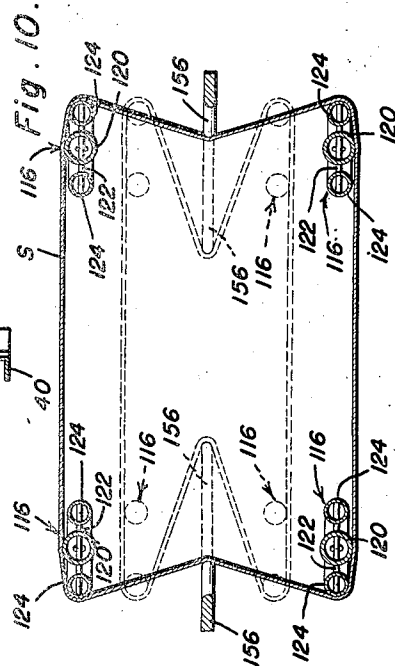


Fig. 10.

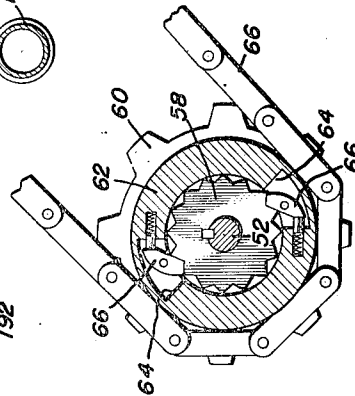


Fig. 15.

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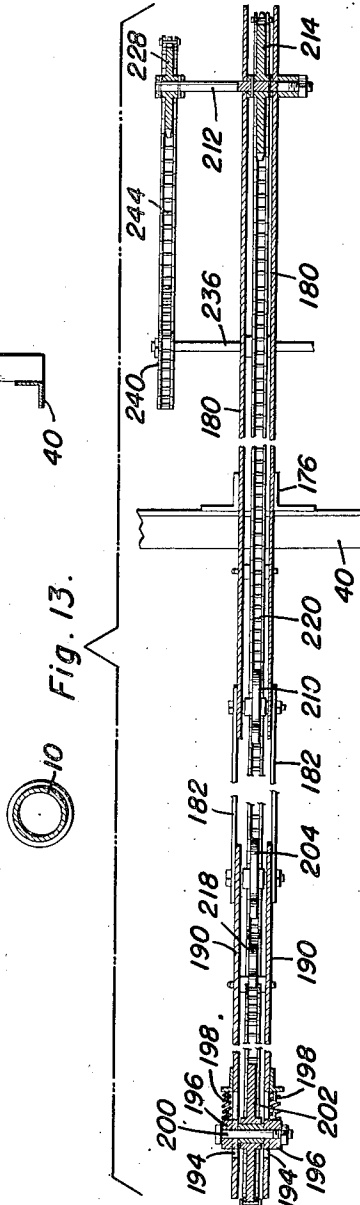
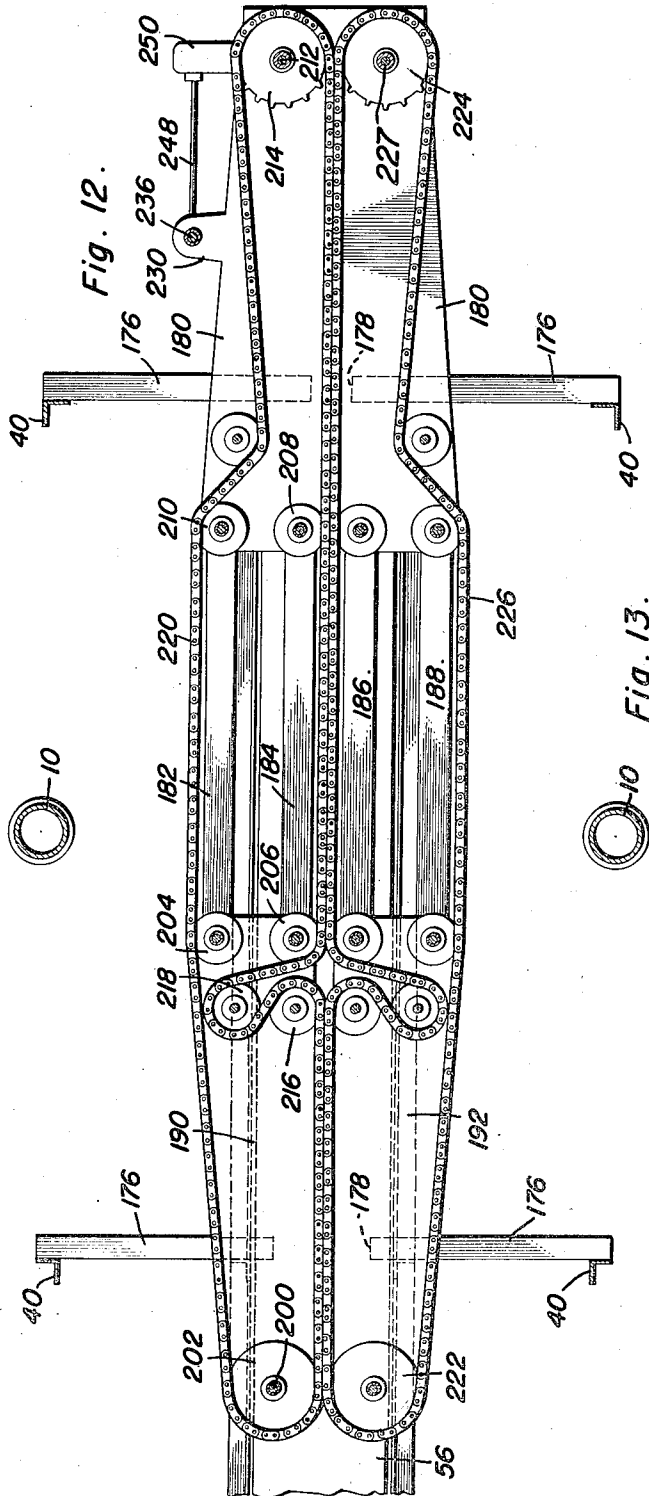
C. B. McHALE ET AL

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PACKAGING MACHINE

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6 Sheets-Sheet 6



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UNITED STATES PATENT OFFICE

2,585,335

PACKAGING MACHINE

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Application March 14, 1949, Serial No. 81,336

11 Claims. (Cl. 53—136)

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This invention relates to a packaging machine and has for its primary object to hold sacks, such as paper bags, with their mouths open and to advance such items beneath a filling station at which the bags are filled with the product to be packaged and subsequently closed as they move away from the filling station.

Another object is to exert counteracting pressures on the sack or bag adjacent the mouth thereof in order to develop sufficient frictional contact to retain the bag or sack on its supporting means while it is being filled, and subsequently to release the pressure so that the bag may move downwardly under the weight of the contents thereof.

Still another object is to cause the mouth of the bag to close and to assure the proper folding of the gussets of the bag during the closing of the mouth thereof.

A still further object of the invention is to improve packaging machines of the general type disclosed in our copending application, Serial No. 752,618, filed June 5, 1947.

The above and other objects may be attained by employing this invention which embodies among its features a carrier mounted to move in a closed path beneath a sack filling station, opposed sack mouth extending units mounted on the carrier to move beneath the carrier, yielding means carried by the carrier to move the sack mouth extending units outwardly and into contact with the sides of a sack adjacent the mouth thereof to hold said sack extended on the carrier, gusset folding fingers mounted on the carrier to move beneath the carrier perpendicular to the direction of movement of the sack mouth extending units, and yielding means carried by the carrier to move the fingers inwardly and into contact with the gussets of a sack held by the sack mouth extending units.

Other features include a sack supporting conveyor upon which filled sacks are moved away from the filling station, and means between the supporting conveyor and the path of movement of the carrier for closing the mouths of the sacks as they are moved by the conveyor.

In the drawings,

Figure 1 is a side view of a packaging machine embodying the features of this invention.

Figure 2 is an end view of the machine illustrated in Figure 1,

Figure 3 is a transverse sectional view taken substantially along the line 3—3 of Figure 1, showing the mouth-closing chains in their open position,

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Figure 4 is a transverse sectional view taken substantially along the line 4—4 of Figure 1,

Figure 5 is a top plan view of one of the sack carriers,

Figure 6 is a sectional view taken substantially along the line 6—6 of Figure 5,

Figure 7 is a vertical sectional view taken substantially along the line 7—7 of Figure 6,

Figure 8 is a vertical sectional view taken substantially along the line 8—8 of Figure 6,

Figure 9 is a fragmentary detail view of one corner of the frame of the sack carrier showing the manner in which the sack carriers are coupled together to form an endless moving sack-carrying unit;

Figure 10 is a horizontal sectional view on a greatly enlarged scale taken substantially on the line 10—10 of Figure 1,

Figure 11 is an enlarged horizontal sectional view taken substantially on the line 11—11 of Figure 1, showing the sack mouth closing unit in open position,

Figure 12 is a view similar to Figure 11 showing the sack mouth closing unit in its closed position,

Figure 13 is a fragmentary sectional view taken substantially along the line 13—13 of Figure 11;

Figure 14 is an enlarged fragmentary sectional view of the main drive ratchet mechanism, and

Figure 15 is an enlarged fragmentary sectional view of the filled sack conveyor drive ratchet.

Referring to the drawings in detail, vertical legs 10 support at their upper ends cross-bars 12 on the under sides of which are secured spaced parallel bars 14 which cooperate with the cross-bars 12 in forming a main supporting frame 16. Extending upwardly from the side bars 14 near one end of the frame 16 is a pair of spaced vertical standards 18 carrying intermediate their upper and lower ends bearing brackets 20 in which an idler shaft 22 is supported.

Extending upwardly from the side bars 14 adjacent the ends thereof remote from the standards 18 are longitudinally spaced pairs of standards 22 and 24, which are joined at their upper ends by side bars 26 and end bars 28 to form a horizontal frame 30 which lies in vertically spaced relation to the frame 16. Bearing brackets 32 are carried by the standards 24 and are provided with aligning openings in which a drive shaft 34 is mounted to rotate about an axis which lies parallel to and in a horizontal plane with the axis of the roller shaft 22.

Longitudinally spaced pairs of vertical columns 35 extend upwardly from the side bars 14 between the standards 18 and 24, and carried by the upper

ends of the columns 35 in vertically spaced relation to the side bars 14 are longitudinally extending spaced parallel track rails 36.

Extending laterally from the side rails 14 adjacent the end of the frame 16 remote from the frame 30 are longitudinally spaced pairs of horizontal arms 38 carrying at their outer ends depending bars 40, the lower ends of which are joined by horizontal cross bars 41 carrying a longitudinally extending horizontally disposed elongated conveyor bed 44. As illustrated, the conveyor bed 44 extends beyond the end of the main frame 16 adjacent the standards 18 and carried by the conveyor bed 44 at the end thereof remote from the main frame are brackets 46 in which an idler roll 48 is mounted to rotate. Brackets 50 depend from the conveyor bed 44 adjacent the end thereof remote from the roll 48 and journaled in said brackets 50 is a drive shaft 52 to which is fixed a drive roller 54. A conveyor belt 56 is trained over the drive roller 54 and the idler roller 48, and the upper run of said belt extends along the upper surface of the bed 44 so that a load imposed on the belt 56 will be supported throughout the length of the conveyor by the bed 44.

Fixed to the drive shaft 52 adjacent one end thereof is a ratchet wheel 58 (Figure 15) and mounted on the shaft 52 for rotation thereabout is a drive sprocket 60 carrying a laterally projecting flange 62 which encircles the ratchet wheel 58. The flange 58 is provided with inwardly opening recesses 64 in which spring advanced pawls 66 are mounted to rock into yielding contact with the teeth of the ratchet wheel 66 so that when the sprocket 60 is oscillated, the shaft 52 will be rotated in but one direction.

Fixed to the drive shaft 34 adjacent one end thereof is a ratchet wheel 68 (Figure 14) and rockably supported on said shaft adjacent the ratchet wheel 68 is a housing 70 which encircles the ratchet wheel 68 and is provided with a radial arm 72 by which the housing 70 is oscillated. A spring-pressed pawl 74 is carried by the housing 70 and engages the teeth of the ratchet wheel 68 so that, as the housing 70 oscillates, the shaft 34 will be driven in but one direction. An arm 76 is carried by and extends outwardly from the radial arm 72 for a purpose to be more fully herein-after explained.

Coupled at one end to the arm 76 is a flexible member 78, the opposite end of which is connected to one end of a drive chain 80 which extends around the sprocket 60 and has its opposite end connected to one end of a retractile coil spring 82, the opposite end of which is connected to one of the side bars 14 of the frame 16. It will thus be seen that as the arm 72 oscillates, the sprocket 60 will oscillate and drive the shaft 52 in one direction with a step-by-step motion.

Mounted in suitable brackets 84 carried by the side bars 26 of the frame 30 is a rotary drive shaft 86 carrying intermediate its ends a drive sprocket 88 which has driving connection with a suitable prime mover 90 in any suitable manner. A crank arm 92 is fixed to the rotary drive shaft 86 adjacent one end thereof and this crank arm is connected, as by a link 94, to the radial arm 72 so that when the prime mover is set into operation so as to rotate the drive sprocket 88, the arm 72 will be oscillated to oscillate the housing 70 and the sprocket 60, thus driving the shafts 52 and 34 in one direction with a step-by-step motion.

Carried by the shaft 22 is an idler drum 96 of

polygonal cross-section and fixed to the drive shaft 34 is a polygonal drive drum 98. An endless sack conveyor designated generally 100 is trained over the drums 96 and 98 and comprises links 102 joining opposite ends of individual sack carriers designated generally 104.

Each sack carrier 104 comprises a rectangular carrier frame (Figure 5) composed of spaced parallel side bars 106 joined at opposite ends by spaced parallel end bars 108 and bottom bars or shoes 110. Welded or otherwise secured to the upper edges of the side bars 106 adjacent opposite ends thereof are spaced parallel cross shafts 112 and fixed in the end bars 108 below the upper edges thereof are longitudinally extending spaced parallel shafts 114 which lie perpendicular to the shafts 112.

Mounted on the shafts 114 to rock about the axes thereof are sack expanding units designated generally 116, each of which comprises a sleeve 118 carrying longitudinally spaced tubular arms 120 which extend outwardly from the sleeve 118 as will be readily understood upon reference to the drawing. Rockably supported intermediate their opposite ends as by a cross-pin 122 carried by each arm 120 are the spaced parallel legs 124 of an inverted U-shaped sack engaging member 126. A cross-pin 128 extends between each pair of legs 124 adjacent their junctions with the bight portion of each sack-engaging member 126 and supported on each cross-pin 128 and extending into the outer end of the arm 120 carrying its respective sack-engaging member 126 is a pin 130. These pins 130 will permit free swinging movement of the sack-engaging members 126 on their respective arms 120 within limits. Extending radially from each sleeve 118 adjacent one end thereof is a pair of longitudinally spaced parallel arms 132 between the outer ends of which is swivelly mounted a block 134. The blocks 134 carried by the respective sleeves 118 are arranged opposite one another and the opposite blocks are provided with aligning openings 136 for the reception of a guide and stop pin 138. A compression coil spring 140 surrounds the guide and stop pin 138 and bears at opposite ends on the opposed blocks 134 yieldingly to urge said blocks 134 apart and the sack expanding units 116 in expanded position.

In order to effect contraction of the sack expanding units 116 against the effort of the spring 140, each sleeve has fixed adjacent its end nearest the arms 132 a segment of a disk 142 and mounted for rotation on an adjacent end bar 108 is a disk 144 carrying a laterally extending arm 146 having a handle 148 at its outer end. A length of chain 150 is coupled at one end to the upper portion of the disk 144 and at its opposite end to the far side of the disk segment 142 on the right side of the device when viewed as in Figure 7. A similar chain length 152 is connected at one end to the lower portion of the disk 144 while the opposite end of said chain length 152 is connected to the far side of the opposite disk segment 142. With the chain lengths 150 and 152 trained over the convex portions of the disk 144, it will be evident that when the arm 146 is moved downwardly as suggested by the broken lines in Figure 7, the sleeves 118 will be rocked on their respective shafts 114 against the effort of the spring 140 so as to contract the sack expanding units 116 as suggested by the broken lines in Figure 7.

Mounted for rocking movement on the cross-shafts 112 are sleeves 154, each of which has

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fixed thereto substantially midway between opposite ends a radially extending sack gusset folding finger 156. An arm 158 is fixed to one of the sleeves 154 adjacent one end thereof and projects in the direction of the finger 156 on said sleeve. A similar arm 160 is fixed to the opposite sleeve 154 adjacent one end thereof and projects radially therefrom in a direction opposite the finger 156 on said sleeve. A link 162 is connected at opposite ends to the arms 158 and 160 so that upon rocking movement of a sleeve 154 about its respective shaft 112, the opposite sleeve 154 will move in unison but in the opposite direction. Fixed to the link 162 adjacent the end thereof which is connected to the arm 160 is a stop collar 164 and surrounding said link is a compression coil spring 166, one end of which bears on the stop collar 164. A bracket 168 is pivotally supported on an adjacent side bar 106 and forms an abutment for the end of the spring 166 remote from the stop collar 164 so that the effort of the spring 166 tends to contract the fingers 156 into the full line position shown in Figures 5 and 6. A hand lever 170 is fixed to one of the sleeves 154 to enable the fingers 156 to be manually expanded against the effort of the spring 166 during the placing of a sack S on the carrier 184 as suggested by the broken lines in Figure 6.

Mounted on the frame 16 substantially midway between opposite ends thereof is a suitable sack-filling unit 172 having a discharge hopper 174 which is located directly about the drive roller 54 of the package conveyor belt 56 so that the sacks S, as they become filled, will be supported together with their contents on the conveyor belt 56, to be moved thereby toward the idler roller 48 beneath the sack-closing unit to be more fully hereinafter described.

Carried by the depending bars 40 intermediate the upper and lower ends thereof and slightly below the level of the frame 16 are inwardly extending horizontal supporting arms 176, the inner ends of which are spaced apart as at 178 to permit filled sacks S to pass therebetween. Supported on the arms 176 adjacent the discharge end of the conveyor belt 56 are horizontally spaced bed plates 180, the adjacent edges of which lie in closely spaced parallel relation with a vertical plane extending through the longitudinal axis of the conveyor belt 56. Mounted for horizontal swinging movement on the plates 180 adjacent the ends thereof remote from the discharge end of the conveyor belt 56 are vertically spaced pairs of parallel arms 182 and 184 and 186 and 188. Pivotaly connected to the pairs of parallel arms 182 and 184 and slidably supported on one of the horizontal arms 176 adjacent the loading end of the conveyor belt 56 are vertically spaced pairs of plates 190. Similar vertically spaced pairs of plates 192 are pivotally connected to the vertically spaced parallel arms 186 and 188 and are supported for horizontal sliding movement on the horizontal arm 176 opposite that on which the plates 190 are supported. The plates 190 are provided adjacent their ends remote from the arms 182 and 184 with elongated longitudinal slots 194 (Figure 11) in which bearing blocks 196 are mounted to slide and these blocks are yieldingly advanced toward the ends of the slots 194 under the influence of compression springs 198. An axle shaft 200 extends through the bearing blocks 196 and mounted on said axle shaft 200 for rotation between the plates 190 is an idler wheel 202 (Figure 12), the periphery of which lies substantially flush with the end edges

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of the plates 190. Mounted for rotation between the plates 190 about a vertical axis which aligns with the axes of the pivots by which the plates 190 are joined to the arms 182 is a guide roller 204 and mounted between the plates 180 to rotate about a vertical axis which aligns with the pivotal connection between said plates 180 and the arms 182 and 184 is a guide roller 206. A similar guide roller 208 is mounted to rotate between the plates 180 about the vertical axis of the pivotal connection between the arms 184 and the plates 180. A guide roller 210 of like structure is mounted to rotate between the plates 180 about a vertical axis of the pivotal connection between the arms 182 and the plates 180, and mounted on a vertical shaft 212 to rotate between the plates 180 adjacent the ends thereof remote from the arms 182 and 184 is a drive sprocket 213. A guide roller 216 is mounted between the plates adjacent the guide roller 206 and when the inner edges of the plates 180 and 190 align, as illustrated in Figure 12, the peripheries of the idler roller 202 and the drive sprocket 214 lie in the same vertical plane along with the peripheries of the guide rollers 206, 208 and 216. A take-up roller 218 is mounted between the plates 190 to rotate about a vertical axis which lies adjacent the axis of the guide roller 204, and cooperates with the guide rollers 206 and 216 in guiding the inner run of a sack-closing chain 220 which is trained over the drive sprocket 214 and the idler and guide rollers as illustrated in Figures 11 and 12.

A similar roller system including an idler roller 222 and a drive sprocket 224 is carried by the plates 180 on the opposite side of the machine, the arms 186 and 188 and the plates 192. Trained over the last-named roller system and idler roll 222 and sprocket 224 is an endless sack-closing chain 226 which cooperates with the chain 220 in engaging opposite sides of a filled sack 5 carried by the conveyor 56 and closing the mouth of said sack above the contents thereof. The sprocket 224 rotates about a vertical shaft 227 which lies in spaced parallel relation to the shaft 212 and carried by each sprocket 214 and 224 is a drive sprocket 228.

Mounted in suitable brackets 230 and 232 which extend laterally from the outer edges of the plates 180 are, respectively, a vertical drive shaft 236 and a vertical idler shaft 238. A drive sprocket 240 is carried by the drive shaft 236 near the upper end thereof and an idler sprocket 242 is mounted to rotate about the idler shaft 238. An endless drive chain 244 is trained over the sprockets 240, 242 and 228 so that upon rotating the drive sprocket 240 the drive sprockets 228 will be rotated in unison but in opposite directions. A suitable gear train is housed within a housing 246 (Figure 1) and is coupled to the drive shaft 236 adjacent the lower end thereof. Power is supplied to said gear train by means of a transmission shaft 248 which is connected to a gear train contained within a housing 250 which is mounted on the machine adjacent the idler roller 48 of the conveyor belt 56. Power is supplied to the gear train within the housing 250 through rotation of the idler roller 48 as the latter is driven by the belt 56, and thus it will be seen that the sack-closing chains 220 and 226 will be moved in unison with the movement of the conveyor belt 56.

In use, an operator places sacks S over the sack-extending units 116 from a point above the machine substantially as indicated at O in

Figure 1. The sacks S moving along with the endless conveyor 100 on the carriers 104 pass around the drum 98 in the direction of the arrows in Figure 1 so that they are turned upright with their mouths extended and moved in a rectilinear path beneath the discharge hopper of the article feeding device 172 at the sack-filling station. A charge of articles having been deposited in a sack while it is at rest beneath the filling station, the hand grip 148 is moved upwardly to release the expanding pressure of the sack-expanding units 116 so as to allow the sack with its contents to drop a short distance onto the conveyor apron 56. Such downward movement of the sack with relation to its respective carrier 104 causes the sack mouth expanding units 116 to be withdrawn from the sack mouth a distance that will permit the fingers 156 to rock inwardly and force the folds of the gussets of the sack inwardly to start the mouth of the sack to close. When a sufficient group of sacks S has moved along the conveyor apron 56 between the chain-supporting members 190 and 192, the members are advanced toward one another into substantially the position illustrated in Figure 12 so as to pinch the mouth of the sack between the chains 220 and 226, as illustrated in Figure 3, and close the sack mouth. The mouth of the sack is held closed by the chains 220 and 226 until the sacks pass beyond the end of the sack-closing unit, at which point they are removed from the conveyor apron 56 to be sewn or otherwise fastened to prevent the escape of the contents of the sack. Obviously, owing to the drive mechanism employed, the empty sacks will be advanced in a step-by-step motion by the carrier 100 toward the sack-loading station, at which they pause for a time sufficient to enable the sack at rest thereunder to be filled, and by reason of the fact that the conveyor apron 56 is actuated in timed relation with the advance of the carrier 100, it will be evident that the filled sacks S will be moved away from the filling station in unison with the advance of the empty sacks. Likewise, owing to the fact that the sack-closing chains 220 and 226 are driven in unison with the movements of the conveyor apron 56, it will be obvious that they too will operate in step-by-step and timed relation with the rest of the mechanism.

While in the foregoing there has been shown and described the preferred embodiment of this invention, it is to be understood that minor changes in the details of construction, combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as claimed.

Having described the invention, what is claimed as new is:

1. In a packaging machine, a carrier mounted to move in a horizontal path beneath a sack-filling station, spaced sack mouth-extending units mounted on the carrier to move around the carrier, yielding means carried by the carrier to move the sack mouth-extending units outwardly and into contact with the sides of a sack adjacent the mouth thereof to hold said sack extended on the carrier, gusset folding fingers mounted on the carrier to move around the carrier perpendicular to the direction of movement of the sack mouth-extending units, and yielding means carried by the carrier to move the fingers inwardly and into contact with

the gussets of a sack held by the sack mouth-extending units.

2. In a packaging machine, a carrier mounted to move in a horizontal rectilinear path beneath a sack-filling station, sack mouth-extending units mounted on the carrier to move in spaced vertical arcs around the carrier, yielding means carried by the carrier to move the sack mouth-extending units outwardly and into contact with a sack adjacent the mouth thereof to hold said sack extended on the carrier, gusset folding fingers mounted on the carrier to move in vertical arcs around the carrier which lie perpendicular to the arcs in which the sack mouth-extending units move, and yielding means carried by the carrier to move the fingers inwardly and into contact with the gussets of a sack held by the sack mouth-extending units.

3. In a packaging machine, a carrier mounted to move in a horizontal path beneath a sack-filling station, sack mouth-extending units mounted on the carrier adjacent opposite sides thereof to move in vertical arcs around the carrier, yielding means carried by the carrier and operable between the sack mouth-extending units to move said units outwardly and into contact with the sides of a sack adjacent the mouth thereof to hold said sack extended on the carrier, gusset folding fingers mounted on the carrier to move in arcs around the carrier which lie perpendicular to the arcs in which the sack mouth-extending units move, and yielding means carried by the carrier to move the fingers inwardly and into contact with the gussets of a sack held by the sack mouth-extending units.

4. In a packaging machine, a carrier mounted to move in a horizontal path beneath a sack-filling station, sack mouth-extending units mounted on the carrier adjacent opposite sides thereof to move in vertical arcs around the carrier, yielding means carried by the carrier to move the sack mouth-extending units outwardly and into contact with the sides of a sack adjacent the mouth thereof to hold said sack extended on the carrier, gusset folding fingers mounted on the carrier adjacent opposite ends thereof to move in arcs around the carrier which lie perpendicular to the arcs in which the sack mouth-extending units move, and yielding means carried by the carrier to move the fingers inwardly and into contact with the gussets of a sack held by the mouth-extending units.

5. In a packaging machine, a carrier mounted to move in a horizontal path beneath a sack-filling station, spaced sack mouth-extending units mounted on the carrier to move around the carrier, yielding means carried by the carrier to move the sack mouth-extending units outwardly and into contact with the sides of a sack adjacent the mouth thereof to hold said sack extended on the carrier, gusset folding fingers mounted on the carrier to move around the carrier perpendicular to the direction of movement of the sack mouth-extending units, a link connected to the fingers for simultaneously moving said fingers in opposite directions, a collar on the link intermediate the ends thereof, a bracket pivoted to the carrier adjacent one side thereof, said bracket having a guide opening therein through which the link extends and a compression coiled spring encircling the link between the collar and the bracket to exert yielding pressure on the collar and yieldingly move the fingers inwardly and into contact with the gussets of a sack held by the sack mouth-extending units.

6. In a packaging machine having a carrier mounted to move in a horizontal path beneath a sack filling station, means for so moving said carrier, means on the carrier for supporting a sack thereon in an upright position with its mouth extended, and a conveyor moving in a horizontal path around the carrier for supporting a filled sack and moving it beyond the filling station, means for closing the mouth of the filled sack comprising gusset folding fingers carried by the carrier and movable around said carrier toward one another under yielding pressure against the gussets of the sack adjacent the mouth thereof for partially contracting the mouth of the sack and traveling means movable above the conveyor adjacent the top of the sack for engaging opposite sides of the sack adjacent the mouth thereof and closing the mouth of the sack as it moves beyond the filling station.

7. In a packaging machine having a carrier mounted to move in a horizontal rectilinear path beneath a sack-filling station, means for so moving said carrier, means on the carrier for supporting a sack thereon in an upright position with its mouth extended and a conveyor moving in a horizontal rectilinear path around the carrier for supporting a filled sack and moving it beyond the filling station, means for closing the mouth of the filled sack while it is moving beyond the filling station comprising gusset folding fingers carried by the carrier and movable toward one another under yielding pressure against the gussets of the sack adjacent the mouth thereof for partially contracting the mouth of the sack and traveling means movable horizontally above the conveyor and below the level of the carrier for engaging the sides of the sack adjacent the mouth thereof and closing the mouth of the sack as it moves beyond the filling station.

8. In a packaging machine having a carrier mounted to move in a horizontal rectilinear path beneath a sack-filling station, means for so moving said carrier, means on the carrier for supporting a sack thereon in an upright position with its mouth extended and a conveyor moving in a horizontal rectilinear path around the carrier for supporting a filled sack and moving it beyond the filling station, means for closing the mouth of the filled sack while it is moving beyond the filling station comprising gusset folding fingers carried by the carrier and movable toward one another under yielding pressure against the gussets of the sack adjacent the mouth thereof for partially contracting the mouth of the sack, and endless chains moving in juxtaposed horizontal paths above the conveyor and below the level of the carrier for engaging the sides of the sack adjacent the mouth thereof and closing the mouth of the sack as it moves beyond the filling station.

9. In a packaging machine, a series of carriers joined together to move in a horizontal rectilinear path beneath a sack-filling station; means

carried by each carrier to support a sack thereon in an upright position with the mouth of the sack extended; means on each carrier to fold the gussets of a sack inwardly adjacent the mouth of the sack after the sack has been filled at the filling station; a conveyor movable beneath the carriers to support filled sacks and move them away from the filling station; means movable above the conveyor and below the carriers for engaging opposite sides of a filled sack adjacent the mouth thereof and closing the mouth of said sack; and common drive means adjacent one end of the series of carriers to move the carriers, the conveyor and the sack-closing means in unison.

10. In a packaging machine, a carrier mounted to move in a horizontal path beneath a sack-filling station, sack mouth-extending units mounted on the carrier to move in spaced arcs around the carrier, yielding means carried by the carrier to move the sack mouth-extending units outwardly and into contact with the sides of a sack adjacent the mouth thereof to hold said sack extended on the carrier, gusset folding fingers mounted on the carrier to move in spaced arcs around the carrier which lie perpendicular to the direction of movement of the sack mouth-extending units, and yielding means carried by the carrier to move the fingers inwardly and into contact with the gussets of a sack held by the sack mouth-extending units.

11. In a packaging machine of the type in which sack carriers carrying sacks to be filled are successively moved beneath a sack-filling station, means on each carrier to hold a sack thereon with its mouth extended, said means comprising sack mouth-extending units pivoted to the carrier to move in aligned arcs which lie around the carrier, yielding means carried by the carrier to move said units outwardly and into engagement with the inner faces of the sides of a sack adjacent the mouth thereof, fingers pivoted to the carrier to move in aligned arcs around the carrier, and yielding means carried by the carrier to move the fingers inwardly and into engagement with the outer faces of the gussets of the sack adjacent the mouth thereof, said fingers cooperating with the sack-extending units in frictionally supporting a sack on a carrier.

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