Aug. 5, 1958 D. R. FORRY 2,845,764

WRAPPER FEED FOR A MEAT PACKAGING MACHINE

Filed April 30, 1956 4 Sheets-Sheet 1

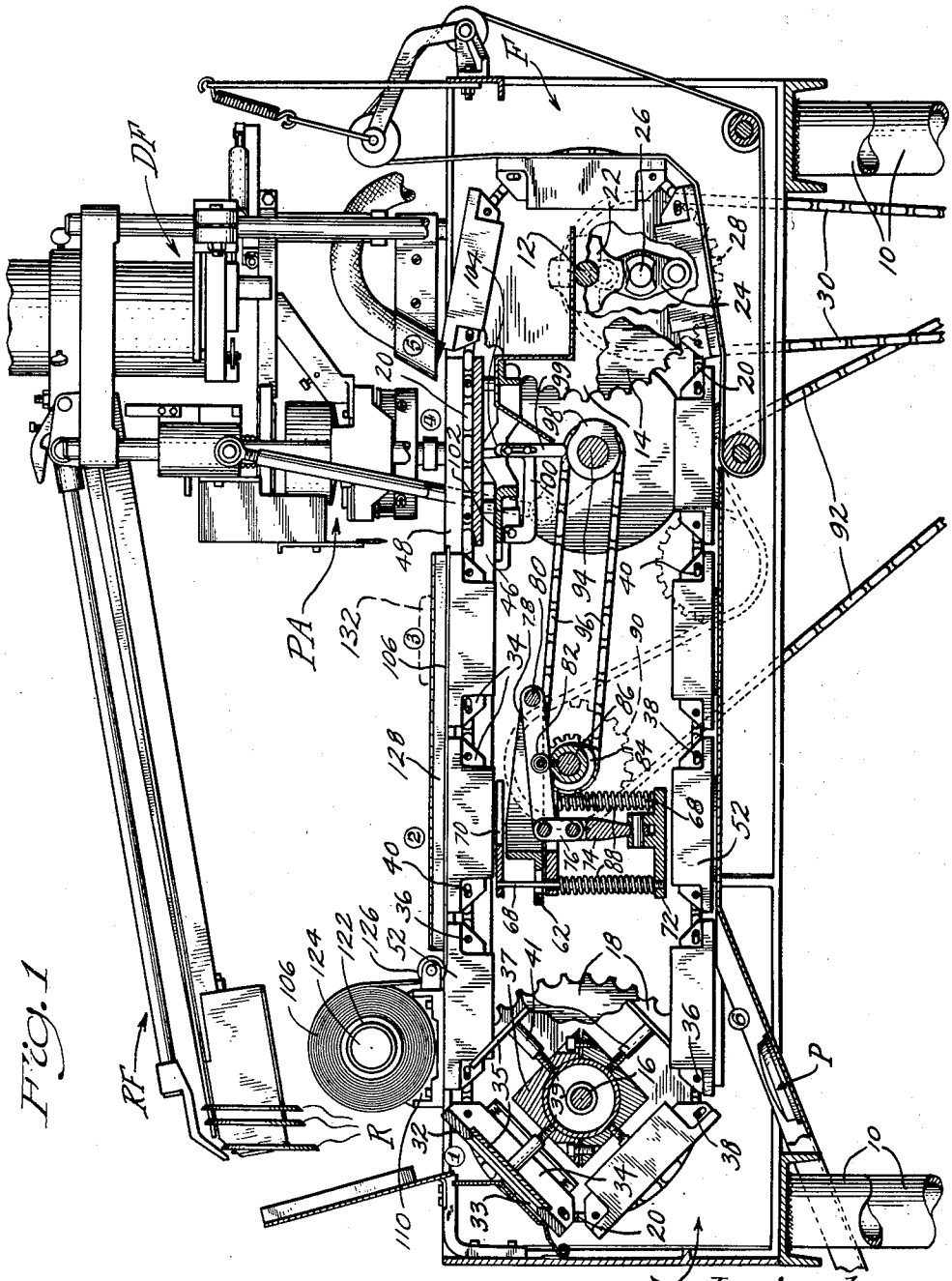


Fig. 1

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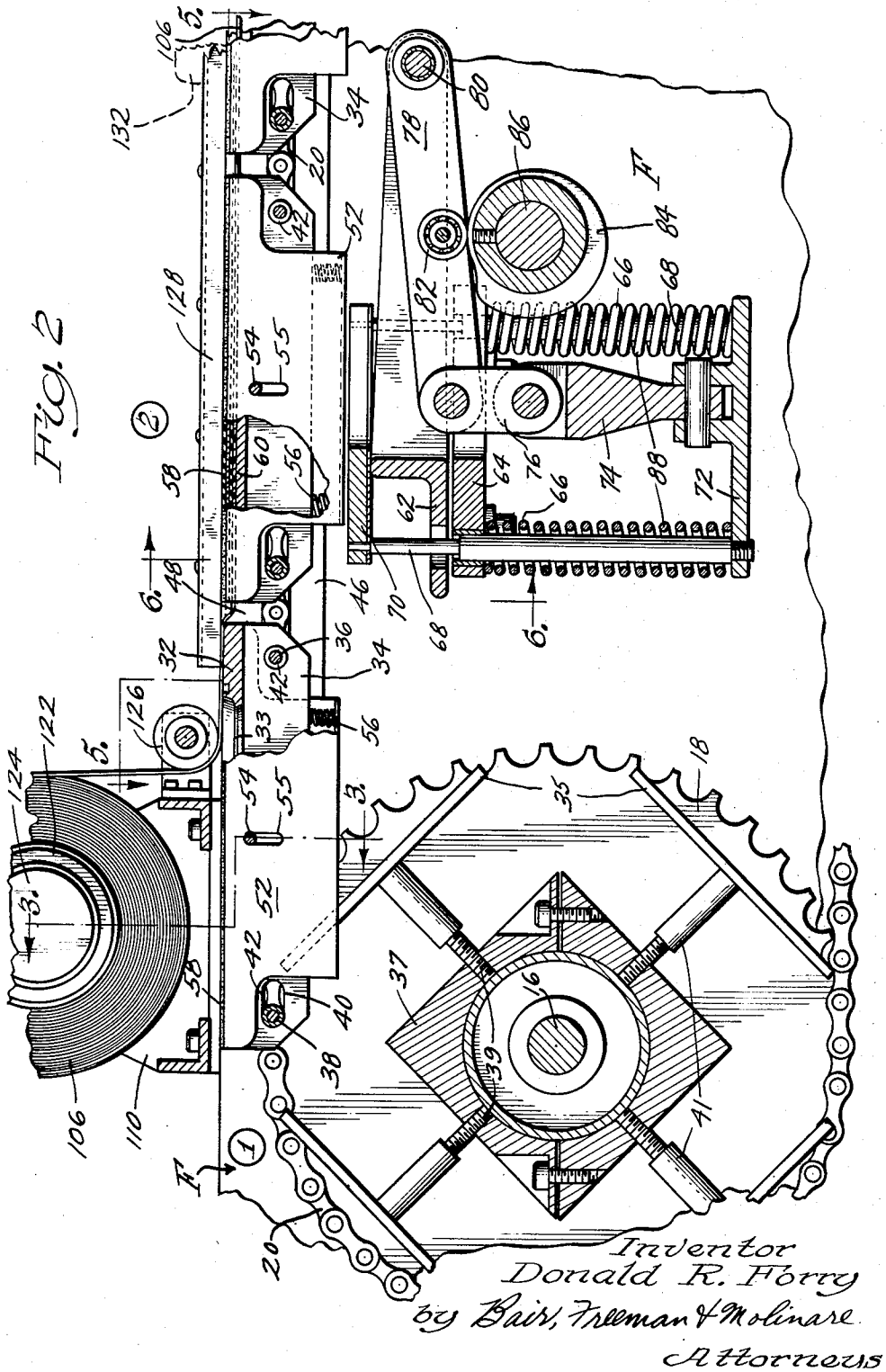


Fig. 2

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WRAPPER FEED FOR A MEAT PACKAGING MACHINE

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FIG. 3

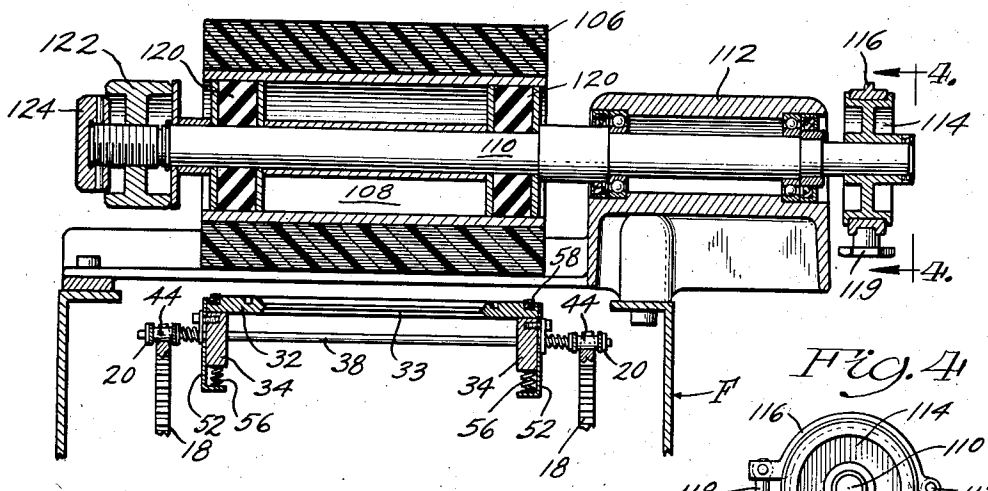


FIG. 4

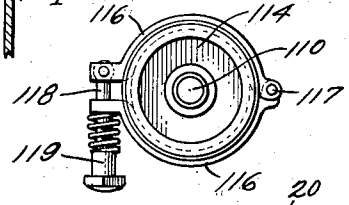
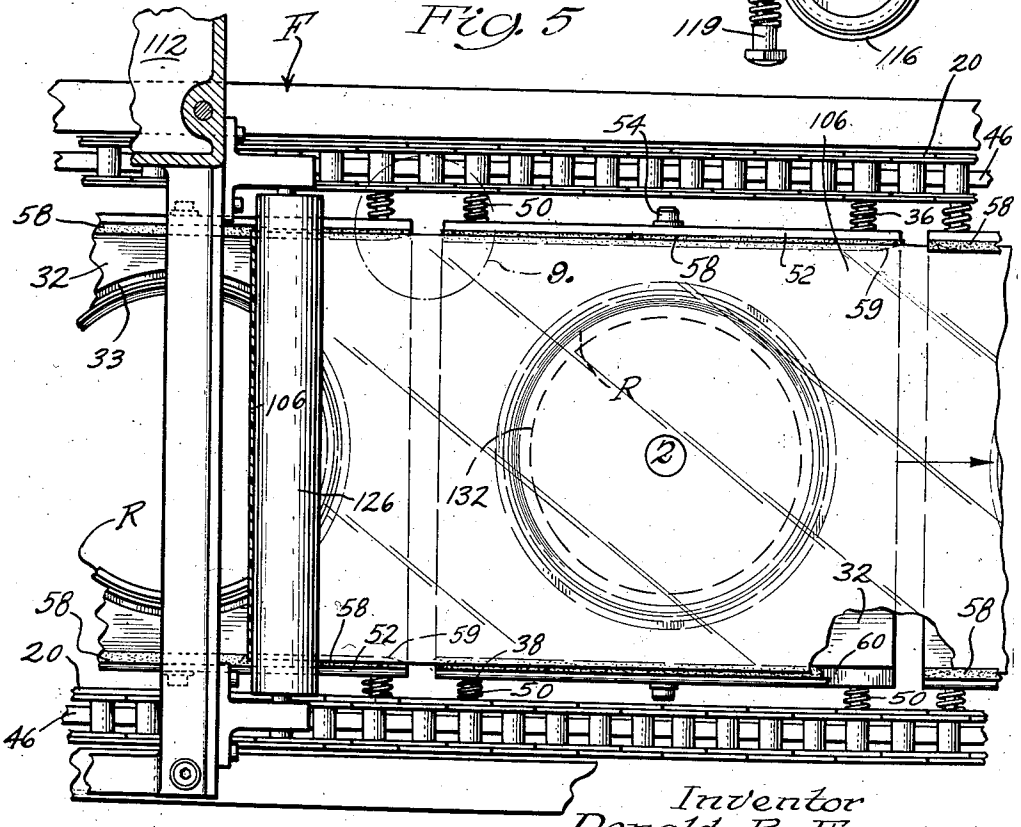


FIG. 5



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WRAPPER FEED FOR A MEAT PACKAGING MACHINE

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FIG. 6

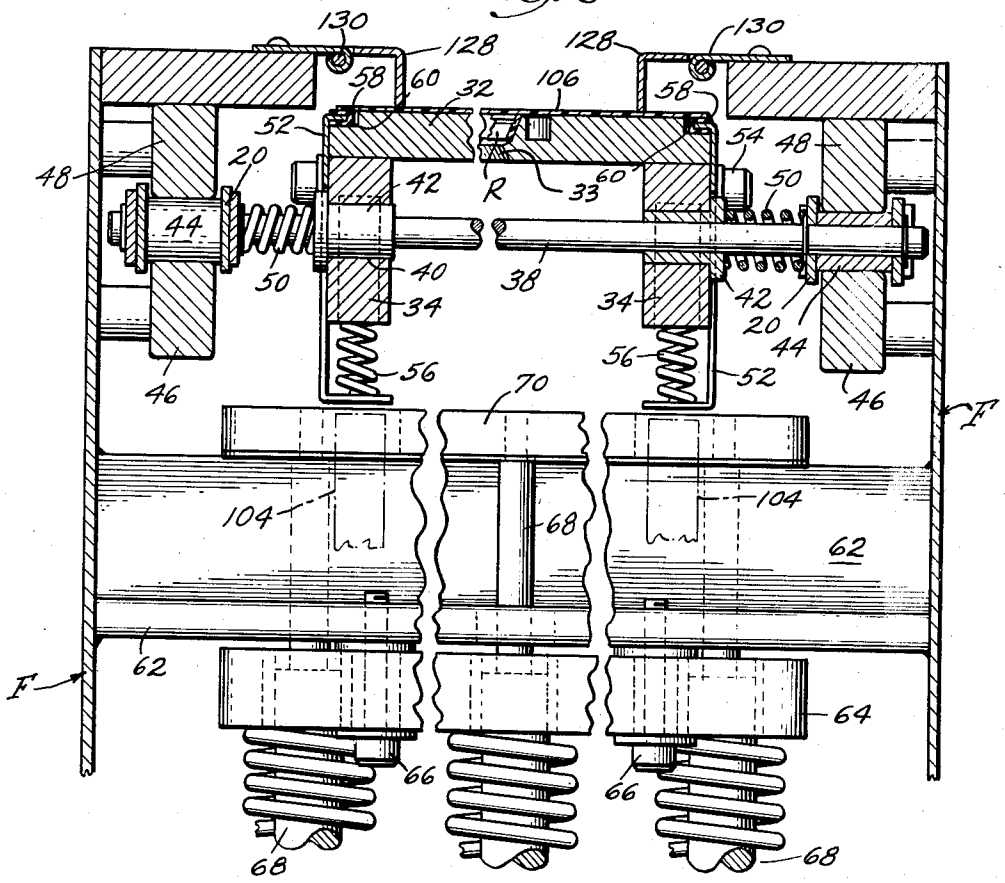


FIG. 9

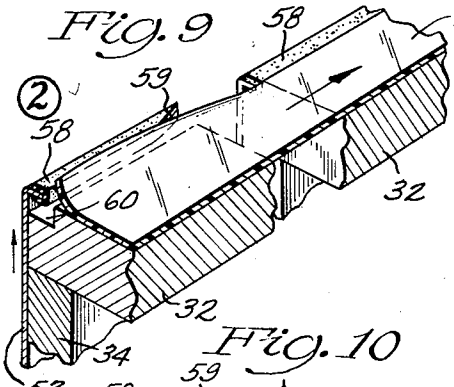


FIG. 7

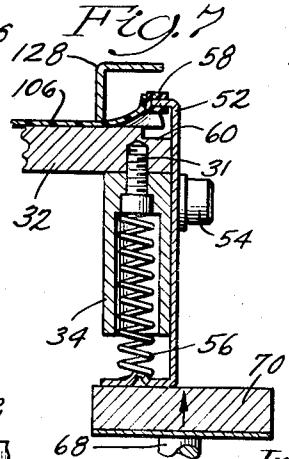


FIG. 8

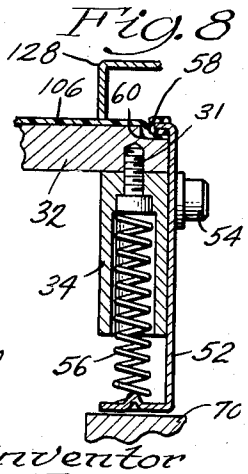
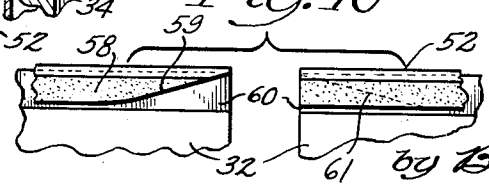


FIG. 10



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WRAPPER FEED FOR A MEAT PACKAGING MACHINE

Donald R. Forry, Hilliards, Ohio, assignor, by mesne assignments, to Dale E. McCarty, Fostoria, Ohio

Application April 30, 1956, Serial No. 581,680

11 Claims. (Cl. 53—220)

This invention relates to an automatic wrapper feed for a meat packaging machine involving a package consisting of retaining ring, disc and wrapper as shown in the patent applications of Dale E. McCarty, Serial No. 295,940, filed June 27, 1952, and now abandoned, Serial No. 338,667, filed February 25, 1953, now Patent No. 2,754,959, and Serial No. 359,091, filed June 2, 1953, now Patent No. 2,811,818, which wrapper such as transparent "Saran" is used in conjunction with retaining rings and discs that may be sprung into the retaining rings to retain between the wrapping material and the disc, meat or other products in an air-tight manner for sale in retail grocery stores and the like.

One object of the invention is to provide an automatic means to feed a strip of wrapping material to successive ring plates of a packaging machine conveyor and superpose the wrapping material on rings carried by the conveyor, the meat or other product to be wrapped then being superposed on the wrapping material followed by the introduction of a disc on top of the product and an assembly operation at one station of the machine that forces the product through the retaining ring and the disc into a groove of the ring for completing the package.

Another object is to provide specially constructed ring plates spaced along a conveyor and provided with clamping means for the wrapping material along the side edges of the plates which clamping means is released to permit introduction of the wrapping material or Saran to the clamps at a clamp station and thereafter rendered effective to clamp the Saran to the ring plate while it passes a loading station and when it arrives at an assembly station.

Still another object is to provide clamp release means at the assembly station where a package assembler trims the wrapping material to the desired size and the excess is then removed at a removal station.

A further object is to provide guide means for the edges of the Saran to insure proper introduction thereof into the clamp means when opened so as to provide maximum efficiency in the operation of the clamp when it closes and insure a substantially wrinkle-free wrapper so that the wrapping material can properly support the meat or other product until such time as the package assembler comes into operation at the assembly station of the machine.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my wrapper feed for a meat packaging machine, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in detail on the accompanying drawings, wherein:

Fig. 1 is a vertical sectional view through a packaging machine for meat and the like showing my wrapper feed applied thereto in—

(1) This application, other aspects of the machine being disclosed and claimed in the following copending applications;

(2) My application—Serial No. 580,124, filed April 23, 1956;

(3) The joint application of myself and Henry B. Tryon, Serial No. 581,131, filed April 27, 1956, now Patent No. 2,815,624;

(4) The application of James W. Smelker, Serial No. 580,036, filed April 23, 1956;

Fig. 2 is an enlargement of the left end of Fig. 1 to show details of construction and the cooperation of various elements of the wrapper feed mechanism;

Fig. 3 is a vertical sectional view on the line **3—3** of Fig. 2;

Fig. 4 is an end view of a portion of Fig. 3 as indicated by the line **4—4** thereof;

Fig. 5 is a plan view partly in section on the line **5—5** of Fig. 2;

Fig. 6 is an enlarged vertical sectional view on the line **6—6** of Fig. 2 showing details of construction and the wrapper in one position relative to a ring plate;

Figs. 7 and 8 are views similar to a portion of Fig. 6 showing different successive positions of the clamp, Saran and ring plate;

Fig. 9 is a perspective view partly in section showing details within the circle **9** of Fig. 5; and

Fig. 10 is an enlarged plan view of Fig. 9.

On the accompanying drawings, the reference character F indicates in general the frame of the machine on which the various operating elements thereof to be described are mounted. The frame F may be supported by four posts **10** extending upwardly from a suitable base (not shown).

Journalled in the frame F is a main shaft **12** on which is mounted a pair of main sprockets **14**. Also journalled in the frame F is an idler shaft **16** on which is a pair of idler sprockets **18**. A pair of conveyor chains are trained around the sprockets **14** and **18** for the purpose of carrying ring plates **32** for rings R to successive stations of the machine as will hereinafter appear. These stations are indicated by numbers in circles as follows:

① Ring feed station
② Saran clamp station
③ Loading station
④ Assembly station
⑤ Saran removal station
⑥ Discharge station

For driving the main shaft **12**, a Geneva wheel **22** is provided, operated by a Geneva arm **24**. The Geneva arm **24** is secured to a Geneva arm shaft **26** on which is mounted a drive sprocket **28**. A drive chain **30** extends from the drive sprocket **28** downwardly to a suitable source of power such as an electric motor with an appropriate step-down gearing which being conventional are not shown.

The ring plates **32** are spaced along the conveyor chains **20** and each has a circular opening **33** therein to receive a ring R. Each plate **32** also has a pair of side flanges **34** mounted thereon by capscrews **31** as shown in Figs. 7 and 8 and extending downwardly past the chains **20** through which propelling rods **36** extend from one chain to the other. Also, positioning rods **38** extend through slots **40** of the flanges **34** which arrangement permits the chains **20** to extend around the sprockets **14** and **18** and at the same time properly carry the ring plates **32** with them and around the sprockets as the chains travel due to rotation of the sprockets.

The sprocket shaft **16** carries four ring trap bases **35** adjustably mounted on a ring trap base holder **37** se-

cured to the shaft. Rods 39 and tubes 41 are threaded together for adjustment purposes and support the ring trap bases 35, the adjustment permitting the ring traps to occupy the proper position with respect to the ring plates 32 as the plates pass around the sprockets 18.

The machine disclosed includes a ring feed mechanism shown generally at RF, a package assembler shown generally at PA and a disc feed shown generally at DF which are fully disclosed and claimed in the three co-pending applications herein mentioned in connection with the description of Fig. 1.

The rods 36 and 38 extend through bushings 42 which are located in the flanges 34, the flanges having circular openings that fit the bushings 42 for the rod 36 and slots 40 to receive the bushings 42 for the rods 38 so that they are movable in the slots to permit closer spacing of the rod 38 relative to the rod 36 as the ring plates 32 pass around the sprockets 14 and 18. Also, as shown in Fig. 6 the outer ends of the rods 36 and 38 are provided with guide rollers 44 which pass between lower guide bars 46 adjacent the sides of the frame F and upper guide bars 48. The coaction of the rollers 44 with the guide bars 46 and 48 insures proper vertical alignment for the upper stretch of the chains 20 and the ring plates 32 as they traverse the upper stretch to provide for proper operation of Saran clamps 52 which will now be described.

The Saran clamps 52 comprise channel-shaped plates as shown in Fig. 6 which are slidable vertically relative to the side flanges 34 of the ring plates 32, being mounted each on its adjacent side plate by a single cap screw 54 through a slot 55. The clamps 52 are each normally biased downwardly to the positions shown in Figs. 6 and 8 by a pair of springs 56, one adjacent each end of the clamp. The upper flanges of the clamp 52 are provided with a friction gripping element 58 in the form of a channel of neoprene or the like.

The side edges of the ring plates 32 are rabbeted as indicated at 60 to accommodate the gripping elements 58. A cross-member 62 is provided between the sides of the frame F and a guide frame 64 is secured thereto as by cap screws 66. Three slide rods 68 are vertically slidable in the guide frame 64 and have a Saran clamp actuating plate 70 secured to their upper ends. Their lower ends are connected together by a slide rod connector 72. A pair of links 74 and 76 operatively connect the connector 72 with a lever 78 pivoted at 80 and carrying a roller 82. The roller 82 engages a cam 84 on a cam shaft 86 and is biased into contact with the cam by cam follower springs 88 mounted on the rods 68 and interposed between the guide frame 64 and the connector 72. A sprocket 90 (see Fig. 1) is provided on the shaft 86 for rotating it and a drive chain 92 extends downwardly therefrom to the step-down gearing already mentioned as driving the chain 30. The cam shaft 86 is thus driven in timed relation with the chain 30 and consequently with the Geneva drive 22—24.

A second cam shaft 94 is journalled in the frame F and is driven by a chain 96 from the cam shaft 86. A cam 98 on the cam shaft 94 is adapted to actuate a cam follower 99 secured to one of a pair of Saran clamp release arms 100 secured to a rock shaft 102. The arms 100 have ends 104 (their position being indicated by dot-and-dash lines in Fig. 6) adapted to engage the Saran clamps 52 at station ④ and release them when the cam 98 raises the follower 99.

The wrapping material used in my machine such as Saran is shown at 106. A supply of the Saran is rolled on a supply roller 108. This roller is carried by a mandrel 110 rotatable in a bearing 112 secured to the frame F. A brake drum 114 is secured to the mandrel 110 and brake shoes 116 cooperate therewith, the shoes being pivoted on a supporting rod 117 extending from the bearing 112. A clamp bolt 118 and clamp nut 119 are associated with the brake shoes to place them under adjustable spring tension.

Expansible plugs 120 of rubber or the like span the distance between the mandrel 110 and the roller 108 and may be expanded by a nut 122 threaded on the mandrel. A nut retainer 124 is pinned to the mandrel to prevent disassociation of the nut 122 relative thereto. The Saran 106, after leaving the roller 108, passes under an idler roller 126 to lie on the ring plates 32 as shown in Fig. 5, and hold-down angles 128 are associated therewith as shown in Figs. 2 and 6. These angles are hinged so as to rest on the Saran by gravity yet may be turned back out of the way in the event access is required to the Saran for initially threading it to the Saran clamps 52.

Practical operation

In the operation of my wrapper feed, the wrapper 106 lies on top of that ring plate 32 which is beneath the roll 108 and also on top of the friction gripping elements 58 of the Saran clamps 52 thereof as shown in Fig. 6. It likewise overlies the elements of the ring plate at station ②. The Saran clamps 52 are elevated at this station (see the left-hand ring plate in Fig. 9 and as shown in Fig. 7) by the cam 84 and intermediate elements 82, 78, 76, 74, 72, 68 and 70. The hold-down angle 128 affords a degree of stiffness for the edge of the Saran so that it snaps under the element 58 after it is elevated slightly further than shown in Fig. 7.

Thereupon the Saran clamp 52 is lowered again by the cam 84 permitting the actuating plate 70 to be depressed by the springs 88 and the clamp assumes the final position shown in Fig. 8 with the edge of the Saran clamped under the action of the springs 66. The right-hand ring plate 32 in Fig. 9 illustrates this clamped position also.

Referring to Fig. 5, the Saran 106 overlies the elements 58 of the left-hand ring plate 32 and the middle ring plate. It is shown clamped under the elements 58 of the right-hand ring plate. When the elements 58 at station ② are elevated and then again depressed as described in the preceding paragraph, the elements 58 of the middle ring plate would likewise overlie the edges of the Saran. To facilitate the movement of the edges of the Saran from above the elements 58 of the middle plate 32 in Fig. 5 to a position therebelow as these elements are elevated and then depressed (Figs. 7 and 8), the forward ends of these elements and the flanges of the Saran clamps 52 on which they are mounted are cut off at an angle indicated at 59 in Figs. 5, 9 and 10.

Since the elements 58 are at opposite edges of the Saran, they tend to stretch it tightly across the ring plate and the ring R in the circular opening 33 thereof as they enter the rabbets 60. This provides a suitable support for several slices of meat or other product (shown dotted at 132 in Figs. 1, 2 and 5) that are subsequently deposited on the Saran centered over the ring at station ③.

The meat is later wrapped at the package assembling station ④ as disclosed in the Forry and Tryon application hereinbefore referred to. Also, at station ④ the elements 58 are again elevated to release the Saran by the action of the cam 98 on the cam follower 99 to rock the shaft 102 and thereby swing the Saran clamp release arms 100 and elevate their ends 104 from the dot-and-dash position shown in Fig. 6 as more fully disclosed in said application.

From the foregoing specification it will be obvious that I have provided a wrapper feed arrangement which effectively clamps a width of wrapping material along its side edges to a plate in overlying relation to a ring so as to support the product to be wrapped on the taut wrapper and present the ring, wrapper and product to a package assembler in such relation to each other that the assembly is readily effected in the manner set forth in the Forry and Tryon application.

Some changes may be made in the construction and

arrangement of the parts of my wrapper feed without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents which may reasonably be included within their scope.

I claim as my invention:

1. In a wrapper feed for a packaging machine, a conveyor having plates, a roll of wrapping material adapted to be fed onto said plates with the width of the material spanning the plates, means to effect wrapper feeding comprising a wrapper clamp at each side edge of each plate, means at a station of the packaging machine for raising said clamps to permit the wrapper edges to spring under them and lowering said clamps to clamp the marginal edges of the wrapper against the top of the plate, and means spaced from said marginal edges to hold the wrapper against the plate.

2. In a wrapper feed of the character disclosed, a conveyor having ring plates to support rings for packages, a roll of wrapping material adapted to be fed onto said plates to span the rings supported thereby, means to effect wrapper feeding comprising clamps on each plate for the side edges of the wrapper, and means at a wrapper feed station of the packaging machine for releasing and reapplying said clamps, the side edges of said plates being rabbeted for said clamps to stretch the wrapper across the plate as said clamps are reapplied.

3. In a wrapper feed for a packaging machine, a conveyor having ring plates to support rings for the packages, a roll of wrapping material adapted to be fed onto said plates to span the rings supported thereby, means to effect such feeding comprising clamps on each plate extending along the side edges thereof, said side edges being rabbeted to receive said clamps, spring means biasing said clamps to clamping position, and means at a wrapper feed station of the packaging machine for moving said clamps against their bias for thus releasing them and for then permitting the clamps to be reapplied under their spring bias with the clamps as they enter said rabbets stretching the wrapper across the plate.

4. In a wrapper feed for a packaging machine, a conveyor having ring plates to support rings for the packages, a roll of wrapping material adapted to be fed onto said plates to span the rings supported thereby and support a product to be wrapped centered above the ring, means to effect such feeding comprising clamps on each plate extending along the side edges thereof, spring means biasing said clamps to clamping position, means at a wrapper feed station of the packaging machine for moving said clamps against their bias for thus releasing them and for then permitting the clamps to be reapplied under their spring bias, said clamps thereupon moving the wrapper with the ring plate as said conveyor advances.

5. In a wrapper feed for a packaging machine, a conveyor having ring plates to support rings for the packages, a roll of wrapping material adapted to be fed onto said plates to span the rings supported thereby, means to effect such feeding comprising a clamp plate slidably carried by each side of each ring plate and having a holding flange overlying the upper marginal edge of the ring plate, said wrapping material being adapted to overlie said holding flanges, means normally biasing said holding flanges against said wrapping material to hold it clamped to the ring plate, and means at a wrapper feed station of the packaging machine for moving said clamp plates against their bias to permit the edges of the wrapper to spring under said holding flanges, said last means then permitting said holding flanges to return to clamping position in relation to said ring plate.

6. In a wrapper feed for a packaging machine, a conveyor having plates provided with rabbeted side edges, a roll of wrapping material adapted to be fed onto said plates to span them, means to effect wrapper feeding comprising a clamp plate slidably carried by each side of each plate and having a holding flange overlying the rabbet of the plate, said wrapping material being adapted to overlie said holding flanges, means normally biasing said holding flanges against the wrapping material to hold it clamped to the plate, and means at a station of the packaging machine for moving said clamp plates against their bias to permit the edges of the wrapper to spring under said holding flanges and then permitting said holding flanges to return to clamping position in said rabbets.

7. In a wrapper feed for a packaging machine, a conveyor having plates, a roll of wrapping material adapted to be fed onto said plates, means to effect such feeding comprising a clamp plate slidably carried by each side of each ring plate and having a holding flange overlying the upper marginal edge of the ring plate, said wrapping material being adapted to overlie said holding flanges, means normally biasing said holding flanges against said wrapping material to hold it clamped to the ring plate, means at a wrapper feed station of the packaging machine for moving said clamp plates against their bias to permit the edges of the wrapper to spring under said holding flanges and said last means then permitting said holding flanges to return to clamping position in relation to said ring plate, and means spaced inwardly from the edges of said wrapping material at said station to hold the wrapping material against the plate and thereby facilitate such springing of the edges of the wrapping material under said holding flanges.

8. In a wrapper feed for a packaging machine, a conveyor having ring plates to support rings for the packages, a roll of wrapping material adapted to be fed onto said plates to span the rings supported thereby, means to effect feeding of the wrapper by movement of said conveyor comprising a clamp plate slidably carried by each side of each ring plate and having a holding flange fitting a rabbet along the upper marginal edge of the ring plate, said wrapping material being adapted to overlie said holding flanges, means normally biasing said holding flanges against said wrapping material to hold it clamped in said rabbets and thereby stretched across said plates, means at a wrapper feed station of the packaging machine for moving said clamp plates against their bias to permit the edges of the wrapper to spring under said holding flanges, and means spaced inwardly from the edges of said wrapping material at said station to facilitate such springing of the edges of the wrapping material under said holding flanges, said last means being hinged for swinging to a position to permit access to said wrapper edges and holding flanges.

9. In a wrapper feed for a packaging machine, a conveyor having ring plates to support rings for the packages, a roll of wrapping material adapted to be fed onto said plates to span the rings supported thereby, means to effect feeding of the wrapper by movement of said conveyor comprising a clamp plate slidably carried by each side of each ring plate and having a holding flange fitting a rabbet along the upper marginal edge of the ring plate, said wrapping material being adapted to overlie said holding flanges, means normally biasing said holding flanges against said wrapping material to hold it clamped in said rabbets and thereby stretched across said plates, means at a wrapper feed station of the packaging machine for moving said clamp plates against their bias to permit the edges of the wrapper to spring under said holding flanges, and means spaced inwardly from the edges of said wrapping material at said station to facilitate such springing of the edges of the wrapping material under said holding flanges.

10. In a wrapper feed, a conveyor having plates, a roll of wrapping material adapted to be fed onto said plates, means to effect such feeding comprising a clamp plate slidably carried by each side of each plate and having a holding flange overlying the upper marginal edge thereof, said wrapping material being adapted to overlie said holding flanges, means normally biasing said

holding flanges against the wrapping material to hold it clamped to the ring plate, means for moving said clamp plates against their bias to permit the edges of the wrapper to spring under said holding flanges, said last means then permitting said holding flanges to return to clamping position in relation to said plate, and means spaced inwardly from the edges of said wrapping material to facilitate such springing of the edges of the wrapping material under said holding flanges.

11. In a wrapper feed for a packaging machine, a conveyor having successively arranged ring plates to support rings for the packages, a roll of wrapping material adapted to span the rings supported thereby, means to effect feeding of the wrapping material comprising a clamp plate slidably carried by each side of each ring plate and having a holding flange overlying the upper marginal edge of the plate, said wrapping material being adapted to initially overlie said holding flanges, means normally biasing said holding flanges against said wrapping material to hold it clamped to the ring plate whereby as the ring plate advances it will pull the wrapping material with it, and means for moving said clamp plates against their bias to permit the edges of the wrapper to spring from above to below said holding flanges, said last means then permitting said holding flanges to return under their bias to clamping position in relation to said ring plate.

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