

Jan. 13, 1970

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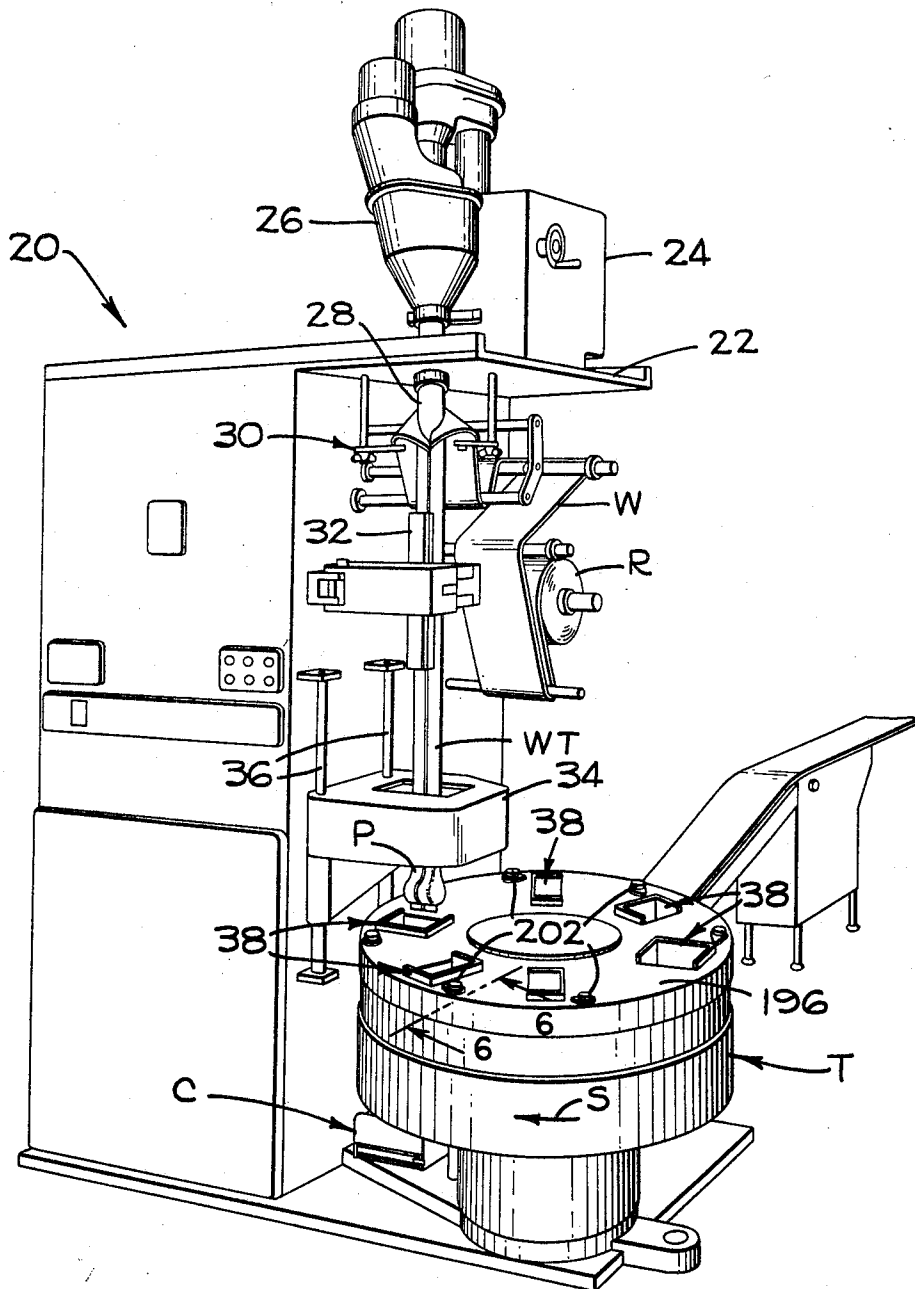
3,488,915

PACKAGE FILLING AND SEALING SYSTEMS

Filed Sept. 15, 1966

7 Sheets-Sheet 1

FIG. 1



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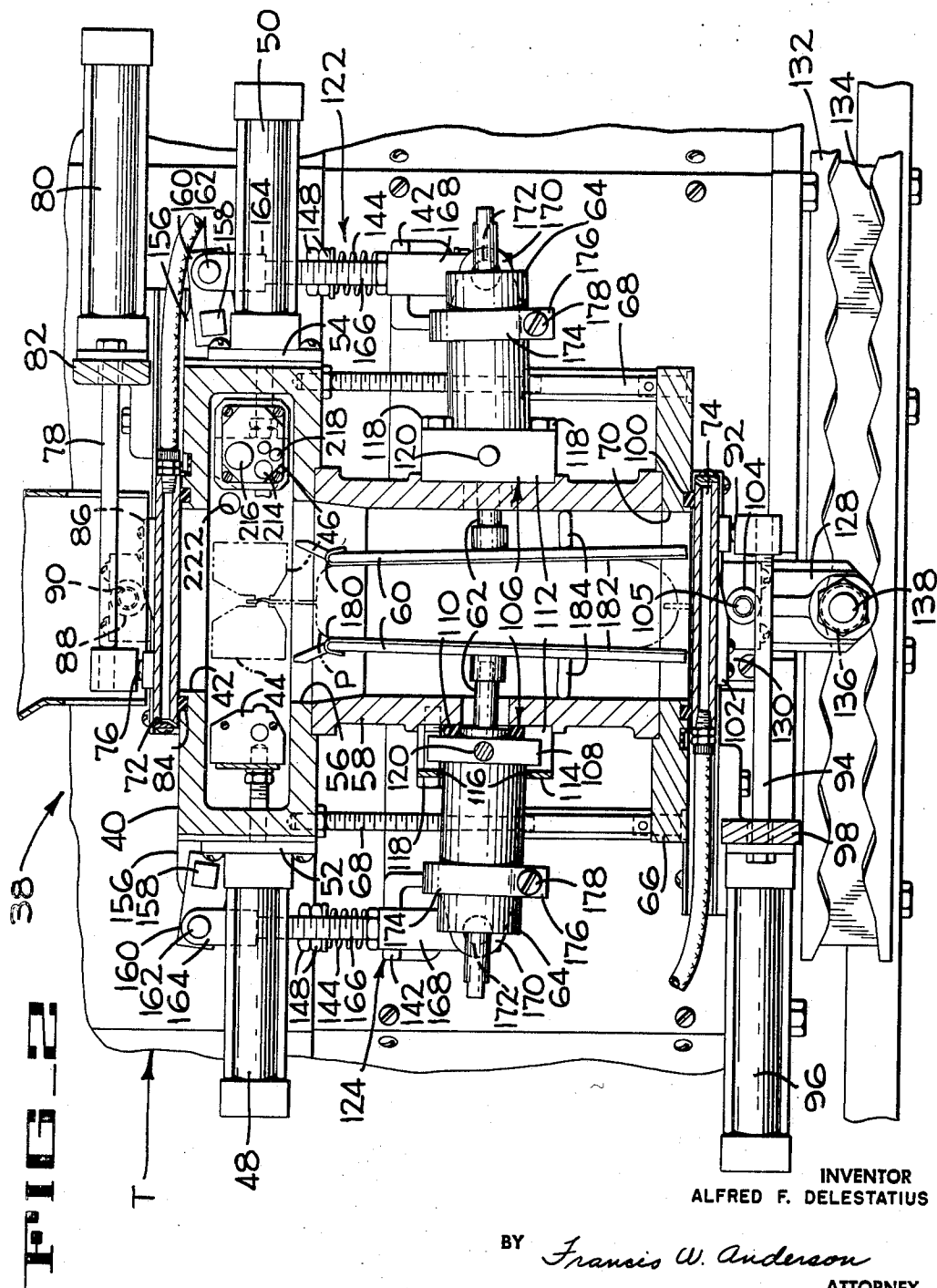
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PACKAGE FILLING AND SEALING SYSTEMS

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FIG. 3

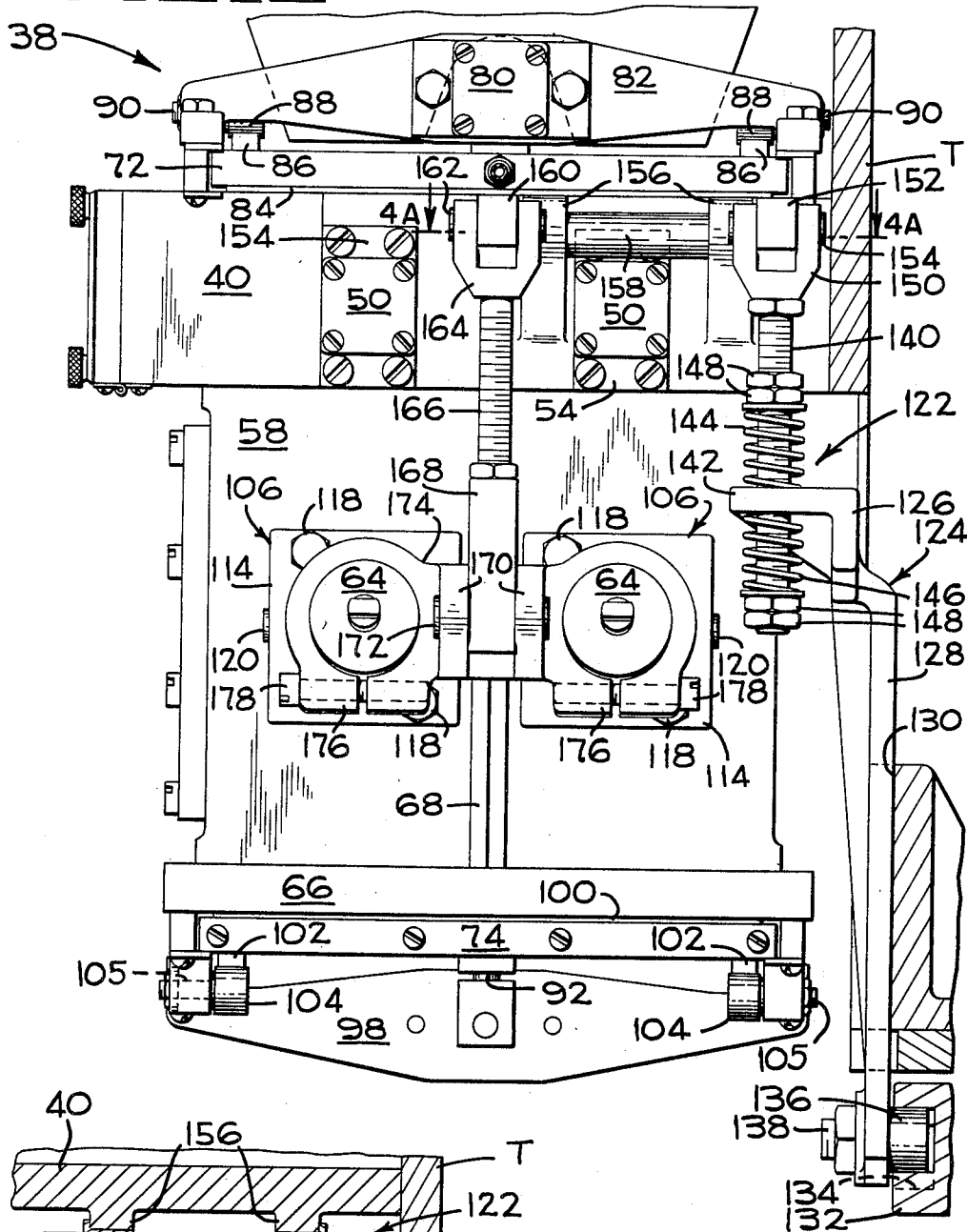


FIG_4A

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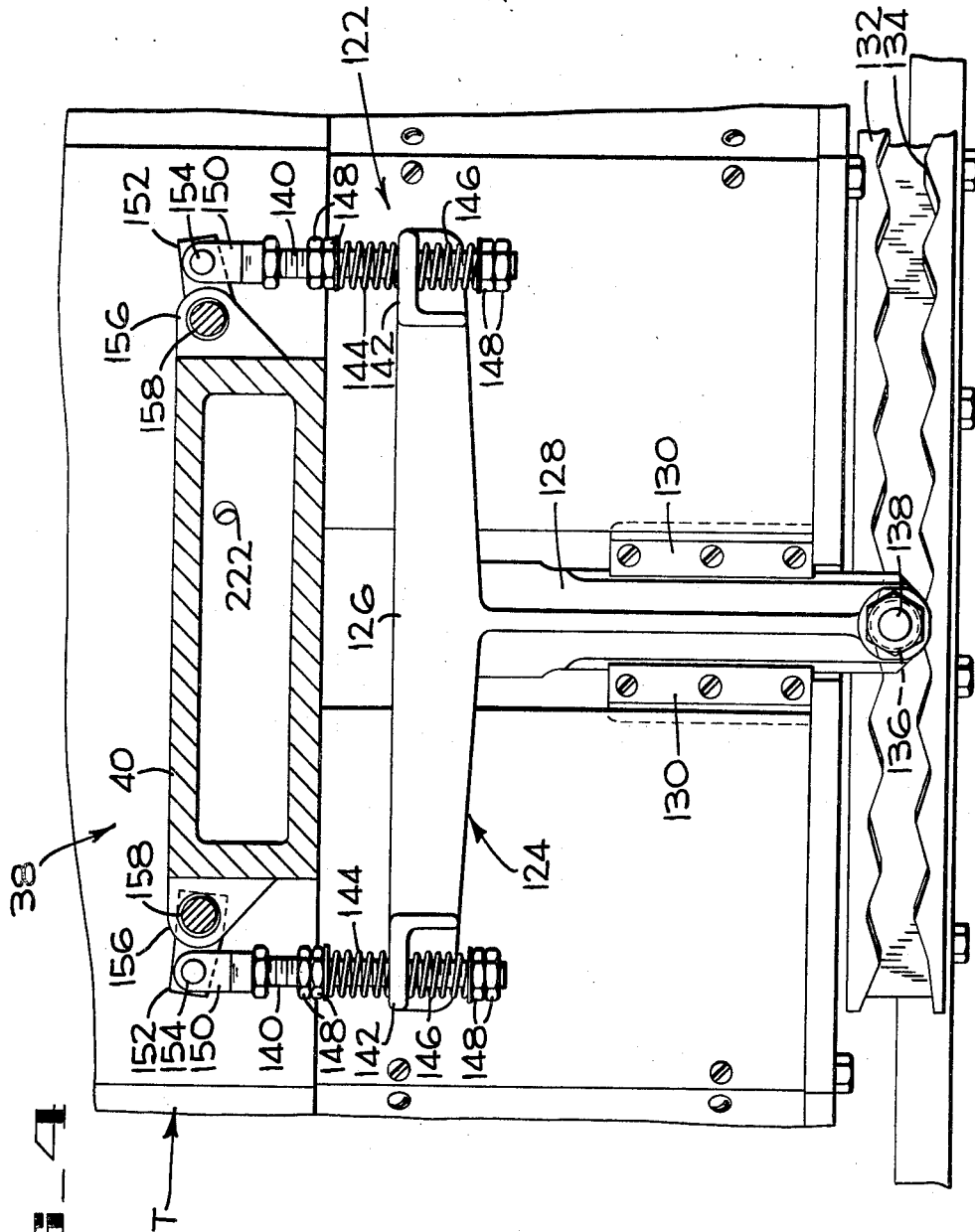
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PACKAGE FILLING AND SEALING SYSTEMS

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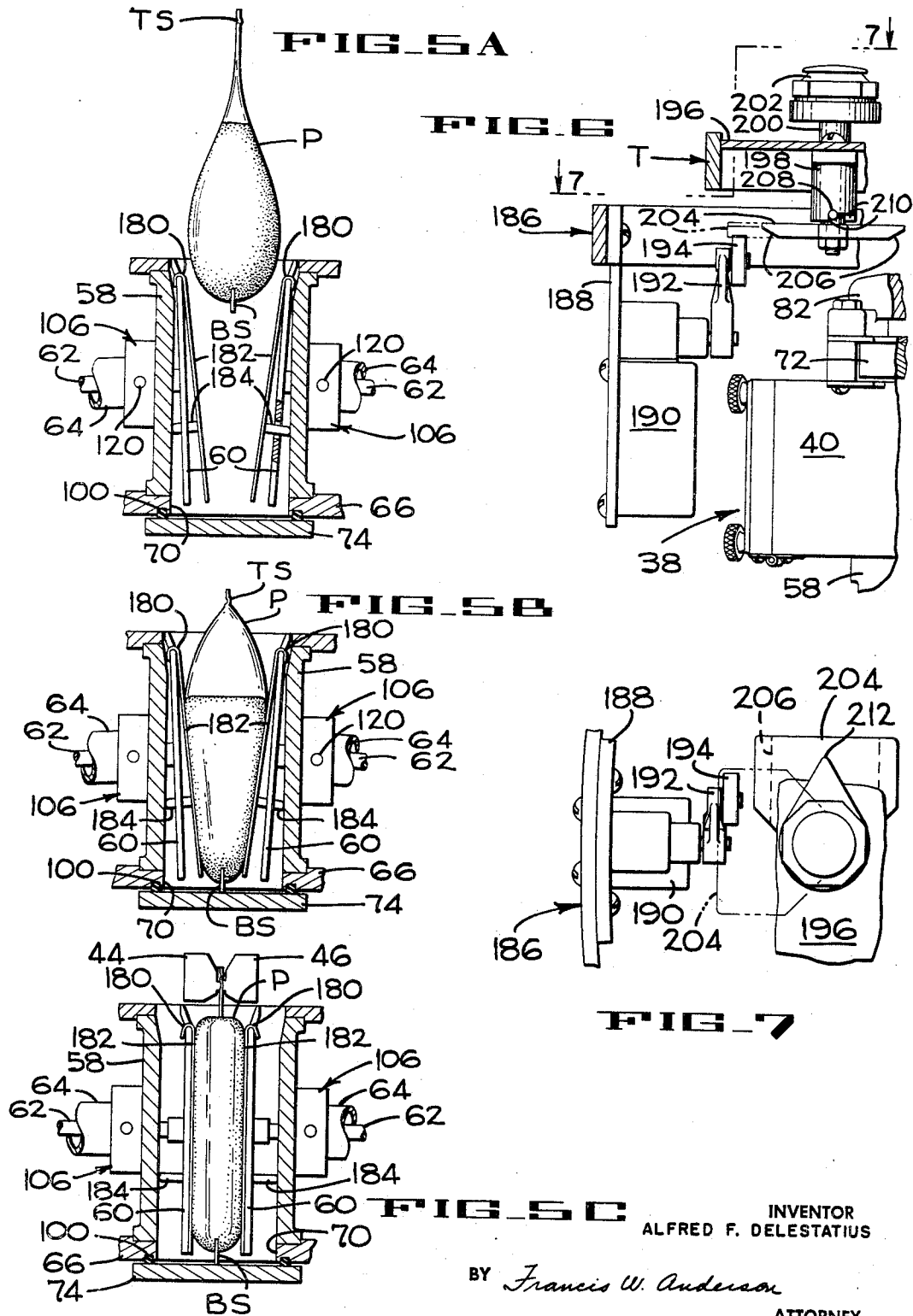
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PACKAGE FILLING AND SEALING SYSTEMS

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FIG_11

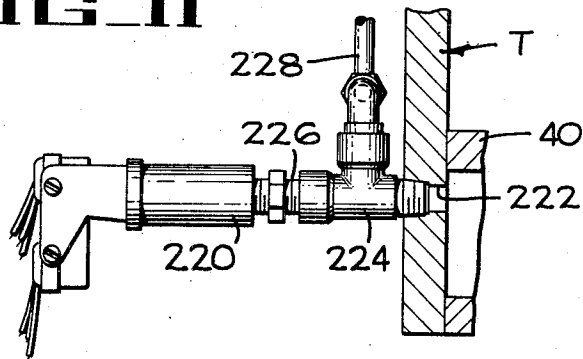
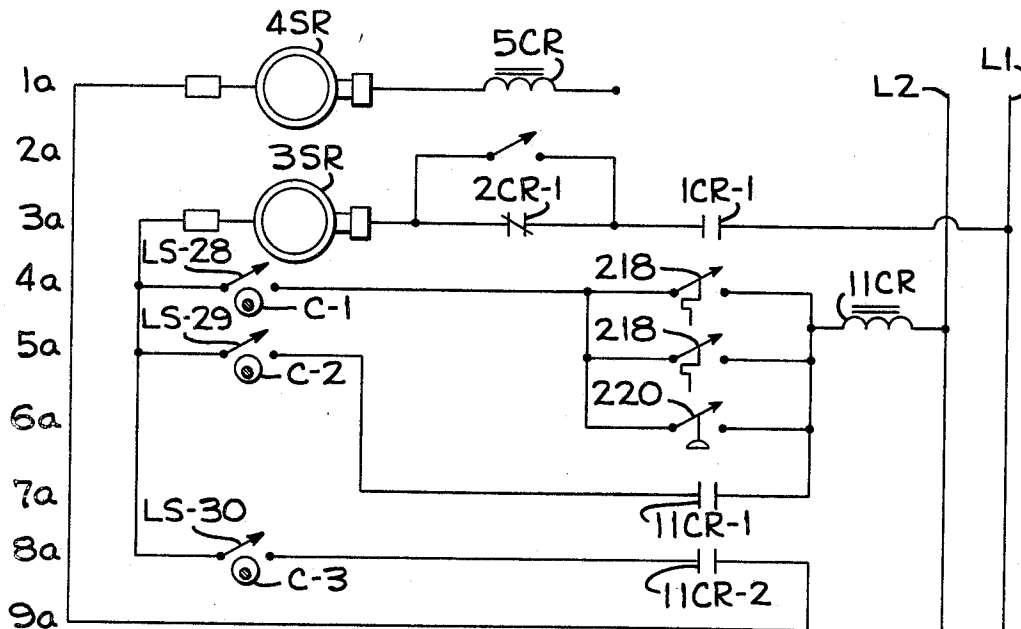


FIG_12



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U.S. Cl. 53—112

8 Claims

ABSTRACT OF THE DISCLOSURE

The present disclosure relates to a package evacuating and shaping turret associated with a packaging machine of the type that makes pillow type packages of thermoplastic web material containing pulverulent granular or small particles of food. The packages are received in a chamber which evacuates the air from the packages and subjects the packages to forming forces which are controlled to distribute the product in the package and the magnitude of such forces are regulated so that the possibility of rupturing the package is avoided.

The present invention concerns various improvements in a package filling and sealing machine of the type disclosed in U.S. application Ser. No. 459,768 filed May 28, 1965 which is included herein by reference.

This referenced application discloses a packaging machine of the type wherein flexible web material such as Pliofilm, Mylar, laminates, cellophane, or other similar material, shape the web into a tube by passing the web through a former which overlaps the marginal edges of the web. A longitudinal seaming device is carried by the machine which is effective to weld or join the overlapping marginal edges thus forming a web tube. The machine carries a vertically reciprocating pouch making feed structure surrounding the web tube and provided with the devices for forming transverse longitudinally spaced seams on the web tube. In the case of heat sealable material heated dies are provided moving inwardly toward each other to form the transverse seam. The reciprocating structure feeds the web of material from the supply roll through the former with the stroke of such reciprocation determining the distance between the transverse seams and thus the size of each pouch. At some time during the downwardly reciprocation of the feed structure the product desired to be packaged is discharged into the web tube. The upper transverse seal is discontinuous at some point thereby providing a small opening for allowing the pouch to be evacuated by a vacuum turret which is positioned to receive the pouches which are severed from the web tube.

The vacuum turret includes a plurality of equally circumferentially spaced compartments or pockets successively presented to catch the pouch as it is severed from the web tube. Means are provided, in each of these pockets for flattening, evacuating and sealing the pouches. After these steps have been performed on each of the pouches, they are discharged from the pockets to a suitable conveyor.

In the referenced application generally rectangular flattener plates are located in each pocket of the vacuum turret. These plates are mounted for limited oscillation about an axis which is midway and parallel to the shorter edges of the plates, and while oscillating they move inwardly toward each other distributing the product between the seams thus flattening the package. The purpose of distributing the granular material during such flattening prevents the possibility of excessively stressing the web and produces a wrinkle free pouch. Oscillation of the flattener plates is accomplished by pneumatic actu-

tors connected to a sequence valve directing the pressure of fluid alternatively to the rod end and the head end of the cylinder causing rapid reciprocation of the actuator. The output of the actuator is clamped to floating vacuum cylinders carrying the flattener plates. Although this method of flattening produces a commercial package it has been found to be marginally reliable and requires more expensive controls which have proved to require more than an acceptable degree of maintenance and accordingly reduced the productive time of the machine.

In overcoming this problem the present invention discloses a mechanical system of oscillating the vacuum cylinders to which are connected the flattener plates. This design has proved to be completely reliable since it resulted in simplifying the pneumatic circuit by elimination of the sequence valve and the oscillating pneumatic cylinders. Accordingly, it is a feature of the present invention to provide a very simple and effective apparatus for shaping pouch packed material.

In addition to the above it is another feature of this invention to provide means preferably carried by the flattener plates, to initially distribute the packaged material toward the upper transverse seam of the pouch. This is preferably accomplished by providing angularly converging plates in each of the vacuum chambers. Such an initial upward distribution of the material before the flattener plates are rendered operative produces the decided advantage of avoiding the possibility of stressing the lower seal of the pouches.

It is another feature of this invention to render any one or more of the vacuum chambers inoperative if it is determined during operation of the machine that one or more of its functions is not being performed in the desired manner. This is preferably accomplished by providing selectively operable means, desirably a cam, actuating a limit switch which will interrupt the cycle of the web forming and filling machine so that a package will not be dropped into the inoperative chamber.

It is a further and equally important feature of this invention to provide vacuum and temperature detection control mechanisms which will automatically condition the package forming and filling machine to by-pass a chamber in the event that the final sealing dies or the vacuum produced in any one chamber is not sufficient to produce a package which is properly completely sealed and evacuated.

Another problem area which has arisen in connection with packages of this nature is the deleterious effect produced by the inclusion of loose product which may spill into a carton in which a plurality of pouches are stacked. When this occurs the presence of such granular material in the carton has the effect of rupturing the web and consequently causing loss of vacuum in one or more pouches. This, of course, destroys the long term storability of these packages, consequently rendering it commercially useless. Packages which have been evacuated, flattened and sealed are dropped from the vacuum turret to a conveyor which carries them to the cartoning station. In dropping from the vacuum chamber to the conveyor the package sometimes breaks, spilling the product on the conveyor. This spilled product finds its way to the cartoning station where it may enter the carton and give rise to the above mentioned problem. In solving this problem, the present invention provides a pair of cooperating conveyors, one of which has a mesh belt made of any suitable material, preferably metal, which permits the granular material to fall therethrough in the event a pouch should break and thus prevent conveyance of such granular material to the cartoning station.

These and other features, objects and advantages of

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his invention will become apparent in the following description and drawings, in which:

FIGURE 1 is a perspective of the packaging machine together with the vacuum turret and the conveyor which incorporates the principles of this invention,

FIGURE 2 is an enlarged front elevation partly in section of a chamber of the vacuum turret showing, in phantom, a package in the process of being flattened and sealed,

FIGURE 3 is a right side view of FIGURE 2,

FIGURE 4 is another front elevation partly in section of the mechanism for imparting oscillatory motion to the flattener plates as the turret rotates.

FIGURE 4A is a section along the line 4A—4A of FIGURE 3,

FIGURES 5A, 5B and 5C are diagrammatic operational views showing, respectively, a pouch dropping into a chamber of the vacuum turret, the action of the inclined converging plates in displacing the material upwardly toward the top seam of the pouch, and the final step of flattening and completely sealing the top seam of the package,

FIGURE 6 is a fragmentary radial section of the turret showing one of the vacuum chamber cutoff switches which conditions the machine to by-pass any disabled chamber,

FIGURE 7 is a section taken substantially along the offset plane 7—7 of FIGURE 6,

FIGURE 8 is a fragmentary perspective of the package conveyor,

FIGURE 9 is a longitudinal section of the package conveyor taken substantially along the line 9—9 of FIGURE 8,

FIGURE 10 is a transverse section of FIGURE 8 taken substantially along the line 10—10,

FIGURE 11 shows the vacuum detecting switch which is associated with each chamber of the vacuum turret, and

FIGURE 12 is a schematic of the control circuit correlating the function of the vacuum cutoff limit switch and the low heat thermostats.

Before describing the improvements of the present invention a brief description of the general organization and operation of the machine illustrated in FIGURE 1 will be set forth. The package making machine generally indicated by the numeral 20 has mounted on an upper support plate 22 a filling machine 24 associated with a product containing hopper 26 having a downwardly extending tube 28 for directing the product into a web tube VT made from web material W of any type hereinbefore mentioned. A roll R of such web material is rotatably supported on the machine with the web being threaded through various guide and tensioning rollers and ultimately to a former 30 mounted in surrounding relationship to the tube 28. The tube and the former define an annular passageway sufficiently large to allow the web to pass freely therethrough and in passing therethrough the web assumes the shape of a tube. As the web progresses downwardly the marginal edges are overlapped coming in contact with a heated sealing device 32 which welds or fuses the overlapped marginal edges of the web.

A pouch forming and feeding structure 34, including means for forming transverse seals or seams at longitudinally spaced points along the web tube, is reciprocally mounted on guide rods 36 carried by the frame of the packaging machine. The feeding structure 34 is shown at the limit of its downward position as a package P is about to be severed from the web tube WT. After the package has been severed the feeding structure 34 moves upwardly firmly engaging the web tube at a point above the level of the product in the web tube and then moves downwardly feeding the web longitudinally downwardly another increment. It is to be kept in mind that the upper seam of the package is provided with a small opening to effect subsequent evacuation of the package.

The severed packages drop into equally circumferen-

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tially spaced chambers or pockets 38 of a vacuum turret T mounted for rotation about a vertical axis in the direction indicated by the arrow S. The packages which drop into the pockets 38 are contained therein for one complete revolution of the turret. While in a pocket the package is flattened, evacuated, and completely sealed whereupon it is discharged to a conveyor structure C which transports the package to a cartoning station if desired.

In accordance with one feature of this invention the pockets of the vacuum turret, one of which is shown in greater detail in FIGURE 2, are provided with an improved and simplified mechanism for oscillating the flattener plates which also carry the angularly disposed plates for initially distributing the package of material toward the upper seam of the package. Each of the vacuum chambers 38 are carried by the turret T and comprise a jaw housing 40 having an opening 42 for passage therethrough of the packages P. The jaw housing has reciprocally mounted therein cooperating sealing jaws 44 and 46 which are moved toward and away from each other by suitable pneumatic cylinders 48 and 50 carried by flange mounts 52 and 54 rigidly attached to the jaw housing. As shown in phantom outline, the sealing jaws 44 and 46 are brought in contact to completely seal the upper seal of the package after evacuation and flattening have been completed. The jaw housing includes another opening 56 providing communication with a compartment 58 in which is located the flattener plates 60 attached to the rod end 62 of vacuum cylinders 64. On the lower end of the compartment a flange 66, connected to the jaw housing by tie rods 68, defines the lower extent of the compartment 58. The flange 66 is provided with an opening 70 to permit downward movement of the package out of the compartment after processing of the package is completed. To provide for entrance and discharge of a package into the compartment 58 an upper door 72 and a bottom door 74, mounted for transverse reciprocation relative to the longitudinal axis of the compartment, are provided. Control means disclosed in the referenced application are provided for opening and closing these doors in timed relation to the rotation of the turret.

As shown in FIGURE 2 the upper door 72 is suitably attached at 76 to a rod 78 of a pneumatic cylinder 80 which is attached to the jaw housing 40 by an appropriate bracket 82. Surrounding the opening 42 and seated in a groove in the jaw housing 40 there is an O-ring 84 which establishes sealing contact with the lower surface of the door 72. A small inclined ramp 86 engageable with a roller 88, rotatably mounted on a stationary stub shaft 90, serves to displace the door 72 downwardly in firm contact with the O-ring 84.

The bottom door is also suitably attached at 92 to a rod 94 of another pneumatic cylinder 96 carried by a bracket 98. An O-ring 100 seated in a groove formed in the flange 66 engages the upper surface of the bottom door for the purpose of sealing the opening 70. As in the case of the upper door, another inclined ramp 102 engages a roller 104 rotatably mounted on a stub shaft 105. Accordingly, when the door 74 is in the position shown in FIGURE 2 the ramp 102 and the roller 104 serve to urge the door in firm contact with the O-ring 100 thus providing an air-tight seal.

Each of the cylinders 64 are attached to the compartment 58 by a floating mount 106. As shown in FIGURE 2 the inner end of the cylinder carries a collar 108 engaging a large O-ring 110 providing an air-tight seal between the collar and the wall of the vacuum chamber 58. The floating mount 106 includes a housing having a wall 112 and a flat end wall 114 being provided with a circular opening 116 of sufficient diameter to permit oscillation of the cylinders 64. The mount is attached to the compartment 58 by bolts 118. Small trunnions 120 which are rigidly connected to the collar 108 extend through the side wall 112 and provide a pivot axis for oscillation of the vacuum cylinders 64.

In accordance with one feature of this invention a new and improved means of a simplified nature are provided for causing oscillation of the vacuum cylinders 64. Such means are generally indicated by the numeral 122 and are best shown in FIGURES 2, 3, 4 and 4A. Referring first to FIGURE 4, which is a chordal section taken radially inwardly of the vacuum chamber 58, it will be seen that a cross head 124 of generally T-shaped configuration is provided. The cross head comprises an elongate beam portion 126 and a downwardly extending leg 128 slidably fitted in guideways 130 which are secured to the turret T. On the pedestal supporting the turret an arcuate track 132 is mounted. This track extends for approximately one-half of a complete revolution of the turret and it has an undulating cam track 134 within which is disposed a cam follower roller 136 rotatably mounted on a short stub shaft 138 which is attached to the lower end of the leg 128. At either end of the beam portion 126 threaded connecting rods 140 extend through ears 142 provided on the beam 126. Compression springs 144 and 146 are fitted over each connecting rod extending on either side of the ears 142 and are maintained in a slight state of compression by lock nuts 148 threaded on the rods 140. Threadedly connected on the upper end of each connecting rod 140 is a clevis 150 having a link 152 pivotally connected thereto by a pivot pin 154. Rotatably mounted in a pair of laterally spaced ears (FIGS. 3 and 4A) 156 is a shaft 158 having one end fixed to the link 152 by a square end fitted into a complementary square hole in the link 152. It is to be understood, however, that this connection can be either keyed or splined as desired. The other end of the shaft 158 is also fixed in the same manner to another link 160 pivotally connected by a pin 162 to a clevis 164 which is threaded on the upper end of an actuator rod 166. The lower end of the actuator rod is threaded to a link 168 which is received between lugs 170 and is pivotally connected thereto by a pin 172. The lugs 170 are integral with a yoke 174 including clamping structures 176 embracing the vacuum cylinders 64. Suitable bolts 178 are provided for drawing up or releasing the clamping structures 176.

During rotation of the turret the above-described vacuum cylinders oscillating means 122 operates in the following manner. Shortly after the package has been dropped into one of the pockets 38 of the turret the roller 136 engages the undulating cam track 134. Reciprocating motion is therefore imparted to the cross head 124 with this motion being transferred to the connecting rods 140 through the springs 144 and 146. By virtue of the link 152 the shaft 158 is caused to rock which in turn causes oscillation of the link 160 and reciprocation of the actuator rod 166. It is to be recalled that the cylinders 64 are mounted for pivotal movement on the trunnion pins 120. Accordingly, reciprocation of the actuator rod 166 is imparted to the yoke 174 thereby oscillating the vacuum cylinders and, accordingly, the flattener plates 60 which are rigidly attached thereto.

Since the degree to which the package is compressed by the flattener plates 60 must be controlled with specified limits in order to prevent rupture of the package, the vacuum cylinder oscillating means 122 is designed to fulfill this objective by providing the springs 144 and 146. The springs can be preloaded by merely manipulating the lock nuts 148 to any desired extent within the range dictated by the spring. In this way the force transmitted by the oscillating means to the flattener plates 60 can be regulated. It is also possible to change the attitude of the flattener plates by lengthening or shortening the length of the connection from the pin 162 to the pin 172.

Further and in accordance with this invention means are provided in each of the pockets 38 to initially displace part of the material contained in the pouches upwardly toward the top seam of each package. The construction and operation of such means is shown best in FIGURES 5A, 5B and 5C. FIGURE 5A shows the gen-

eral shape of the package which is formed by the package making and filling machine 20. It will be seen that the package includes a bottom seal BS and a top seam TS and that the shape assumed is generally in the form of a tear drop. When the vacuum cylinder oscillating means 122 is not in engagement with the cam track 134 the flattener plates 60 and accordingly the vacuum cylinders 64 are oriented locating the lower ends of the flattener plates closer than the upper ends. This relative position of the flattener plates is shown in FIGURE 5A. Attached to the upper end of the flattener plates 60 by bent portions 180 are flat material distributing plates 182 which substantially overlie the flattener plates 60. Each of the distributing plates 182 have secured thereon a rearwardly extending bar 184 projecting through a clearance hole in the flattener plates 60. The free end of this bar contacts the inner surface of the compartment 58 and it is of sufficient length to provide a desired degree of convergence of the plates 182 relative to the plates 60.

FIGURE 5B shows the action of the material distributing plates 182 after the package has completed its downward fall into the chamber 58. It will be noted that a majority of the material that was concentrated at the bottom seam has been displaced upwardly and that the sides of the packages assume the shape defined by the plates 182. After the oscillating mechanism 122 of the particular pocket has encountered the cam track 132 causing oscillation of the vacuum cylinders 64 and the plates 60 have been moved inwardly by the cylinders 64, the package assumes the shape shown in FIGURE 5C. Inward movement of the flattener plates 60 causes the plates 182 to come in planar contact with the flattener plates 60 and of course they are at this time substantially parallel to each other. At this stage of the process, that is, when the package has been evacuated and flattened the jaw cylinders 50 and 52 are actuated moving the sealing jaws 44 and 46 toward each other to thereby completely seal the top seam, since, as it will be recalled, a small opening has been allowed to exist until the evacuating step has been completed.

Experience with the material distributing plates 182 has shown that breakage of the pouch due to excessive stress in and around the bottom seam has been greatly reduced and a proper distribution of material to achieve a flat package has been more reliably performed since preliminary distribution of the material prior to oscillating cylinders has facilitated fulfillment of the function of the oscillating mechanism 122.

Further, and in accordance with this invention there is provided an electro-mechanical subsystem for disabling any one of the chambers or pockets 38 in the event the package or pouch produced by that pocket is faulty for any particular reason. For example, if completion of the top seam is not performed due to incorrect temperature of the sealing jaws 44 or 46, or leakage of the chamber due to wear of the O-rings 84 and 100, or that the package is not properly evacuated, that particular chamber will be by-passed by the package making machine 20 since it will not sever a pouch from the web tube for reception by that pocket. The mechanism for fulfilling this function is shown in FIGURES 6 and 7. On a stationary frame structure 186 a downwardly extending plate 188 is provided for supporting a suitable limit switch 190 having an actuator arm 192 carrying on the end thereof a roller 194. The turret includes an upper plate 196 to which is bolted a flanged sleeve 198 having rotatably disposed therein a shaft 200 carrying a knob 202 on the upper end and a plate 204 at the lower end. The plate is provided with beveled edges 206, the purpose of which will be explained hereinafter. A small pin 208 is secured to and extends transversely of the shaft 200. This pin engages shoulders 210 of a cutout portion at the lower end of the flanged sleeve 198 therefore limiting rotation of the shaft to an angle of 90°. As shown in FIGURE 7 the plate 204 is proportioned such

that it does not contact the roller 194 when it is in its full outline position whereas contact with the roller 194 is established when it is in its phantom outline position. Since the adjusted position of the plate 204 is not visible to the operator because of the upper plate of the turret 196, the knob 202 is provided with a pointer 212 which will quickly visually indicate the position of the plate 204. The bevel portions 206 provide an inclined ramp along which the roller 194 rides thereby reducing impact to the limit switch 190.

If it is found that one of the chambers or pockets 38 are producing a package that is faulty in some material regard all that is necessary to by-pass this pocket is to turn the knob 202 positioning the plate 204 to contact the roller 194 of the limit switch. This conditions the controlled circuit of the packaging machine 20 to prevent severance of a package from the web tube thereby bypassing the particular chamber. It is to be noted by inspection of FIGURE 1 that there is a knob 202 for each chamber or pocket of the vacuum turret. This arrangement, of course, has the advantage of allowing continued operation of the machine even though one or more pockets may be rendered inoperative for any of the above mentioned reasons.

It is another and equally important feature of this invention to continuously monitor the temperature level of the sealing jaws 44 and 46 in order to ensure a sufficient temperature level to complete the seal of the top seam of each pouch. As shown in greater detail in FIGURE 2 with reference to the jaw 46 there is provided a heater 214, a main thermostat 216 for maintaining a constant temperature of the jaws, and a low temperature thermostat 218 which is electrically connected to a circuit operating to prevent release of a pouch into that particular chamber of the turret. Should the temperature of any one of the jaws in any of the pockets reach a point where sealing could not be effected, the low temperature thermostats reliably prevent release of a pouch in the particular pocket 38 until the condition is corrected.

In addition to monitoring the temperature of the sealing jaws each chamber or pocket 38 is provided with a vacuum detector switch 220 which is connected to the jaw housing 40 at an opening 222 which shows in FIGURES 2 and 11. The vacuum detector switch 220 is attached to a fitting 224 by a nipple 226. On the fitting 224 there is also a conduit 228 which is connected to a gauge (not shown) so that visual indication of vacuum in each of the pockets or chambers 38 can be made. The vacuum detector switch 220 includes therein suitable contacts which are normally open when the desired level of vacuum is established in the chamber or pocket 38. Accordingly, should the pressure in one of the chambers 38 be above the desired level an electrical control circuit is conditioned to prevent dropping of a pouch into that chamber. In view of the above it can be appreciated that the improved construction of this invention not only prevents making of packages whose top seam is not completely sealed but it also prevents making up packages in the event the desired level of vacuum is not attained in each of the pockets or chambers 38.

The remaining area of improvement of the present invention pertains to the conveyor structure C shown in FIGURES 8, 9 and 10. The conveyor structure comprises two or more longitudinally adjacent cooperating conveyor sections 228 and 230 which are provided for directing the completed packages to a cartoning station, if desired. The improvement involves the conveyor section 228 which, as shown, comprises a frame structure having laterally spaced and interconnected side plates 232 and 234 rotatably mounting longitudinally spaced pulleys 236 and 238 secured to respective shafts which are journaled in pairs of flange-mount bearings 240 and 242. An open mesh endless belt 244 is trained about the pulleys 238 and 236. As shown best in FIGURES 9 and 10 a tray 246 is located below the belt 244 for the purpose of col-

lecting the packaged material spilling from a broken pouch when it drops onto the belt 244. The tray is arranged to slide between the side plates 232 and 234 so that the accumulated product may be disposed of. The belt 244 is driven by a sprocket chain arrangement 248 which transmits power of a driven belt 250 of the conveyor section 230 to the shaft on which the pulley 238 is mounted. A layer of rubber 252 is applied to the pulley 238 for firmly gripping the belt 244 and thus effect orbital movement thereof.

To maintain the upper reach of the belt 244 substantially flat, a plurality of transversely spaced longitudinally extending supports 254 are provided. Carried on the upper edges of the side plates 232 and 234 are elongate angle brackets 256 and 258 attached to generally similarly shaped upwardly extending side plates 260 and 262 having respective rearward edges interconnected by an inclined chute 264 which serves to direct packages dropped from the pockets of the vacuum turret to the belt 244. Should a package break when it makes contact with the chute 264 the granular material will pass through the belt 244 and be collected in the tray 246 and thus migration of such granular material to the cartoning station is prevented.

FIGURE 12 shows the electrical control circuit which conditions the package making and filling machine 20 to by-pass a pocket 38 which has failed to maintain the proper temperature of the sealing jaws 44 and 46 or the vacuum at the desired level. This circuit monitors these conditions every revolution of a pocket. As shown and described in the referenced application there is provided a plurality of stationary cams associated with switches which are fixed to the turret. The turret monitor circuit shown in FIGURE 12 includes three cams C-1, C-2 and C-3 associated with switches LS-28, LS-29 and LS-30 in lines 4a, 5a and 8a, respectively. A relay 5CR, in line 1a, is connected to the package making and filling machine 20. When energized, the relay 5CR prevents severance of a package P from the web tube WT. Slip ring 4SR and 3SR, in lines 1a and 3a, respectively, provide an electrical connection to each of the pockets 38 as the turret T rotates. Connected to L1 by line 3a are normally open contacts 1CR-1 and normally closed contacts 2CR-1. The normally closed, held open, contacts of the thermostats 218 in lines 4a and 5a and the normally closed held open contacts of the vacuum detector switch 220 in line 6a are connected in parallel. The circuit is completed to the supply line L2 by a relay 11CR having normally open contacts 11CR-1 in line 7a and 11CR-2 in line 8a. On closing 1CR-1, LS-28 and LS-30 the relay 11CR remain deenergized when the contacts of the thermostats 218 and the vacuum switch 220 are open indicating conditions in each pocket 38 to be normal. Should the temperature of a sealing jaw drop below a predetermined level or the vacuum raise above the desired level, one or more of the contacts closes energizing the relay 11CR which closed contacts 11CR-1 and 11CR-2. Since LS-30 is closed at the time when the circuit is checked, relay 5CR in line 1a is energized conditioning the machine 20 to by-pass that pocket.

Assuming it is decided to continue operation even though one or more pockets 38 is by-passed all that is necessary is to turn the knob 202 positioning the plate 204 to actuate the limit switch 190. This by-passes the pocket monitor circuit of FIGURE 12 for that particular pocket.

Although the best mode contemplated for carrying out the present invention has been herein shown and described, it will be apparent that modification and variation may be made without departing from what is regarded to be the subject matter of the invention as set forth in the appended claims.

What is claimed is:

1. In a package filling and sealing system of the type comprising a machine for filling and making packages of

flexible web material, and a turret having means for evacuating, shaping and sealing the package, the improvement in said shaping means comprising means for imparting oscillatory motion to confronting package-engaging shaping members, means for maintaining said shaping members in forceable contact with the package during oscillation thereof, and means providing a floating connection for limiting the force which such shaping members impose on the package during oscillation thereof.

2. In a package filling and sealing system of the type comprising a machine for filling and making packages of flexible web material, and a turret having means for evacuating, shaping and sealing the package, the improvement in said shaping means comprising means for imparting oscillatory motion to confronting package-engaging shaping members, and means providing a floating connection for limiting the force which such shaping members impose on the package during oscillation thereof, said evacuating, shaping and sealing means comprises means for preliminary displacing the packaged product in the package before such shaping members are rendered operative.

3. The invention according to claim 1 wherein said oscillatory means comprises an undulating cam track engaged by a follower carried by said oscillatory means.

4. The invention according to claim 2 wherein said turret comprises a plurality of circumferentially spaced compartments each of which include package evacuating, shaping and sealing means, and means for bypassing any one or more compartments in the event the package evacuating and sealing means are inoperative.

5. The invention according to claim 4 wherein said compartment by-passing means comprises an electrical switch operated by a switch engaging member for each compartment.

6. The invention according to claim 4 further comprising an upper and lower door for each compartment which open and close to receive and discharge a package at a predetermined point during rotation of the turret, and a

conveyor structure located to receive the package from the compartment when the lower door is opened, said conveyor having an open mesh belt to allow passage therethrough of packaged product in the event the package should break.

7. An apparatus for rocking laterally spaced and aligned plates which are movable toward and away from each other for the purpose of flattening product packaged in a web of flexible material, said apparatus comprising a cam having an undulating track, a reciprocally mounted actuator movable relative to said track and rotatably carrying a roller located in said track, a linkage mechanism, including a floating connection, for transferring reciprocation of said actuator to said plates and thus effect rocking thereof, and means for maintaining said plates in forceable contact with the package at least during rocking of said plates.

8. The invention according to claim 7 wherein additional plates are supported on each of said aligned plates, and means on said additional plates positioning them at an inclination relative to said aligned plates when said aligned plates are moved away from each other, said angle of inclination being such that the lower ends of said additional plates are closer to each other than the upper ends.

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53—126; 100—264