

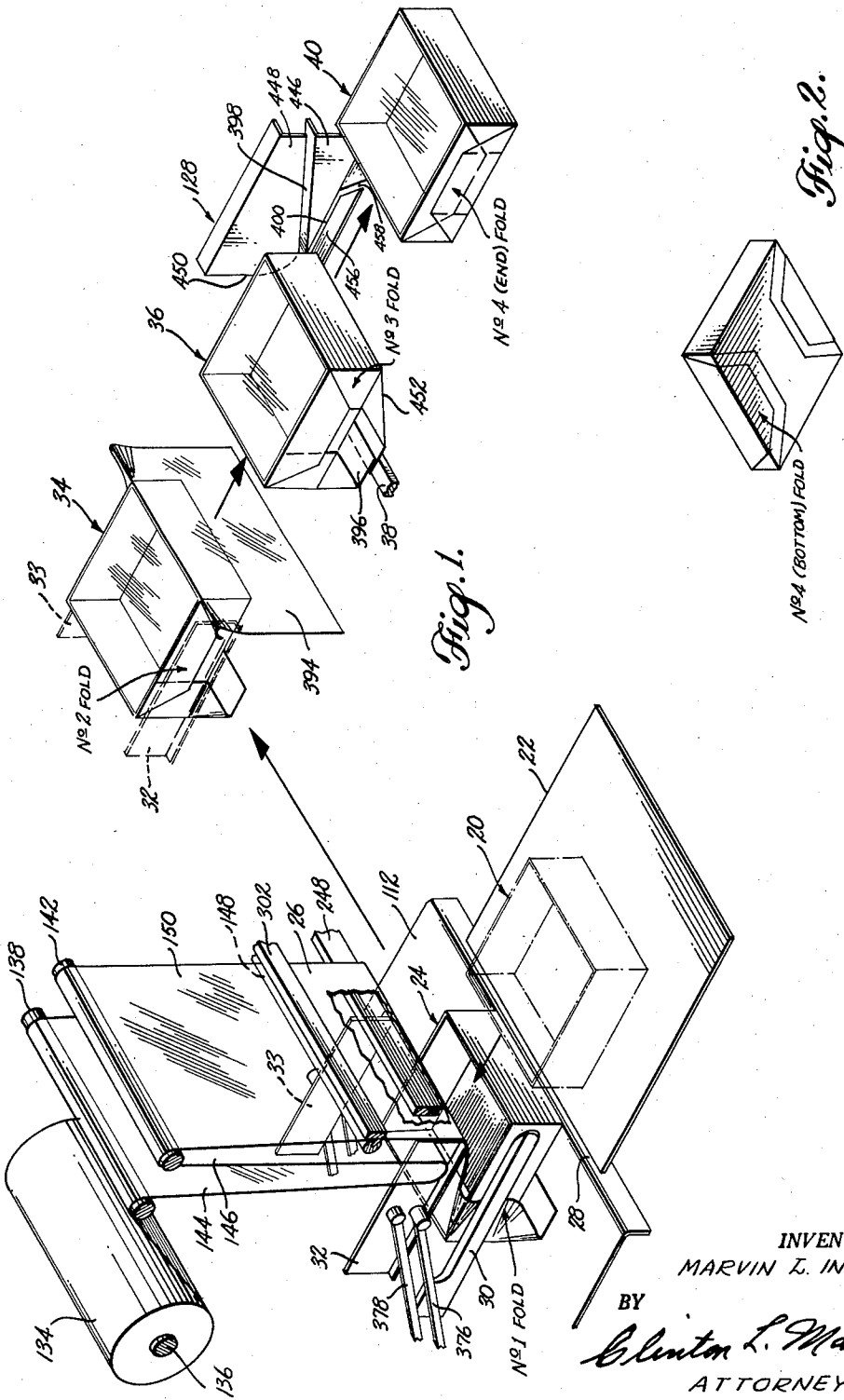
Nov. 18, 1958

M. L. INGRAM  
WRAPPING MACHINES

2,860,466

Filed May 8, 1956

8 Sheets-Sheet 1



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8 Sheets-Sheet 2

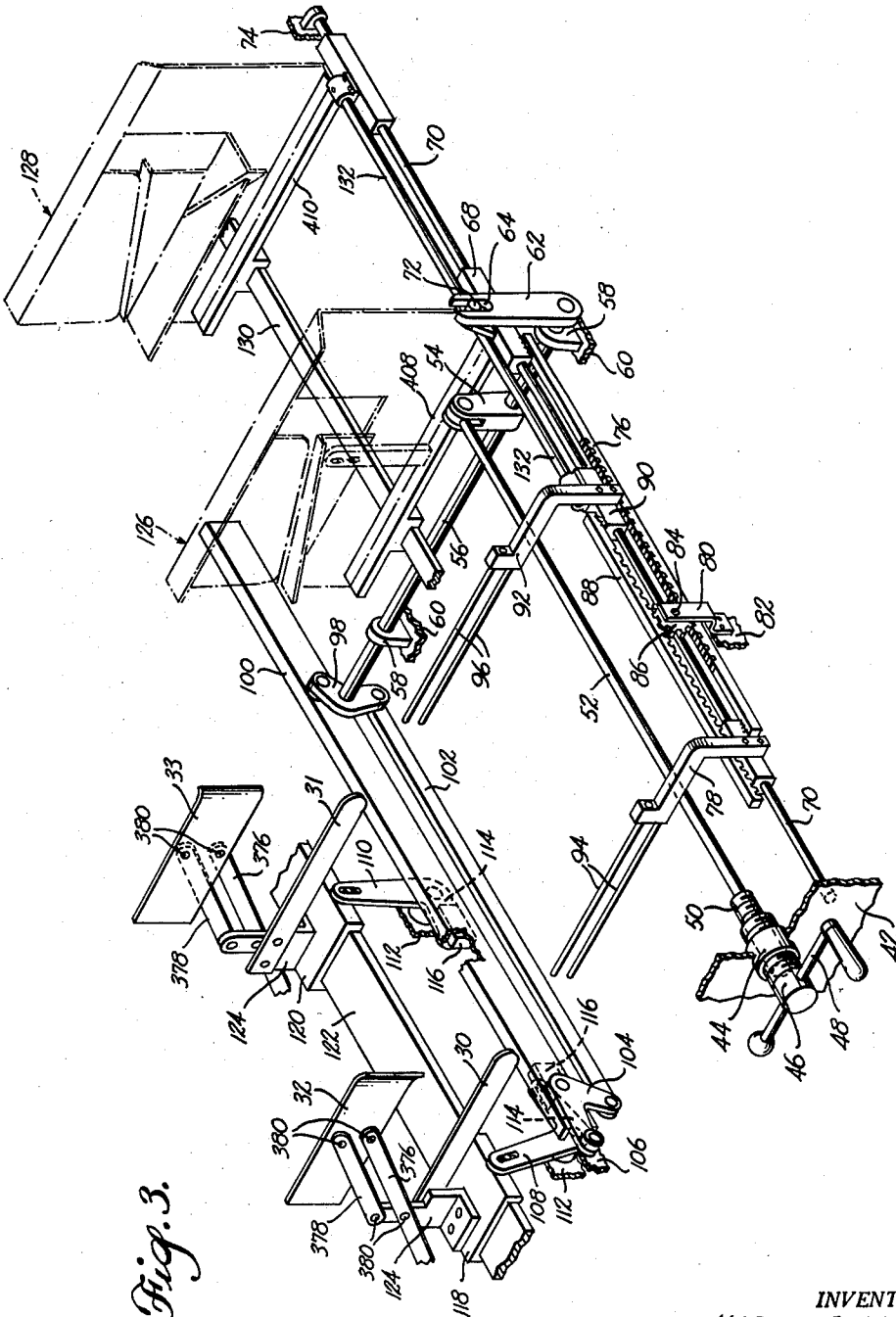


Fig. 3.

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8 Sheets-Sheet 3

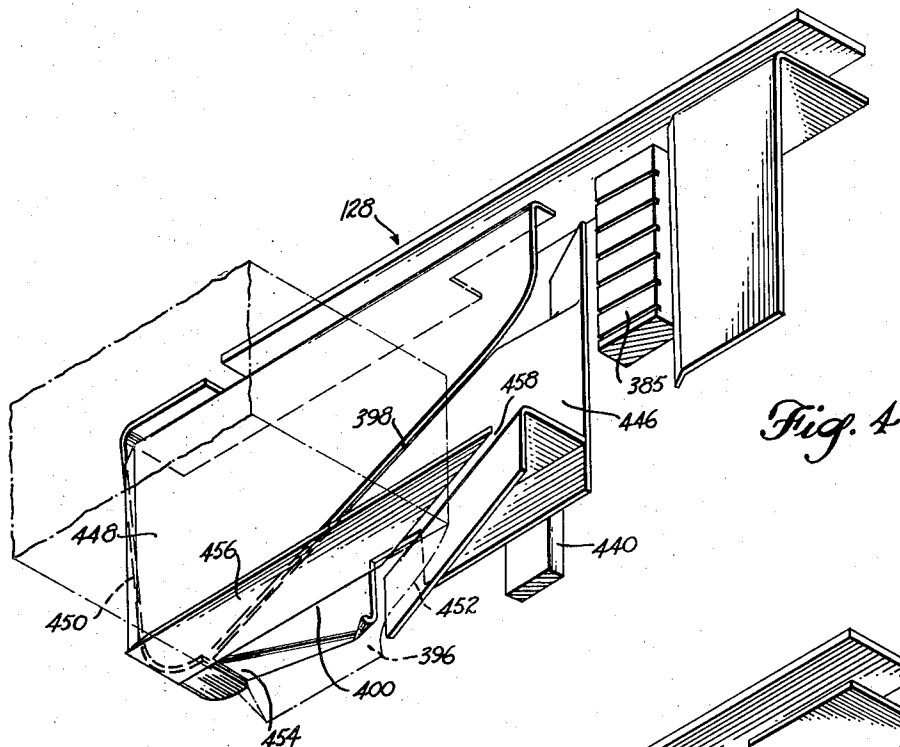


*Fig. 4*

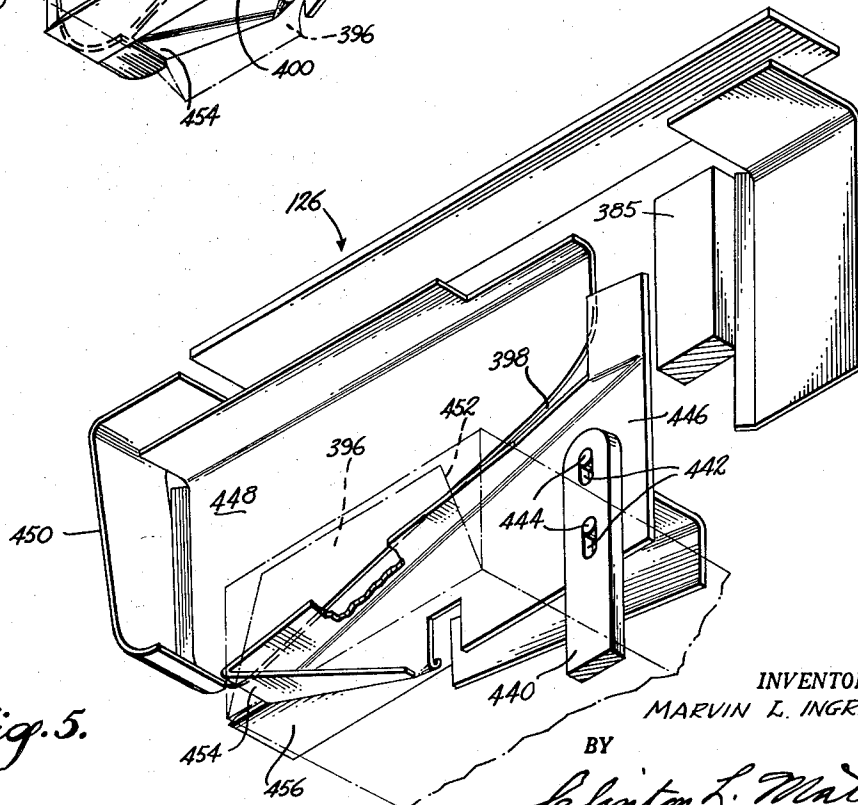


*Fig. 5.*

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8 Sheets-Sheet 4

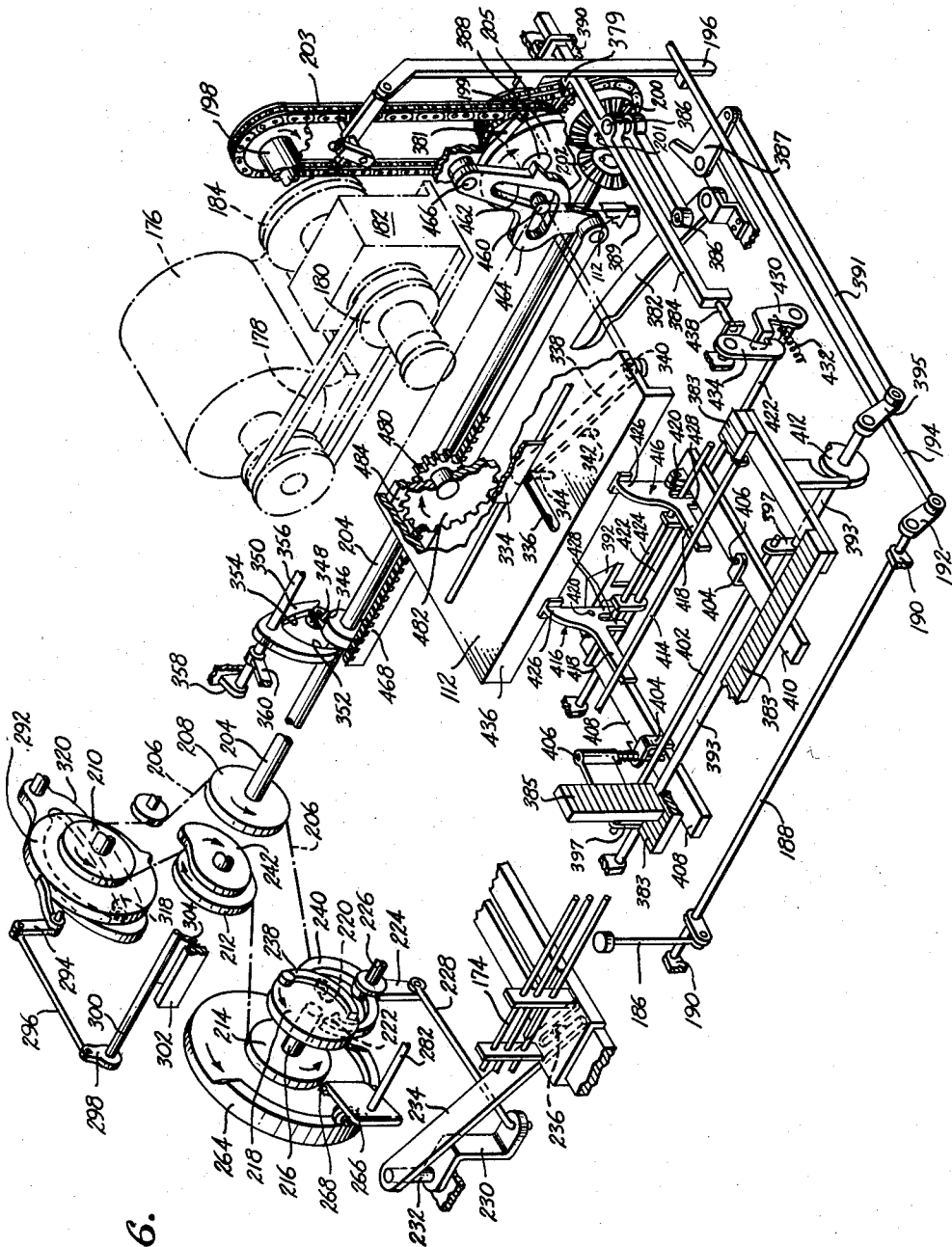


Fig. 6.

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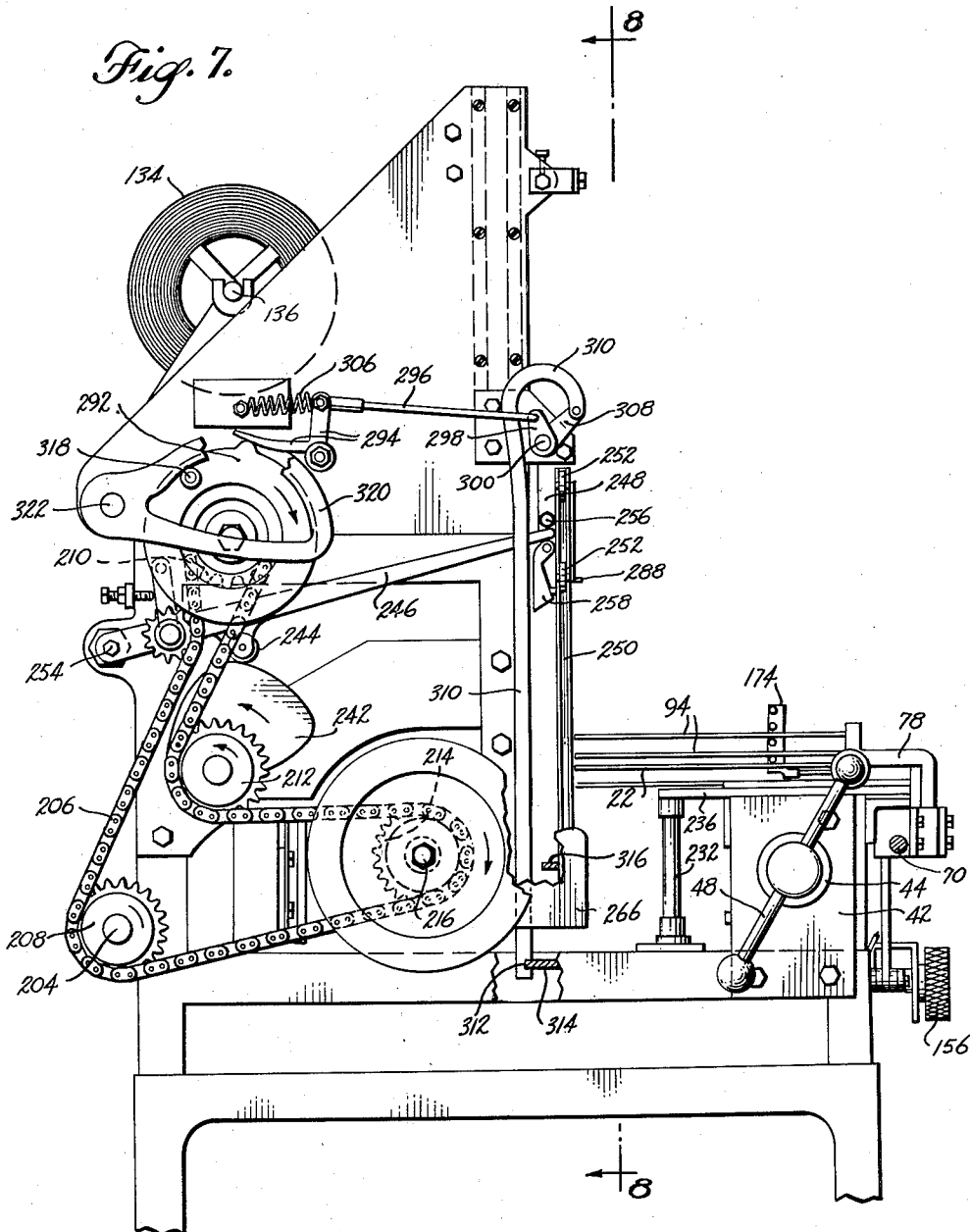
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8 Sheets-Sheet 5



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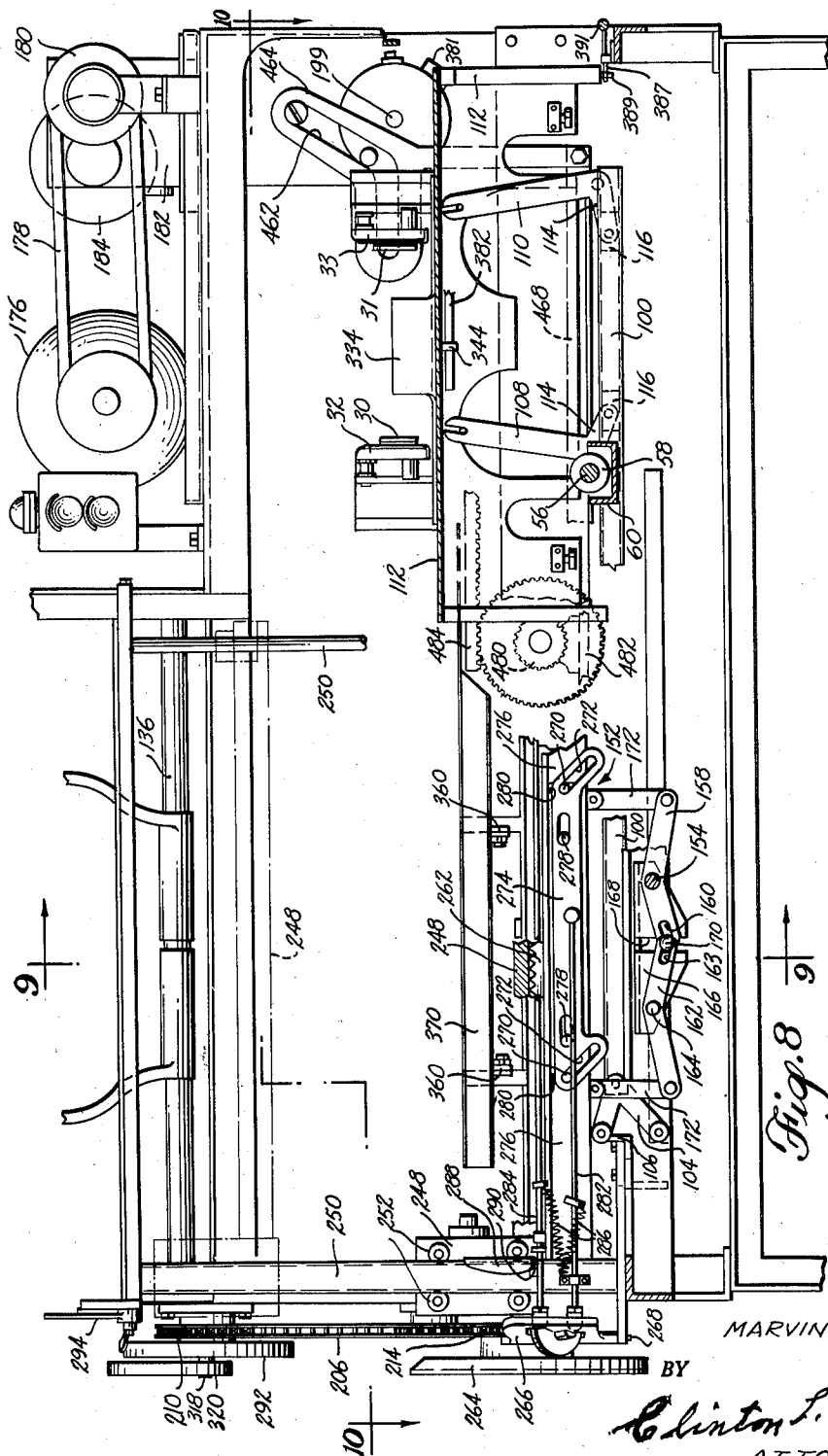
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**2,860,466**

## WRAPPING MACHINES

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8 Sheets-Sheet 6



Nov. 18, 1958

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WRAPPING MACHINES

2,860,466

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8 Sheets-Sheet 7

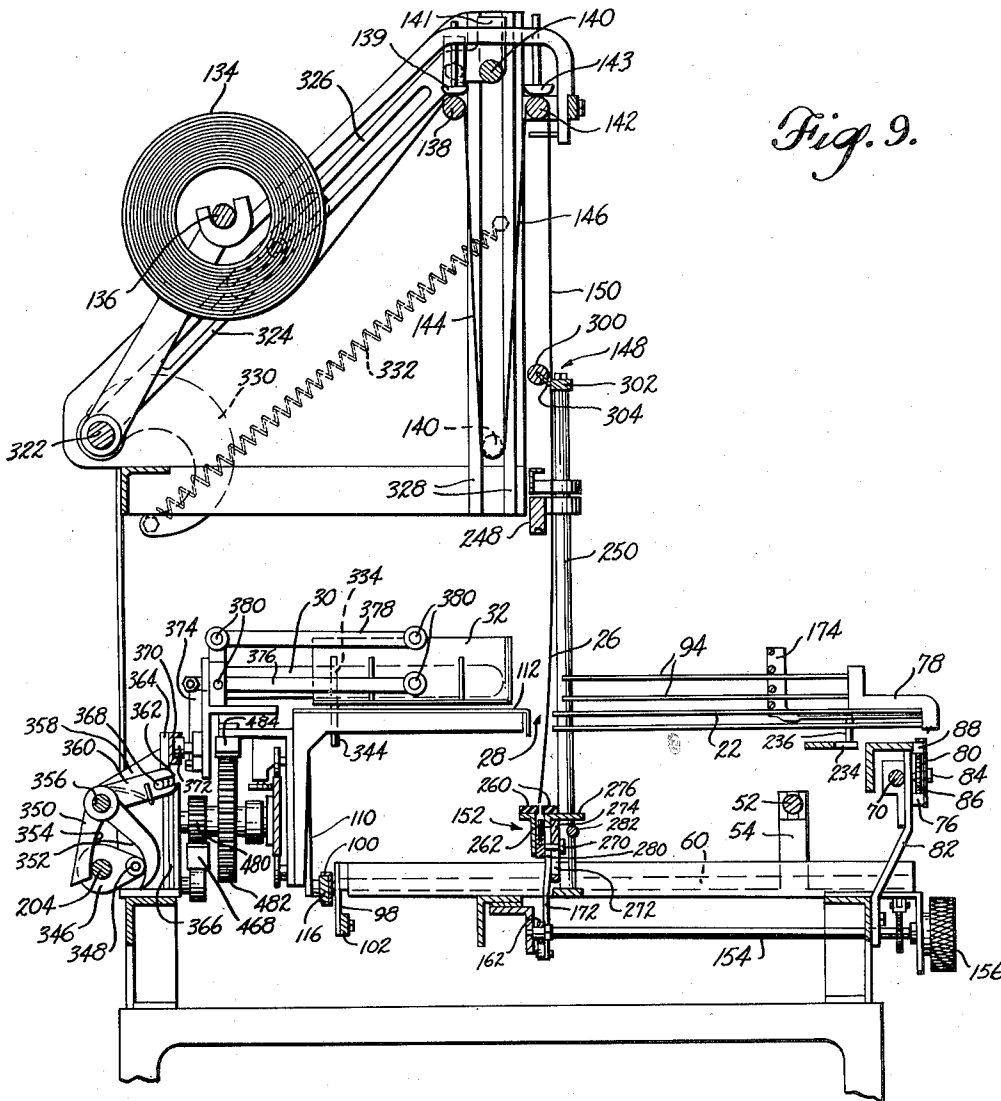


Fig. 9.

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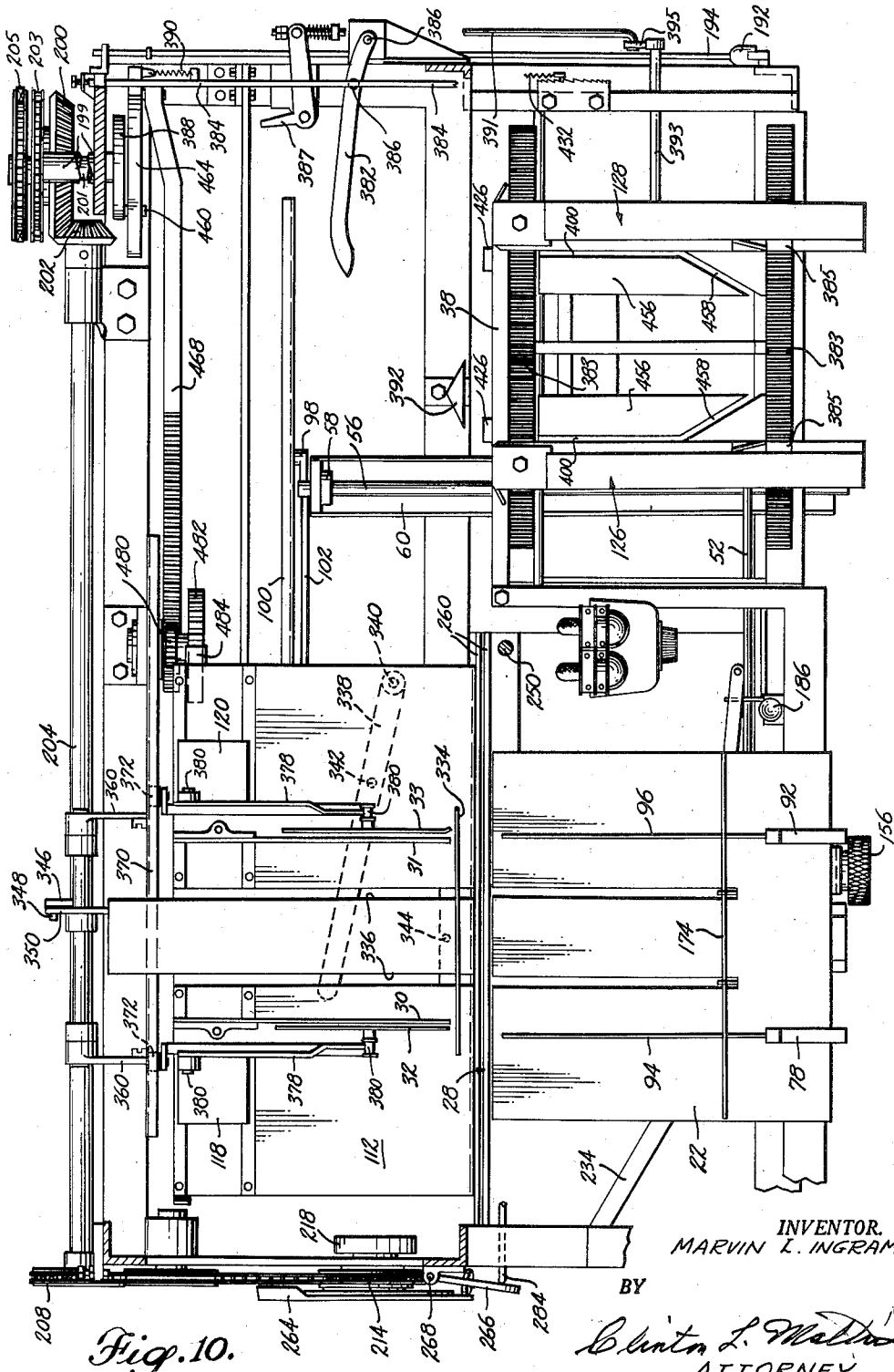
M. L. INGRAM

2,860,466

## WRAPPING MACHINES

Filed May 8, 1956

8 Sheets-Sheet 8



1

2,860,466

## WRAPPING MACHINES

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Application May 8, 1956, Serial No. 583,415

12 Claims. (Cl. 53—223)

My invention relates to wrapping machines and particularly to a wrapping machine which will wrap small, medium, and large packages; articles on U-boards, flat boards, trays or closed top cartons, and substantially all articles which are now being packaged and sold in "self-serving" markets.

Heretofore most wrapping machines were designed for wrapping a particular article such as a loaf of bread but with the modern trend of serving food products in "self-service" stores, there has become a need for a versatile machine to wrap various articles as distinguished from a machine designed to wrap particular articles.

An object of my invention is to provide a wrapping machine where all of the wrapping and folding is accomplished on a common level and thus to eliminate the elevator mechanism commonly employed in prior art devices.

It is an object of my invention to provide mechanism so that a sheet of paper or other wrapping material is suspended and into which an article may be urged so that the free end of the paper covers a portion of the bottom of the article to be wrapped and then carriage means drop behind the trailing end of the package and against the said paper so that sufficient paper is provided about and over the article and trailing from the article to complete the bottom wrapping of the article and the paper is severed from a roll of paper behind the article to provide paper for the next article to be wrapped.

It is a further object of my invention to provide a wrapping mechanism wherein the articles to be wrapped travel in a U-shaped pattern so that the initial portion of the paper on the bottom of the package is provided during the travel of the package on one leg of the U-shaped travel and then upon reversal and traveling on the other leg of said U-shaped pattern, the paper is completely wrapped around the article to be wrapped and the folding of the bottom is completed.

It is a further object of my invention to provide mechanism to provide for the storage of free paper so that the paper will flow freely in wrapping the same about an article.

It is a further object of my invention to provide for the travel of a package on the middle leg of a U-shaped pattern and with paper suspendedly supported from the former trailing end portion of the package.

It is a further object of my invention to provide folding mechanism so that the machine is readily adjustable for a so-called "end fold" or a so-called "bottom" fold in connection with the wrapping of various articles.

It is a further object to provide a carriage mounted for vertical travel and operable in a bight of a sheet of wrapping material, as paper from a roll, and sever it at such location to provide the trailing end of one sheet for one package and place the leading end of the next sheet in position for wrapping the next package and thus overcome the highly objectionable feature of prior art machines requiring a separate step to place the leading edge of a sheet from a roll in wrapping position.

2

It is a further object of my invention to provide a wrapping mechanism wherein the paper feed is visible to permit ease of maintenance of devices embodying my invention.

5 It is a further object of my invention to provide a paper feeding mechanism in connection with wrapping machines with little back pressure so that the device can wrap articles weighing only a matter of ounces.

10 It is a further object of my invention to provide a device which is readily adjustable so it may be employed to wrap articles of different lengths and of different sizes.

15 It is a further object of my invention to provide a wrapping machine having a paper feeding mechanism which eliminates formation of wrinkles or pleats in the paper being fed.

20 It is a further object of my invention to provide a machine which is compact in size, certain in operation, of a design which can be economically fabricated, substantially foolproof, and substantially simple for maintenance thereof.

25 Other objects and advantages of my invention will become apparent as the description of the same proceeds and the invention will be best understood from the consideration of the accompanying detailed description, taken in connection with the accompanying drawings forming a part of the specification, with the understanding, however, that the invention is not to be limited to the exact details of construction shown and described since obvious modifications will occur to a person skilled in the art.

30 Figure 1 is a schematic view illustrating generally the manner in which a package is wrapped by a device of my invention;

35 Fig. 2 is a bottom perspective view of a package, as a box, which has been wrapped in paper and indicating a "bottom" fold;

40 Fig. 3 is a fragmentary, diagrammatic view illustrating the adjustment mechanisms of a device of my invention—parts being omitted to better illustrate such adjustment mechanisms;

45 Fig. 4 is a detached perspective view illustrating one of the folding mechanisms and adjusted for a "bottom" fold;

50 Fig. 5 is a view similar to Fig. 4 but illustrating another of said folding mechanisms—the mechanism being illustrated in a position to make an "end" fold;

55 Fig. 6 is a fragmentary schematic view and with parts omitted, for purposes of better illustration, and depicting the driving mechanism employed in connection with the present embodiment of this invention;

Fig. 7 is an end elevation;

Fig. 8 is a front elevational view, with parts broken away, and taken substantially on broken line 8—8 of Fig. 7;

60 Fig. 9 is a sectional view, with parts in elevation, and taken substantially on broken line 9—9 of Fig. 8; and

Fig. 10 is a view substantially in plan and with parts in section and taken substantially on broken line 10—10 of Fig. 8.

65 In explaining this invention, reference will first be made to Fig. 1 of the drawings as it is believed the same will permit better explanation of the invention and the mode of operation thereof.

70 I wrap and fold the paper about an article all on a common level. In order to explain the various positions of the article which is being wrapped, I have assigned different numbers to the same article or package depending on its location. Initially the package to be wrapped is located at a position and numbered 20 where the same rests on a platform 22. The package 20 may be moved to such a position manually or by suitable conveyor means (not shown). By means, to be hereinafter de-

scribed, the package 20 on the platform 22 is moved so it assumes the position in which it is shown where it is numbered 24. In moving from 20 to 24, the package is pushed against a depending or draped sheet of paper and which portion of the paper is numbered 26. As the package passes horizontally over the slot 28 through which the sheet of paper 26 depends, the package moves the depending sheet with the package and at the same time the package passes between folding members 30 and 31 and number one end fold is performed as the package is moving to the location where it is marked 24.

When the package reaches the location marked 24, the second end fold is caused by the end folding members 32 and 33. The end folding members 32 and 33 are above the package when the package reaches the location numbered 24 and substantially immediately upon reaching said location, the end fold members 32 and 33 pass downwardly and fold the paper for the second end fold but for purposes of illustration, the second end fold is not shown until the package reached the location where it is numbered 34.

When the package and the piece of paper thereon with two end folds is in the position where it is numbered 34, there will be a depending portion of the paper in slot 28 and as the package moves toward the location where it is marked 36, the piece of paper which is draped downwardly from the package and in said slot 28 encounters the bar 38, a fragment of which is shown schematically in Fig. 1, and the said bar 38 (which will be more completely described in connection with other figures such as Fig. 10) will fold the piece of paper to provide the overlap at the bottom of the package as shown. At the same time the package is advancing from the station where it is marked 34 to the station where it is marked 36, the third end fold is formed and the paper is positioned so that the fourth fold will be made by the devices which are shown detached in Figs. 4 and 5 and a fragment of one thereof is shown in Fig. 1 schematically. However both of the devices are illustrated in other figures such as Fig. 3 of the drawings.

Then in accordance with the way in which the devices of Figs. 4 and 5 are adjusted, either the fourth fold is an "end" fold as shown in Fig. 1 of the drawings or is a "bottom" fold as shown in Fig. 2.

The package indicated by 40 in Fig. 1 illustrates a position of a package after completely folded and sealed and discharged from the machine.

Referring to Fig. 3, a main frame portion 42 supports a threaded member 44 and the threaded member 44 threadably mounts a screw member 46. Screw member 46 is shown as threaded internally and externally and the external threads of the screw member 46 are mounted in said threaded portion 44. A lever 48 is rigid with the screw 46 and provides a means for rotating the said screw. A screw 50 is threaded and is mounted in the internal screws of the screw member 46 and in turn the screw 50 is connected with a rod 52. The arrangement of double screws is designed to provide relatively fast travel longitudinally of the screw 50 and the rod 52 connected therewith, all with a minimum amount of rotation of the lever 48. However, if desired, the double screw arrangement need not be employed and other means may be employed to provide longitudinal travel of the rod 52 in either direction.

The rod 52 moves longitudinally in either direction by operation of the lever 48 and through bell crank 54 causes angular movement in either direction of the shaft 56. The shaft 56 is carried by suitable bearings 58 connected with main frame portions 60. The shaft 56 carries a crank 62 and the crank 62 terminates in a slot 64. A block 68 is mounted for sliding movement on shaft 70. To accomplish this, the block 68 carries a pin 72 which pin 72 is mounted in the slot 64. The shaft 70 is carried by main frame portions 42 and 74.

The block 68 also mounts a rack 76. The rack 76 is

connected with a package arm 78. The rack 76 is supported for sliding movement by a bracket 80. The bracket 80 is connected to main frame portion 82. A pin 84 rotatably mounts pinion 86. The rack 76 and pinion 86 are in mesh. Above the pinion 86 and in mesh with said pinion 86 is a second rack 88. The said second rack 88 is rigid with a block 90 and the block 90 is slidably mounted on the shaft 70. The block 90 also carries a package arm 92. The package arms 78 and 92 are mounted for adjustment toward and away from each other so that the portions 94 and 96 of the package arms 78 and 92 are moved a distance away from each other determined by the length of the package to be wrapped.

When the package is in the position indicated by 20 in Fig. 1 of the drawings, and is between arm portions 94 and 96 (see Figs. 3 and 10) then the arm portions 94 and 96 are moved toward or away from each other so that they will snugly engage the ends of the package to be wrapped. The end folding members 30 and 31 must be properly positioned as respects each other so that, as the package moves from the position indicated at 20 in Figure 1 and where it is in the position indicated as 24 in said Figure 1, there will be provided a tight and appropriate first fold. Also the end folding members 32 and 33 which provide for the second end fold, must be properly positioned relative to each other to provide for an appropriate second end fold.

I prefer to use the same lever 48 to make various adjustments of parts of the device where adjustments are required by the length of the package to be wrapped. Thus other mechanism operates as the shaft 56 is angularly moved in response to movement of the lever 48. The lever 98 which is fixed on shaft 56 also angularly moves. The lever 98 has one end portion pivotally connected with a channel 100 and has its other end portion pivotally connected with a rod 102. The channel 100 is of channel shape for purposes hereinafter mentioned and the said channel 100 and the rod 102 are linked together by a portion of a bell crank 104 and the said portion of the bell crank 104 is the same length as the lever 98 to form a parallelogram construction. Also the bell crank 104 is pivotally connected to main frame portion 106. Bell cranks 108 and 110 are respectively pivoted to portions of a travelling table 112.

Thus it will be apparent that as the shaft 56 angularly moves, the rod 102 and the channel 100 will be moved toward and away from each other. The bell cranks 108 and 110 each have a lever portion 114 and each lever portion 114 is pivotally connected with a block 116 and each of the said blocks 116 are mounted for sliding movement in channel 100. Guides 118 and 120 are mounted for sliding movement on bar 122 and bar 122 is carried by the travelling table 112. The bell cranks 108 and 110 are respectively pivotally connected with the said guides 118 and 120.

It will thus be seen that by movement of the said lever 48 that the end folding members 30 and 31 may be adjusted relative to each other in an amount determined by the length of the package.

Also each of the end folding members 32 and 33 is pivotally connected with a bracket 124 and one of the brackets 124 is supported on a guide 118 and the other on guide 120. Thus by adjusting the positions of the end folding members 30 and 31 relative to each other, there is simultaneously effected an adjustment between the end folding members 32 and 33 as respect each other. The mechanism for raising and lowering the end folding members 32 and 33 will be later discussed.

As a package is in station designated by 24 in Fig. 1 on the drawings, then the package will move in the direction of the arrow to 34. The travelling table 112 carries with it the end folding members 30, 31, 32 and 33 and thus the two end folds which were accomplished before the package left the position indicated by 24 will be held until the package reaches the location 34.

5

The members designated generally as 126 and 128 provide the third and fourth folds and thus must also be adjusted relative to each other to fit a package of a given length.

Previously it was described that the block 68 (see Fig. 3) would slide on shaft 70 in response to movement of the lever 48 and the interconnecting means. Block 68 is connected with the end folding member 126. The end folding members 126 and 128 are mounted for sliding movement toward and away from each other by frame portion 130. Block 90 carries a rod 132 which is connected with end folding member 128. Thus the end folding members 126 and 128 are adjusted toward or away from each other in response to movement imparted to the lever 48, which through the mechanisms described causes the blocks 68 and 90 to move and in turn the movement thereof is reflected into movement of the end folding members toward or away from each other.

Assuming that an adjustment has been made in accordance with the foregoing, so that the device is in a position to wrap packages of a given length, then (see Fig. 9) the roll of paper 134 is supported by roll supporting shaft 136 and associate parts from the main frame of the machine. Paper from the roll of paper 134 is fed over a roller 138, which again is mounted by the main frame of the machine and under vertically movable and relatively light hold down weight 139. Then the paper is threaded under a roller 140, which roller 140 is mounted for vertical traveling movement. The roller 140 normally is in the up position as shown by full lines in Fig. 9 of the drawings and its lowermost down position is indicated by dotted lines in said Fig. 9. Then the paper is threaded over roller 142, which is fixed to the main frame of the machine and under vertically movable and relatively light hold down weight 143. The portion of the paper from the paper roll 134 which extends from roller 138 and around roller 140 is numbered 144. The portion of the paper which extends upwardly from the roller 140 and to the roller 142 is numbered 146. The portion of the paper which extends downwardly from the roll 142 toward a paper gripping device 148 is numbered 150.

It is desired that slack paper be provided at a desired time in the cycle of operation. The means for moving the said slack pulling roller 140 up and down will be described in connection with the portion of the cycle when the same operates.

The paper passes through the paper gripping device which again only grips the paper at a desired time in the cycle and then the portion of the paper which extends downwardly from the paper gripping device 148 extends through the slot 28 and thence the paper extends downwardly to a paper cutting device which is numbered generally 152. This paper cutting device 152 again like other parts only operates at a given time in the cycle of operation of the device and its manner of operation will be described later.

The paper cutter or knife mechanism 152 must be adjusted so that the amount of paper that goes around the package crosswise will be adequate but not excessive. In adjusting the device, the amount of paper that hangs below the top level of the traveling table 112 and through the slot 28 will be one-half of the width of the bottom surface of the package, plus one-half of the desired overlap of the seam on the bottom of the package. The mechanism to cut the paper and provide the desired amount of draped paper as just explained will be next considered.

A shaft 154 (see Figs. 8 and 9—lower right hand corner Fig. 9) carries a suitable indicator or dial 156 to indicate the relative position of the paper cutting mechanism 152. The dial 156 also is provided with suitable catch mechanism so as to hold the shaft 154 in any selected position.

6

The shaft 154 mounts a lever 158 (see Fig. 8) and the angular position of the lever 158 is determined by the angular position of the shaft 154 to which it is fixed. The lever 158 terminates in a slot 160. Another lever 162 which mates with the lever 158 has a slot 163 and is mounted on a pin 164. The pin 164 rotatably mounts the lever 162 and the pin 164 is carried by a frame portion of the paper cutter mechanism 152. A plate 166 having a slot 168 therein is also carried by the frame mechanism of the paper cutter 152. A pin 170 having suitable shoulder portions is mounted in the slots of levers 158 and 162 and the slot of plate 166. Thus upon angular movement of shaft 154 the levers 158 and 162 will be angularly moved.

The outer end portions of each of the levers 158 and 162 is pivotally connected to a link 172 and each of the links 172 is pivotally connected with the paper cutter mechanism 152. Thus the paper cutter mechanism 152 may be raised or lowered as desired and the relative position thereof will be calibrated on the dial 156.

After the paper has been threaded, as previously explained and the paper is depending through slot 28 and there is sufficient paper to reach the cutter mechanism 152, a cycle of operation may be commenced.

A pusher mechanism 174 is employed to push a package from the position marked 20 in Fig. 1 of the drawings to the position marked 24. This may be accomplished by a switch mechanism manually depressed or depressed by the weight of the package for a completely automatic machine if desired.

Referring now to Fig. 6 of the drawings, the source of power is indicated as an electric motor 176. A belt 178 is reeved over the pulley of the electric motor 176 and said belt 178 is also reeved over a variable speed mechanism indicated generally as 180. The variable speed mechanism is connected with a speed reduction mechanism 182 which in turn is connected with a clutch mechanism 184. The gear ratios are designed so that one revolution of the clutch mechanism 184 will take care of one complete cycle of operation. A mechanical mechanism is shown to trip the clutch after one revolution. This is indicated schematically by the clutch mechanism 184 which may be of a standard one revolution clutch type so that at the end of each revolution it will automatically stop and then the clutch mechanism is engaged for another cycle by means of mechanical links and levers. In said Fig. 6 of the drawings, I have schematically shown a rod 186 which is to be pushed down to engage the clutch. The rod 186 is connected by a link to a rod 188 and the rod 188 is supported by main frame portions 190. Thus as the rod 186 is pushed down, angular movement of the rod 188 in a counter-clockwise direction obtains. This movement is imparted through a link 192 to rod 194. Movement of rod 194 in turn is imparted to lever 196 and in turn through the other linkage to the clutch mechanism 184. The reason for the various links, levers and rods is to provide a manual control close to the position where an operative will stand.

Rotary motion of the shaft 198, which is connected with the clutch mechanism 184, is imparted to shafts 199 and 201 by reason link belts 203 and 205. Bevel gear 200 (see also Fig. 10 of the drawings) is mounted on shaft 201. The bevel gear 200 meshes with bevel gear 202 and the motion is transmitted by the said bevel gears to shaft 204. The motion of shaft 204 is transmitted by link chain 206 (see also Fig. 7), which link chain is reeved over sprockets 208, 210, 212, and 214. Sprocket 208 is mounted on driven shaft 204. Sprocket 214 is mounted on shaft 216 (see Fig. 6) and shaft 216 mounts a cam plate 218. On one surface of the cam plate 218 is a roller 220. When the roller 220 engages with cam follower 222, link 224 is angularly moved about its pivotal support 226. The angular movement of the link 224 is imparted to a link 228, thence through

lever 230, shaft 232 (fixed to said lever 230) and thence through a lever 234 to the pusher mechanism 174, which is pivotally connected to it. The pivotal connection is obtained by having a slot in the end portion of the lever 234 and a pin 236 carried by the slidably mounted pusher member 174.

In order to have a power return of the pusher mechanism 174 and to lock the pusher mechanism when in its retracted position, a second cam follower is provided and a cam surface 238 is mounted on the cam plate 218. The cam surface follower 240 imparts movement to the lever 224 in the opposite direction to that described in connection with the other cam mechanism on the cam plate 218.

Thus when a package is in the position 20 on Fig. 1 of the drawings and the cam plate 218 makes a complete revolution, the pusher portion of the pusher mechanism 174 pushes a package to be wrapped against the paper which is suspended and draped and when the package moves from station 20 to 24, the package will appear as indicated in position 24 with the exception that for the purpose of illustration the operation of the end folding members 32 and 33 is not illustrated at such portions of the cycle. However, immediately upon the pusher member pushing the package into place to station 24 and upon the start of the retraction of the pusher member, the end folding members 30, 31, 32 and 33 have all accomplished their purposes. Prior to forward movement of pusher mechanism 174, paper gripping device 148 is released and paper slack pulling roller 140 operates so that released and free paper will be available. These mechanisms will be described after description of the operation of paper cutter 152 and associated parts.

Before the pusher mechanism 174 moves to push a package from station 20 to station 24 of Fig. 1 of the drawings, cam 242 (see Fig. 7) mounted on the same shaft as sprocket 212 engages the cam follower 244. Cam follower 244 is connected with arm or lever 246. Carriage 248 is mounted for vertical traveling movement on guides 250. Roller bearings 252 facilitate travel of the carriage 248 on the guides 250 or on one thereof. The lever 246 is pivoted as by a bearing 254 and the free end portion of the lever 246 is disposed between a roller 256 and a pivoted latch 258. Thus at the appropriate time the lever 246 is raised by the cam 244. In Figs. 7, 8 and 9 the carriage 248 is shown in its uppermost position for purposes of illustration. In the rest position or at the end of a cycle or the start of a cycle, the carriage 248 is in an intermediate but not in its uppermost position. However just prior to the pusher mechanism 174 operating to move a package from station 20 to station 24 of Fig. 1, the carriage 248 is raised to its uppermost position.

Just after the pusher mechanism starts to retract (after it has pushed a package from station 20 to station 24) then the carriage 248 drops and at the same time the end fold members 32 and 33 drop.

As the carriage 248 drops, it drops over the suspended portion of the paper 26 (see Fig. 1) and carries the paper down to a cutoff mechanism which will be next described. The carriage 248 in its lowermost position rests on a resilient pad mechanism 260 comprising laterally spaced pads. (See Fig. 9.)

Paper cut off knife 262 is vertically movable between the pads of pad mechanism 262. The carriage 248 moves downwardly when the cut off knife 262 is retracted and the cut off knife 262 rises to cut the paper, and operate against the said carriage 248 when it is down.

The mechanism for operating or raising the cut off knife at the appropriate time comprises (see Figs. 6 and 10) a cam 264 carried by sprocket 214 (which has been previously described and is driven by link chain 206). A cam follower 266 is hingedly supported by a frame portion of the machine and this may be accomplished as by a pin 268. The paper cutter 152 (see par-

ticularly Fig. 8) has a cut off knife 262 which is vertically reciprocable on the paper cutter carriage. The knife 262 is supported by two pins 270 and they are slidably in diagonal slots 272. The slots 272 are disposed in a longitudinally slidable plate 274. The paper cutter carriage 276 of the paper cutter 152 is provided with pins 278 which slidably mount the plate 274 for longitudinal travel. The position of the parts as shown in Fig. 8 of the drawings are such that the knife 262 is in its up position. Vertical slots 280 (best shown in Fig. 8) are disposed in the carriage 276. The cutter knife 262 carries pins 270 and the pins 270 are mounted in the vertical slots 280 as well as in the angular slots 272.

Thus as the plate 274 moves toward the right as shown in Fig. 8 of the drawings, the pins 270 will rise because of the vertical slots 280 and the angular slots 272. This is a position as indicated in Fig. 8. When the plate 274 moves to the left as shown in Fig. 8 of the drawings, the knife will be retracted.

Rods 282 and 284 are mounted for sliding movement and each is spring loaded to return to normal by spring means 286. The ends of the rods 282 and 284 engage against cam follower 266. Thus at the appropriate time sequence in a cycle, the carriage 248 drops and the cut off knife 262 rises to cut the paper disposed between the two pads of pad mechanism 260. (See Fig. 9.)

At the time of the cutting, the carriage 248 is locked to the carriage paper cutter. This is accomplished by a latch 288 carried by the carriage 248 and a catch 290 carried by rod 284. In view of the fact that the rod 284 moves longitudinally, it will move the latch and catch in momentary engaging position when the cam 264 has moved the rod 284 into the position shown in Fig. 8 of the drawings.

Thus as the knife operates to cut the paper from the roll, we have a package with paper under the advancing portion of the bottom; over the advancing edge; over the top; over the trailing edge; and downwardly to the paper cutter. Also as the knife operates it leaves behind a drape of paper ready for the next package to be wrapped thereby.

During the portion of the cycle where paper is being cut by the paper cutting mechanism 152 and during the portion of the cycle when the slack pulling roller 140 is operating, the paper gripping device 148 is in paper gripping position and at all other times it is in paper releasing position. The paper gripping device 148 is operated by a cam 292 (see Fig. 7) which is carried by sheave 210. A bellcrank 294 is pivotally supported by the main frame of the machine and one portion of the bell crank 294 functions as a cam follower and the other portion of the said bell crank 294 is pivoted to a link 296. The other end portion of the link 296 is pivotally mounted to a lever 298 and the lever 298 is rigidly secured to a rotatable shaft 300. The shaft 300 is rotatable as respects the main frame of the machine. The paper portion 150 (see Fig. 9) is fed between fixed shaft 302 and rotatable shaft 300. Rotatable shaft 300 carries a projecting portion or plate 304 and thus upon rotation of shaft 300 at the suitable portion of the cycle of operation, paper will be gripped between the plate 304 and the fixed shaft 302.

As will best appear in Fig. 7, the bell crank 294 must operate in a counterclockwise direction in order to grip the paper. Thus the low portions of the cam 292 cause the paper gripping mechanism to engage the paper. Thus the spring 306 is employed to tend to urge the cam follower portion of the bell crank 294 against the cam 292. However, a lock is provided so that the said spring 306 does not function to close the paper gripping mechanism until said lock is released.

The said locking mechanism comprises a bell crank 308 which pivotally mounts a U-shaped portion of a link 310. At the lower portion of the link 310, there is provided a slot 312 and said slot 312 normally engages a key 314 carried by a main frame portion of the machine. Due to the shape of the link 310 and its normal position

relative to its pivot, the said link 310 tends to move in a counter-clockwise direction and engages the slot 312 with the key 314.

In order to release the lock between the slot 312 and the key 314 at a suitable time, a dog 258 is carried by the carriage 248. When the carriage 248 is in its lowermost position, the latch or dog 258 wedges between the link 310 and a frame portion 316 carried by the main frame of the machine and thus releases the slot 312 from the key 314. Upon release of the slot 312 from the key 314, the spring 306 will urge the cam follower portion of bell crank 294 to engage cam 292 and thus the paper is gripped. As the carriage 248 cooperates with the paper cutter 152 to cut paper and in view of the fact that the falling of the carriage 248 sets the time interval at which the paper is being held, it is therefore insured that at the time of the cutting of the paper that the paper will be held by the paper gripping device 148.

The paper is gripped until the carriage 248 rises and until the cam portion of the bell crank 294 engages an appropriate portion of the cam 292. It will be observed that as the bell crank 308 moves in a counter clockwise direction, it moves the link 310 slightly upward and therefore moves the slot 312 out of alignment with the key 314. On the other hand where the bell crank 308 moves in a clockwise direction, the link 310 will move downwardly and the slot 312 and key 314 will be in alignment. Thus the latch or dog 258 initiates the locking of the paper by the paper gripping device 148. However, the cam 292 functions to release the paper gripping device at the proper time in the cycle of operation of the device. Obviously a cam arrangement might be employed to determine the full cycle of operation of the paper gripping device rather than the particular means illustrated and described.

At the time the paper is being gripped, the slack pulling roller 140 functions. Cam 292 carries roller 318 eccentric thereof. Roller 318 functions as a driver of cam 320 which cam 320 acts as a lever to angularly move shaft 322. Shaft 322 is connected to links 324. (See Fig. 9.) Each of the links 324 is mounted for longitudinal sliding movement as respects the links 326 to provide for a change of the overall length of each of the sets of links 324 and 326. Link 326 pivotally carries glides 141 mounted for vertical sliding movement in guides 328 and which guides are carried by main frame structure. Glides 141 rotatably mount roller 140. To assist turning movement of the shaft 322 in providing upward travel of the slack pulling roll 140, a lever 330 may be fixed on shaft 322 and a spring 332 connected between said lever and a main frame portion of the machine.

The paper gripping mechanism remains in engaged position until just before the completion of one cycle of the device where the device is in position to have the pusher member 174 move another package from station 20 of Fig. 1 to station 24. At the start of each cycle the paper gripping device 148 will be in released position and thereafter it will assume its gripping position at times during a cycle as previously indicated.

As a package passes from station 20 to station 24, it first encounters a slidably mounted ejector member 334 (see Figs. 6, 8 and 10). The said ejector member 334 is slidably mounted in slots 336 in traveling table 112. A lever 338 is pivotally mounted by pivot means 340 on the bottom of the table 112. The lever 338 carries a pin member 342 intermediate its length and the mode of operation of the ejector 334 will describe in the portion of the cycle when it is ejecting. At this point in the cycle, the free end portion of the lever 338 is in the position of travel of a pin member 344. Thus as the ejector member 334 is slidable in said slots and the amount that the ejector member is pushed forward by an entering package will depend entirely upon the width of the package.

When a package reaches station 24 of Fig. 1, then the pusher mechanism 174 starts its retractal movement and

almost immediately the carriage 248 starts to drop and at the same time end folding members 32 and 33 start to drop. The mechanism for causing the end folding members 32 and 33 to drop comprises linkage connected to the driven shaft 204 which shaft was previously described.

On the shaft 204 (see Fig. 9) is a cam follower 346 which mounts, on the outer portion thereof, a roller 348. A cam 350 is substantially U-shaped and when the surface 352 is engaging the roller 348, the end folding members 32 and 33 are being lowered and when said roller engages the cam surface 352, the said members 32 and 33 are being raised.

A jack shaft 356 (see Figs. 6 and 9) is mounted on a main frame portion 358. A lever 360 is secured to the jack shaft 356 and the lever 360 terminates in a slot 362. Guides 364 are mounted for sliding vertical movement in guideways 366. The guideways 366 are carried by main frame portions and pin 368 is carried by guides 364. The pin 368 enters into the said slot 362 in lever 360. A channel forming member 370 may be integral with the guides 364. The channel forming member 370 has a U-shaped portion so that a roller 372 may be mounted for traveling movement to said channel forming member 370. The channel member 370 as just described is carried by a main frame portion of the machine while the roller 372 is carried by the traveling carriage 112. The roller 372 is connected by a link 374 which in turn is pivoted to a link 376. The link 376 and the link 378 form a parallelogram having pivots 380. As the links 376 and 378 are raised and lowered, the parallelogram relation to these links is maintained by the structure just described. The said links 378 and 380 mount the end folding devices 32 and 33. The advantage of having the parallelogram is that as the links 32 and 33 come down, the bottom edges thereof will be parallel to the bottom of the package. The end folding devices 32 and 33 urge the paper down at the ends of the package and over the outside of the end folding members 30 and 31. The end folding members 30 and 31 are snugly against the ends of the package (snugly because of the previous adjustment thereof) and then the end folding members 31 and 32 come down when the package is at station 24 and then the traveling or sliding table 112 moves from station 24 in Fig. 1 to station 34. While the carriage is so traveling, the end fold members 30, 31, 32 and 33 remain in the same position that they were in when they were in position 24.

As the only time the mechanism for raising or lowering the end folding members 32 and 33 is when the same are in station 24 of Fig. 1 of the drawings, the channel 370 need not extend the full length of the machine (see Fig. 8).

In the event that heating elements are desired to seal the package, the following mechanism may be employed so that as the packages move between stations 34 and 36 of Fig. 1 of the drawings, they pass by retractable heaters 383 to engage the bottom of the package and retractable heaters 385 to engage the ends of the package. The means to retract the said bottom heaters 383 and the end heaters 385 will include a lever 387 (see Figs. 6 and 8) carried by a main frame portion of the machine which is positioned in the path of travel of a pin 389 and which pin 389 is carried by the traveling table 112. Thus as a package is passing from station 24 to station 34 and when the package almost reaches said station 34, the pin 389 engages lever 387 and the heaters 385 are moved inwardly and the bottom heaters 383 are moved upwardly. The heaters engage a package as it is moving from station 36 to station 40 of Fig. 1 and thus the preceding package is subjected to the action of the heaters to seal the ends and then the heaters are retracted. If the heaters are not retracted and are allowed to remain adjacent a package

while the package is at rest, obviously there would be burning.

When the carriage or table 112 reaches station 34, then the direction of travel of the package is changed but the package remains all on one level which is not the prior commercial art.

The pin 342 travels with the carriage 112 and moves in front of a pivoted lever which is pivoted to a main frame structure (see Figs. 6 and 10). A bar 384 is slidably mounted on a main frame portion and the bar 384 is pivotally connected with the said lever 382 by pivot means 386. The lever or sliding bar 384 has a cam follower 379 which is moved by wedge shaped cam 381 mounted on a face of driven cam wheel 388. The cam wheel 388 is mounted on shaft 199 and thus operates in timed sequence during a cycle of operation of the device. A spring 390 urges the sliding bar 384 in a direction to return the same to normal after the cam follower 379 leaves the camming surface of the cam 388. In other words, sliding bar 384 is moved in one direction by the cam 388 and is returned in the other direction by the said springs 390.

The pin 344 is carried by the slidably mounted ejector 334 and when the pin 344 is in its most forward position, it will engage during its travel the cam 392 (see Figs. 6 and 10). The purpose of the cam 392 is to insure that the ejector 334 is always slightly retracted after ejecting a package before it starts on its return travel. Thus during the forward travel of the sliding table 112 or in other words travel from left to right as viewed in Fig. 10 of the drawings, the ejector member 334, if it is in its most forward position during such travel, it will be moved slightly rearwardly as the pin 344 engages cam 392 and upon the return travel of said table 112 or in other words right to left as viewed in Fig. 10 of the drawings, the ejector 334 will be moved slightly rearwardly. As the ejector member 334 is slidably mounted and is not spring mounted, the said cam 392 is used as a means to insure that the position of the ejector 334 is determined during its return travel.

As the package is ejected by the ejector member 334 and is moved in the direction from position 34 to position 36 of Fig. 1 of the drawings, the draped or hanging portion 394 of paper encounters bar 38 and as the package travels, the said portion 394 is folded under the package and at the same time the upper edge portions of said portion 394 encounter end folding members 126 and 128 and thus the paper assumes the position shown at station 36. At the same time the portions of the paper which are indicated by 396 in Fig. 1 of the drawings will pass either through the slot 398 of Fig. 4 of the drawings or the slot 400 depending upon the adjustment which will be described. There are two end folding members 126 and 128 and each is provided with means so either a slot 398 or a slot 400 is the operative slot.

As the ejector member 334 is operating to eject a package and move it from station 34 to station 36 in Fig. 1, not only are folds provided as mentioned but in addition there is the matter of providing tension on the paper to get a tightly wrapped package.

The lever 387 (see Figs. 6 and 8) is shown in the nature of a bell crank and one arm thereof is engaged by the pin 389 and the other arm thereof is pivotally connected with a link 391. Longitudinal movement of the link 391 is translated to rotary motion of shaft 393 by lever 395. Shaft 393 carries a lever 397. There are two levers 397 and they support a bar 402. As the bar 402 moves in a clockwise direction as indicated in Fig. 6 of the drawings, the said bar engages two levers 404. Each lever 404 is rigid on a shaft 406 and the shafts 406 are mounted respectively on bars 408 and 410 and the bars 408 and 410 respectively are parts of the folding members 126 and 128. Each one of the end heaters 385 is carried by a shaft 406 and the parts are mated so that

upon clockwise movement of the shaft 402 (see Fig. 6) the end heaters 385 are moved toward each other. Due to the fact that the mechanism for moving the end heaters toward each other includes the bell crank 387, the portion of the cycle during which the end heaters are in their closest position toward each other will be at the time when the carriage 112 is in the position where a package will be in station 34 of Fig. 1 of the drawings and as soon as the carriage 112 is retracted, then the end heaters will be retracted. At the same time the bottom heater is raised when the end heaters are moved toward each other. The motion on shaft 393 will be translated by a cam 412 to raise reciprocally mounted bottom heaters 383.

As the bottom heater members 383 are raised by means described, a bar member 414 is also raised. The bar member 414 is positioned above two bell crank members, each of the bell crank members having three arms. The arms 418 of the bell cranks 416 are engaged by the bar member 414 as the bottom heater member moves downwardly. Thus as the bottom heater 383 moves downwardly or retracts, a force is urged on the bell cranks 416 tending to turn them in a counterclockwise direction as respects the showing in Fig. 6 about their axes 420. Rod 422 is mounted for rotary movement and rod 424 is rigid with rod 422 and thus the rods 422 and 424 are in effect a lever mounted for rotation about the axis of rod 422. The reason for using the rod arrangement rather than cams or gears is that the bars 408 and 410 are movable toward and away from each other in the adjustments to fit a predetermined length package. The fold members 126 and 128 which are connected with said bar members 408 and 410 are adjustable for a predetermined length package in view of the fact they are connected with said bar members. Also the end heating members 385 are adjustable for predetermined length package. It is desired that the paper tensioning members which comprise arms 426 of bell crank members 416 likewise be adjustable for a predetermined length package so the paper tensioning member provides tension adjacent the end portions of a package. Thus it is desired to have a slidable connection between the bell crank members 416 and the means to operate the same. The third leg of each of the bell cranks 416 is a bifurcated member 428. The rod 424 interfits in the fork portion of the arm 428. Thus when the bell crank members 416 turn in a counter-clockwise direction, the rod 422 will turn in a clockwise direction and lever 430, carried by rod 422, will turn clockwise. Lever 430 is urged in a counter-clockwise direction by a spring tensioning means 432. A catch 434 is pivotally mounted and by gravity tends to move into a locking position against lever 430. Thus when the heater members 383 descend, through the mechanism just described, they move the lever 430 against tension of (preferably) adjustable spring 432 and catch 434 prevents counter-clockwise movement of the shaft 422.

The paper tensioning arms 426 urge depending paper 394 from a package when the package is in station 34 of Fig. 1 and against a side plate 436 of the carriage 112. Thus if paper is between the said paper tensioning members 426 and the said side plate 436 and the catch 434 is released, then the spring 432 will provide the desired tension on the paper as the package moves from station 34 to station 36 of Fig. 1.

The means for releasing the said catch 434, which is cocked each time the bottom heater members 383 descend, comprises a catch releasing pin 438 carried by sliding bar 384. The sliding bar 384 was described in connection with the operation of the ejector 334. Thus when the ejector member 334 commences to operate, at the same time the catch 434 is released so that the paper tensioning arms 426 are released so that they can urge paper against the side plate 436 of the traveling table 112.

Each of the bars 408 and 410 carries a post 440 (see

Figs. 4 and 5). Each of the posts 440 is provided with spaced apart and aligned key hole slots 442. A pin 444 is aligned for traveling movement in the said key hole slots and the two pins 440 connect with each movable plate 446. A movable plate 446 and a relatively fixed plate 448 constitute each of the end folding members 126 or 128.

Assuming that the movable plate 446 is in its down position as it is shown in Fig. 5 of the drawings, then the device will provide for an "end" fold as distinguished from a "bottom" fold. An "end" fold as termed in the art is depicted as the package wrapped at station 40 in Fig. 1 of the drawings while a so-called "bottom" fold is depicted in Fig. 2 of the drawings.

Fig. 5 of the drawings is a perspective view which is taken of the member 126 or the member to the left in Fig. 3 of the drawings and the view is taken looking upwardly toward the outside of end folding member 126.

Assuming that a package is at station 34 of Fig. 1, the draped portion 394 of paper encounters bar 38 and shortly thereafter the portion of the paper above the said bar 38 encounters the arcuate portions 450 of end folding members 126 and 128. This causes the last two end folds to be started. The third end fold may be either started or completed before advancing end portions 452 enter slots 398 in the end fold members 126 and 128 and as the said portion 396 attempts to ride up the slot 398 the said portion is folded upwardly and against a package and the end fold illustrated at station 40 in Fig. 1 is accomplished.

Assuming that the movable plates 446 of the folding members 126 and 128 are in the position shown in Fig. 4 of the drawings, and as the package reaches station 36 of Fig. 1, the advancing end portions 452 of the portion of paper 396 pass in the space below the tip portions 454 of the movable plates 446. Thus the portion of paper 396 move downwardly and between the movable plates 446 and in the slot 400 (see also Fig. 10) between said movable plates 446 and the plates 456 the said portions 396 then encounter diagonal slots 458 and as the paper portion travels in said slots, because of the diagonals involved, the paper is folded to form the "bottom" fold illustrated in Fig. 2 of the drawings.

The means for causing traveling movement of the traveling table 112 comprises the cam wheel 388 (see Figs. 6 and 10) which was previously described in connection with the operation of the heater mechanisms 383 and 385, and the arm paper tensioning devices 426. The said driven cam wheel 388 carries a roller 460 on the face opposite to the face which carries the wedge shaped cam 381. The roller 460 operates in an L-shaped groove 462 in the cam 464. The cam 464 is mounted by pivot means 466 to a main frame portion. A rack 468 is connected with cam 464 and rack 468 has its teeth in mesh with a pinion 480. Pinion 480 is rotatably mounted by a main frame portion of the device. Pinion 480 rigidly carries another pinion 482 and pinion 482 meshes with the teeth of a rack 484. Rack 484 is carried by the traveling table 112. By the use of the racks and pinions mentioned, relatively small amounts of movement of rack 468 provide the necessary traveling movement of table 112.

In the foregoing it will now be obvious that I have provided a wrapping machine wherein there is a platform 22 to receive thereon a package to be wrapped. Also I have provided a roll of paper 134 wherein the leading end portion thereof extends transversely of the platform 22 and extends from above the said platform to below the platform. Next I have provided pusher means 174 to urge a package in a first direction and into and past the vertical line of extension of said end portion 26 of wrapping material and the package to be wrapped carries with it wrapping material under the advancing portion of its bottom, over its advancing edge, over its top, over its ends, and with the paper hanging from the then trailing end portion of the package. Carriage means 248 is

mounted for vertical travel and it engages a portion of the wrapping material behind the package to be wrapped and urges a bight of the same to an elevation below the platform. At this location cutting means 152 is provided so that the bight of paper is severed at this location and there will be the trailing end portion of the paper on the package extending down through slot 28 and the leading end portion of the paper will also be extending down said slot so that the paper from the roll is ready for wrapping the next package without the usual step of making an extra operation to have the paper ready for the next package.

As the package is moved by the pusher mechanism 174, the leading edge portion encounters first end fold members 30 and 31 and the first end fold is accomplished during such travel. Thereafter the second end fold members 32 and 33 drop and the second end fold is accomplished.

Prior to the operation of said pusher mechanism 174 the paper gripping device 148 has operated and the slack pulling roller 149 has operated to provide a loop of free paper and then the paper gripping device 148 is released so at the time the package is moving forward it is pulling on free paper which is free from the roll of paper or wrapping material 134.

Next the traveling table 112 moves in a direction substantially at right angles to the first direction of travel of the package and then the package is moved in a third direction which is substantially parallel to its first direction of travel but at an angle of substantially 180° thereto and the package is moved by the ejector means 334. The package passes by bar 38 to complete the wrapping of the paper about the bottom of the package and then the third fold members best shown in Figs. 4 and 5 are encountered. These third fold members comprise the arcuate portions 450 (best shown in Figs. 4 and 5) and the advancing end portions 452 of the wrapping material are either directed into slots 398 or slots 400 and 458 (best shown in Fig. 10 of the drawings) to provide the fourth fold to be a so-called "end" fold or a so-called "bottom" end fold. The so-called fourth "end" fold is best shown in Fig. 1 of the drawings and the so-called "bottom" end fold is best shown in Fig. 2 of the drawings. Preferably retractable bottom heaters 383 and end heaters 385 are provided so that if the package is being wrapped with cellophane, the package may be sealed by the application of heat and the heaters are only in operative position at the desired time to prevent burning.

It is very important in my invention to provide a hanging piece of paper into which a package is urged so that the package will carry the paper from under a portion of its bottom, over its leading edge portion, over its top, and having a portion of the paper extending downwardly from the package and have the paper severed at a bight so that there is a piece of paper hanging from behind the package to be wrapped and there is also the leading end portion of the paper at a location so the device is ready to wrap a new package.

Obviously changes may be made in the forms, dimensions, and arrangements of the parts of my invention without departing from the principle thereof, the foregoing setting forth only a preferred form of embodiment of my invention.

I claim:

1. In a wrapping machine, a platform for disposing thereon a package to be wrapped; a roll of wrapping material having the leading end portion thereof extending transversely of the platform and extending from above said platform to below said platform; pusher means urging a package to be wrapped in a first direction and into and past the vertical line of extension of said end portion of wrapping material, the package to be wrapped carrying with it wrapping material under the advancing portion of its bottom, over its advancing edge, and over its top; carriage means mounted for vertical travel and engaging

15

a portion of the wrapping material behind the package to be wrapped and urging a bight of the same to an elevation below said platform; cutting means disposed at a location below said platform, severing said bight portion of wrapping material from said roll of wrapping material, leaving the then trailing end portion of the wrapping material over the package hanging downwardly from the package and leaving the leading end portion of wrapping material attached to the roll at an elevation below the platform; traveling table means transferring said package and the wrapping material thereon in a second direction and at substantially right angles to said first direction of travel and at substantially the same elevation; and ejector means transferring said package and the wrapping material thereon in a third direction of travel and at substantially the same elevation as in the first and second directions of travel and in a direction substantially directly opposite to the first direction of travel.

2. In a wrapping machine, a platform for disposing thereon a package to be wrapped; a roll of wrapping material having the leading end portion thereof extending transversely of the platform and extending from above said platform to below said platform; pusher means urging a package to be wrapped in a first direction and into and past the vertical line of extension of said end portion of wrapping material, the package to be wrapped carrying with it wrapping material under the advancing portion of its bottom, over its advancing edge, and over its top; carriage means mounted for vertical travel and engaging a portion of the wrapping material behind the package to be wrapped and urging a bight of the same to an elevation below said platform; cutting means disposed at a location below said platform, severing said bight portion of wrapping material from said roll of wrapping material, leaving the then trailing end portion of the wrapping material over the package hanging downwardly from the package and leaving the leading end portion of wrapping material attached to the roll at an elevation below the platform; traveling table means transferring said package and the wrapping material thereon in a second direction and at substantially right angles to said first direction of travel and ejector means transferring said package and the wrapping material thereon in a third direction of travel and in a direction substantially directly opposite to the first direction of travel.

3. In a wrapping machine, a platform for disposing thereon a package to be wrapped; a roll of wrapping material having the leading end portion thereof extending transversely of the platform and extending from above said platform to below said platform; pusher means urging a package to be wrapped into and past the vertical line of extension of said end portion of wrapping material, the package to be wrapped carrying with it wrapping material under the advancing portion of its bottom, over its advancing edge, and over its top; carriage means mounted for vertical travel and engaging a portion of the wrapping material behind the package to be wrapped and urging a bight of the same to an elevation below said platform; and cutting means disposed at a location below said platform severing said bight portion of wrapping material from said roll of wrapping material, leaving the then trailing end portion of the wrapping material over the package hanging downwardly from the package and leaving the leading end portion of wrapping material attached to the roll at an elevation below the platform.

4. The combination of claim 3 wherein a slack pulling means is disposed between the roll of wrapping material and a leading end portion thereof and operable prior to the pusher means, thus providing free paper away from said roll when the pusher means is urging a package.

5. The combination of claim 3 wherein said cutting means which is disposed at a location below said platform is vertically adjustable to determine the length of a piece of wrapping material cut from said roll of wrapping material.

16

6. In a wrapping machine, a platform for disposing thereon a package to be wrapped; a roll of wrapping material having the leading end portion thereof extending transversely of the platform and from above said platform to below said platform; pusher means urging a package to be wrapped in a first direction and into and past the vertical line of extension of said draped portion of wrapping material, the package to be wrapped carrying with it wrapping material under the advancing portion of its bottom, over its advancing edge, over its top and over the advancing ends of the package to be wrapped; first end fold means disposed in the path of travel of wrapping material extending over the advancing ends of the package to be wrapped and providing a first end fold of the wrapping material by relative travel between the said package and the said first end fold means; second end fold means mounted for vertical travel and operable to form a second end fold on the package to be wrapped after said first end fold has been formed; carriage means mounted for vertical travel and engaging a lap portion of the wrapping material behind the package to be wrapped and urging the same to an elevation below said platform; cutting means severing said lap portion of wrapping material from said roll of wrapping material and disposed at a location below said platform leaving the then trailing end portion of the wrapping material over the package hanging downwardly from the package; traveling table means transferring said package and the wrapping material thereon in a second direction and at substantially right angles to said first direction of travel and at substantially the same elevation; ejector means transferring said package and the wrapping material thereon in a third direction of travel and at substantially the same elevation as in the first and second directions of travel and in a direction substantially directly opposite to the first direction of travel; and third end fold means disposed in the path of travel of the wrapping material extending over the then advancing ends of a package to be wrapped and providing a third end fold of the paper by relative travel between the said package and the said third end fold means.

7. In a wrapping machine, wrapping means for extending a sheet of wrapping material about a package with the sheet extending from under a portion of the bottom, over a first edge, over the top and then draped over the second edge and extending below the same; means providing a first end fold adjacent the first edge and a second end fold adjacent the top; means providing a third end fold adjacent the second edge; and means providing a fourth fold comprising spaced apart relatively fixed side plates having upwardly directed diagonal bottom edges, a bottom plate having converging slots; and vertically adjustable side plates having upper edges mating the lower edges of and aligned with said relatively fixed plates, said vertically adjusted side plates in one position of adjustment providing passageways above their upper edges and in the other position providing passageways to said converging slots in the bottom plate.

8. In a wrapping machine, wrapping means for extending a sheet of wrapping material about a package with the sheet extending from under a portion of the bottom, over a first edge, over the top and then draped over the second edge and extending below the same; means providing a first end fold adjacent the first edge and a second end fold adjacent the top; means providing third and fourth end folds comprising spaced apart side plate means, each having a downwardly and rearwardly arcuate forward wall terminating in a forwardly and upwardly extending diagonal slot; bottom plate means having forwardly extending and converging slots, said slots starting adjacent the base of said walls, and means to direct a portion of the wrapping material in slots in the bottom plate means or in slots in the side plate means.

9. In a wrapping machine, a platform for disposing thereon a package to be wrapped; a roll of wrapping

17

material having the leading end portion thereof extending transversely of the platform and extending from above said platform to below said platform; releasable wrapping material gripping means disposed to grip said wrapping material at a top portion and above said platform; slack pulling wrapping material means operable to form a loop of wrapping material between the roll thereof and the gripping means at the time the gripping means are in gripping position; pusher means urging a package to be wrapped in the direction of and into and past the vertical line of extension of said draped portion of wrapping material, said pusher means operating at a time said gripping means are in released position, thus permitting the moving package to carry wrapping material with it obtained from said loop of said wrapping material; carriage means mounted for vertical travel and engaging a portion of the wrapping material behind the package to be wrapped and urging a bight of the same to an elevation below said platform; and cutting means disposed at a location below said platform severing said bight portion of wrapping material from said roll of wrapping material, leaving the then trailing end portion of the wrapping material over the package hanging downwardly from the package and leaving the leading end portion of wrapping material attached to the roll at an elevation below the platform.

10. In a wrapping machine, a platform for disposing thereon a package to be wrapped; a roll of wrapping material having the leading end portion thereof extending transversely of the platform and extending from above said platform to below said platform; pusher means urging a package to be wrapped in the direction of and

18

into and past the vertical line of extension of said leading end portion of wrapping material, the moving package pulling wrapping material with it; carriage means mounted for vertical travel and engaging the portion of the wrapping material behind the package to be wrapped and urging the same to an elevation below the platform; and cutting means severing said lap portion of wrapping material from said roll of wrapping material and disposed at a location below said platform leaving the then trailing end portion of the wrapping material over the package and hanging downwardly from the package and leaving the leading end portion of the wrapping material from the roll disposed below the platform.

11. The combination of claim 10 wherein the cutting means is vertically adjustable to determine the length of a sheet of wrapping material.

12. The combination of claim 10 wherein a slack pulling means is disposed between the roll of wrapping material and a leading end portion thereof and operable prior to the pusher means, thus providing free paper away from said roll when the pusher means is urging a package.

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