

May 21, 1968

J. B. GRANT ET AL

3,383,832

PACKAGE WRAPPING MACHINE

Filed March 7, 1966

7 Sheets-Sheet 1

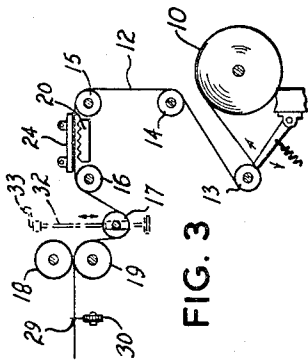


FIG. 3

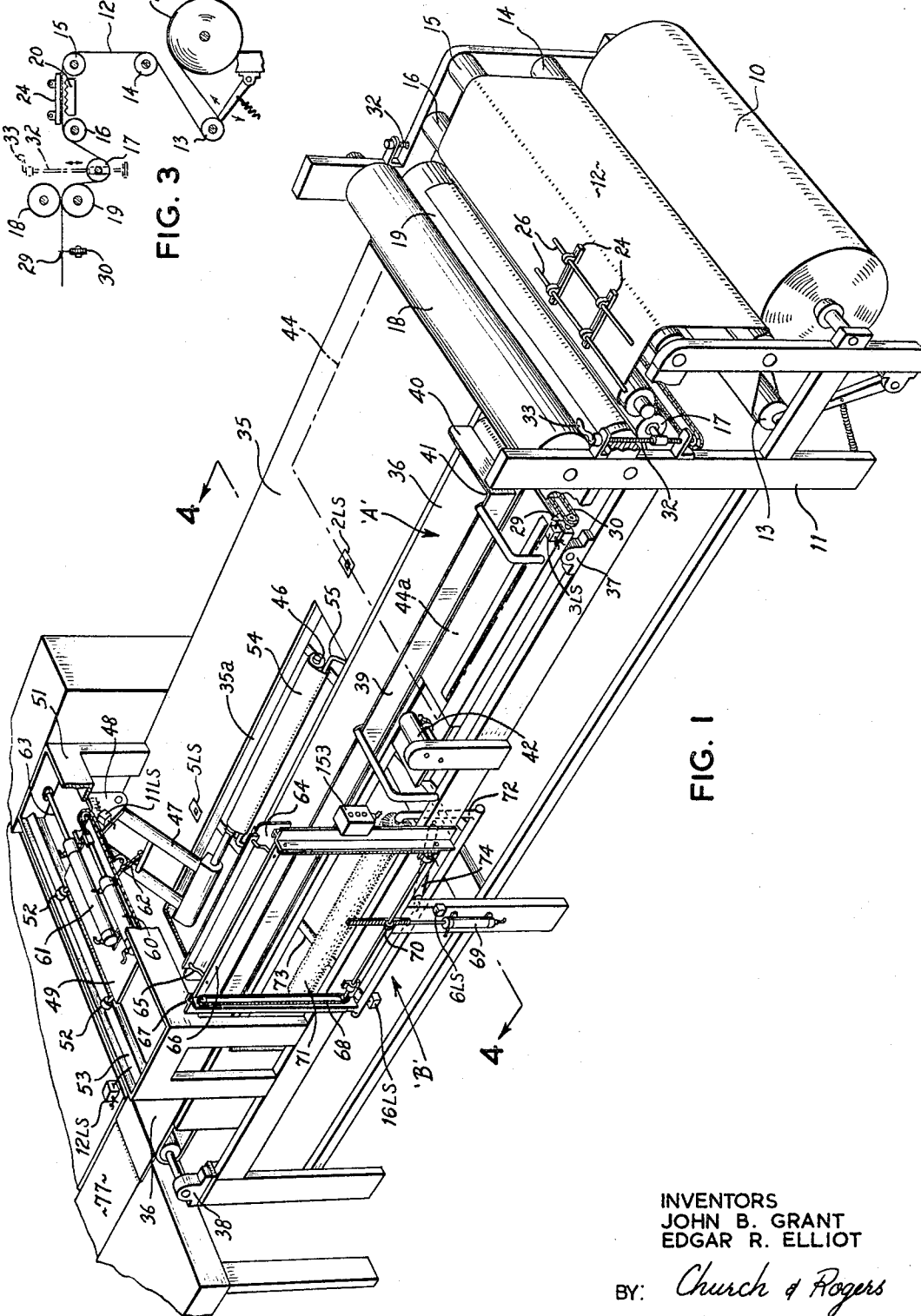


FIG. 1

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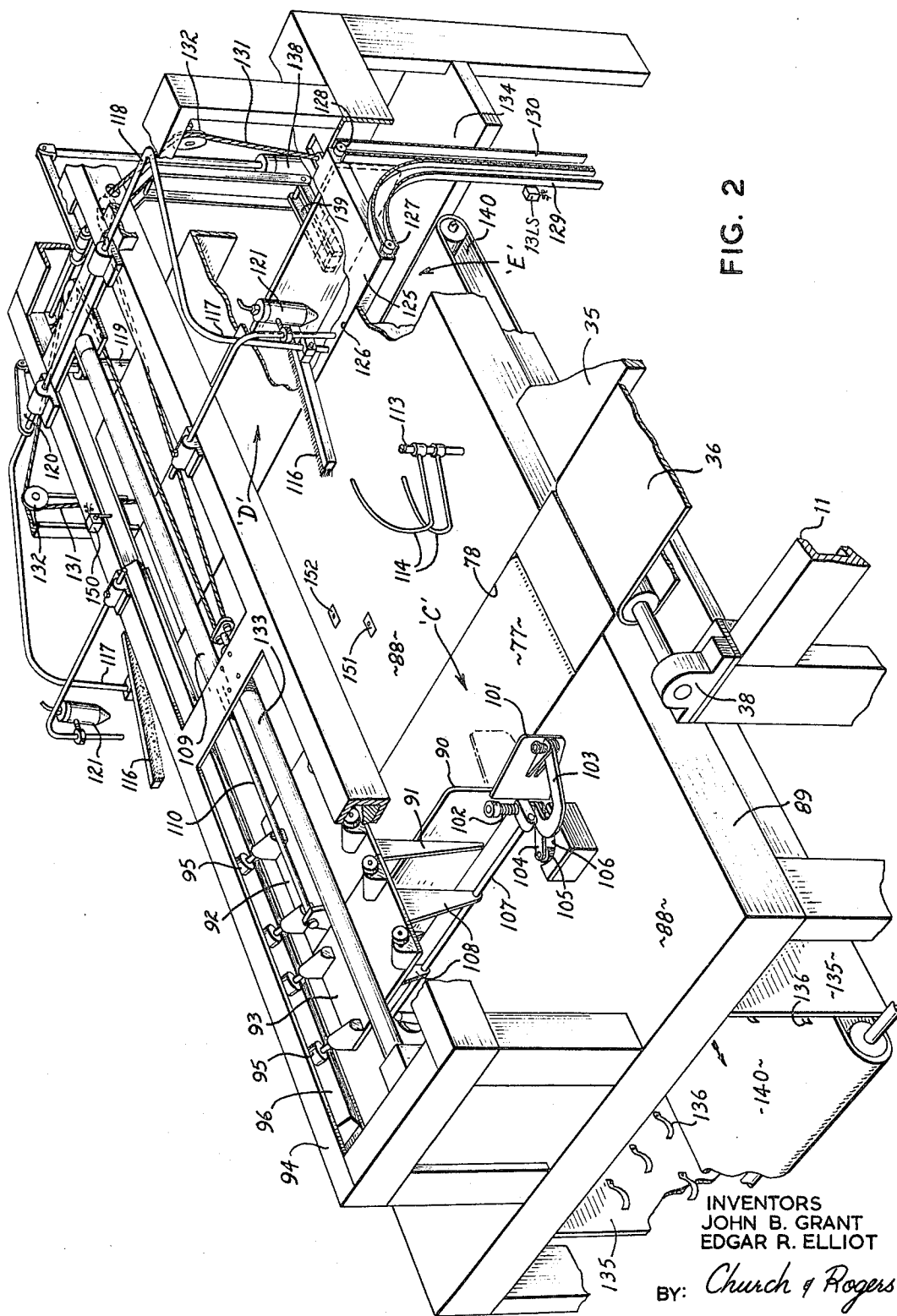


FIG. 2

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FIG. 4

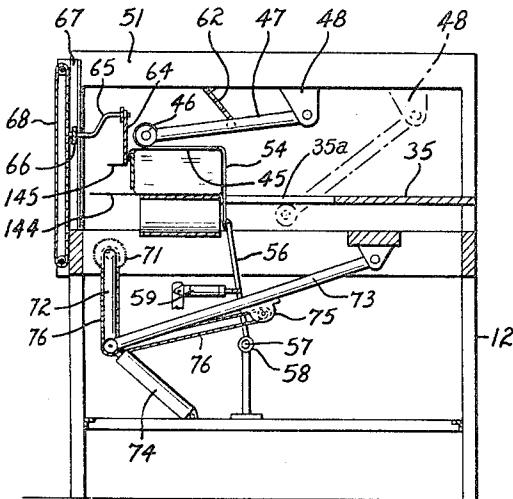


FIG. 5

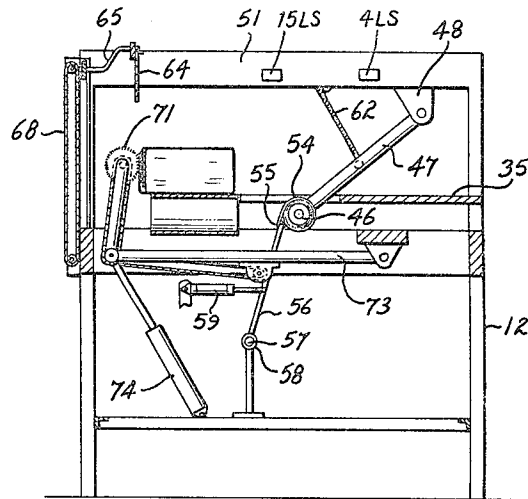


FIG. 6

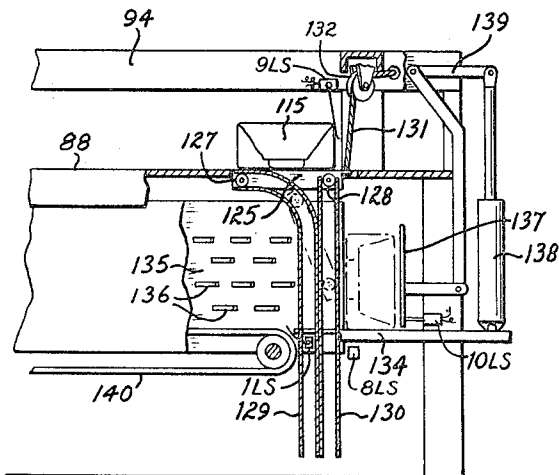
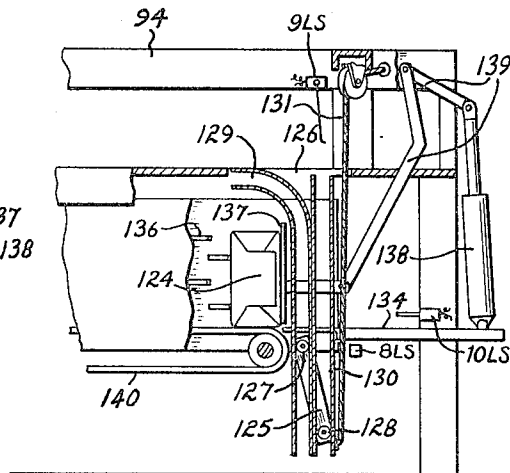


FIG. 7



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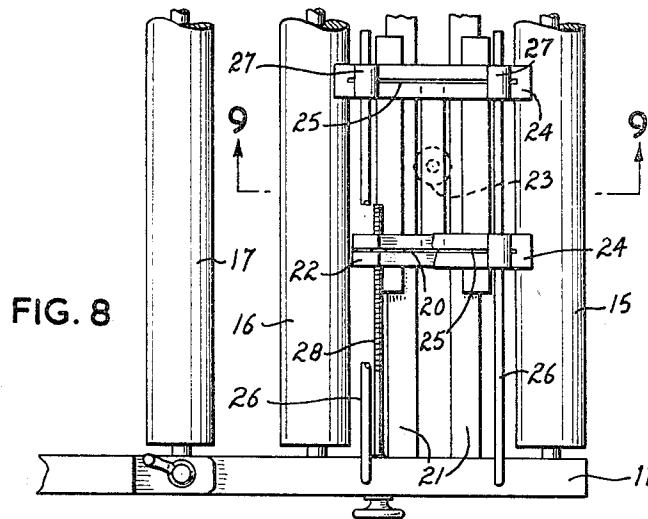
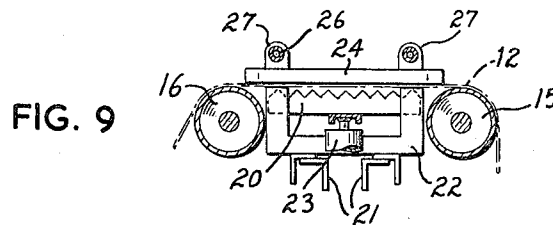
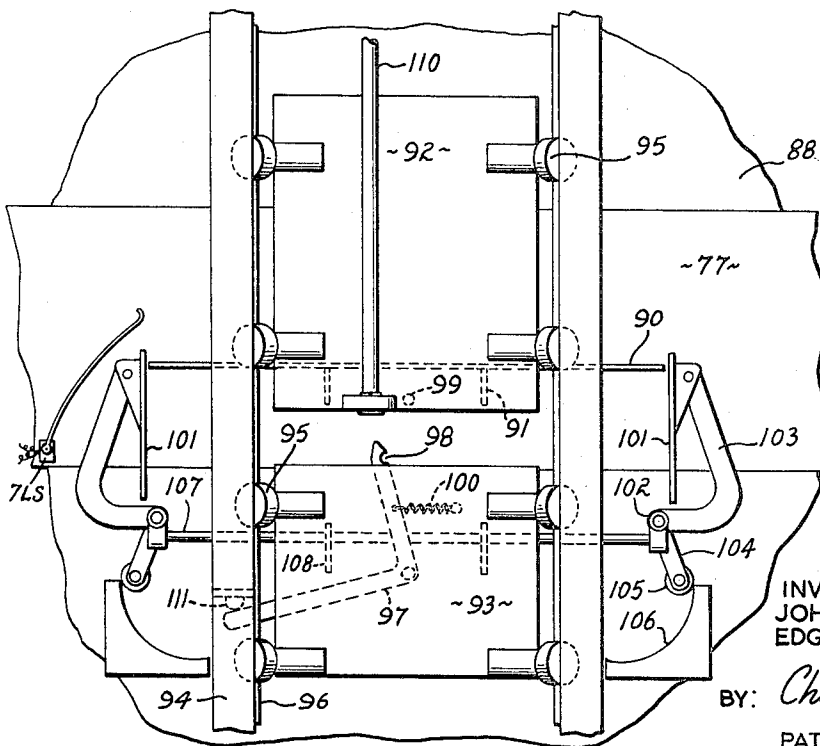
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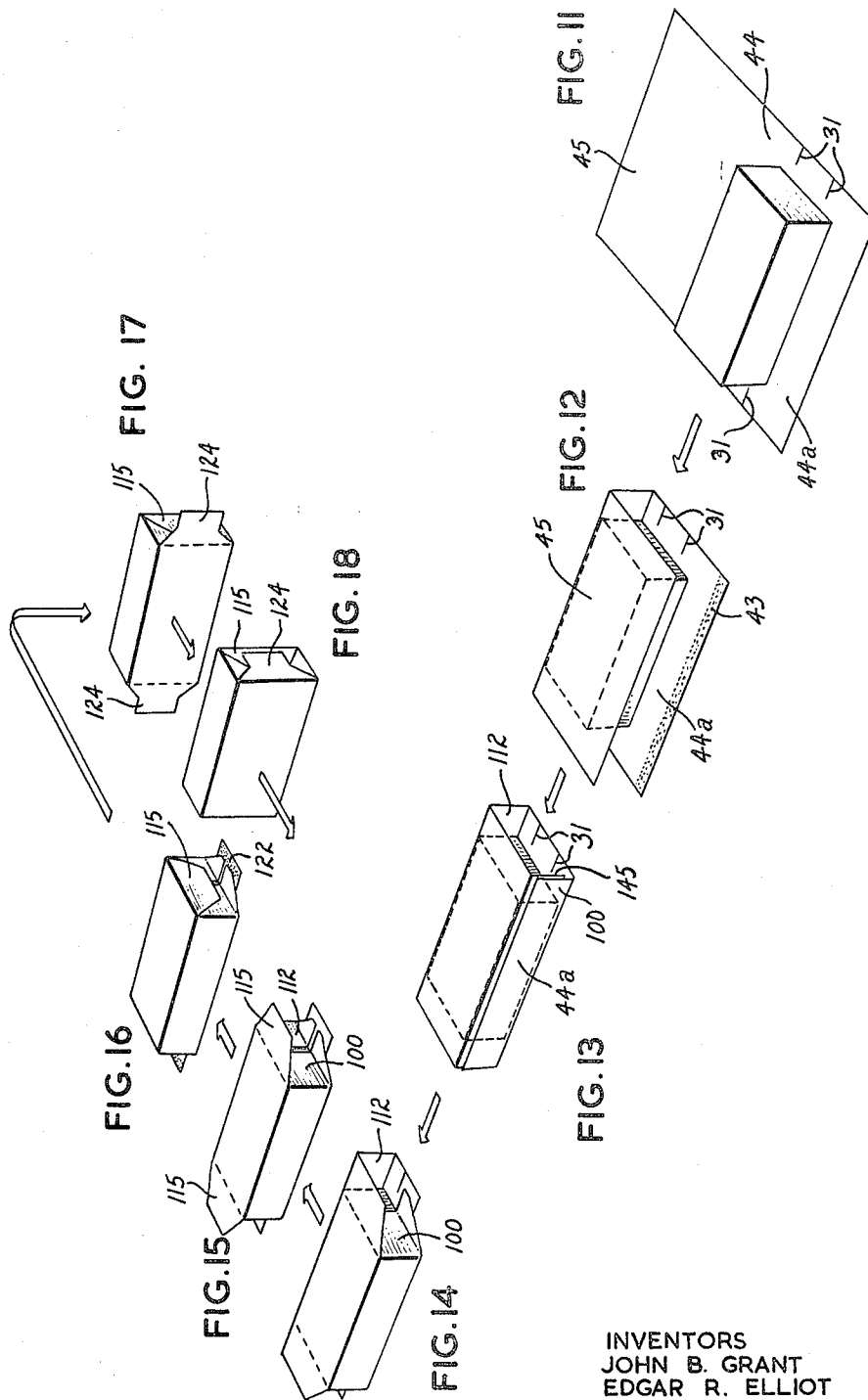
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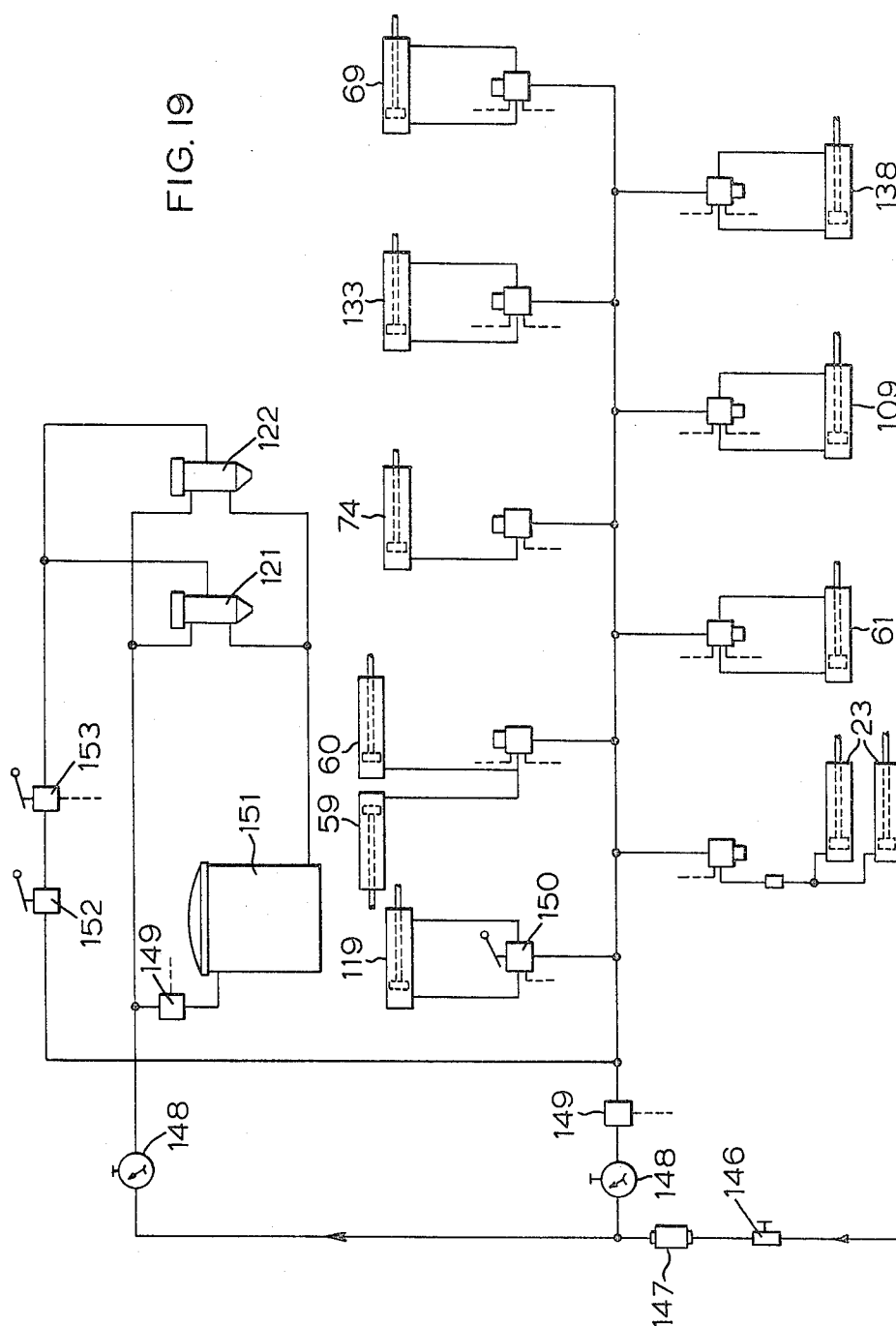
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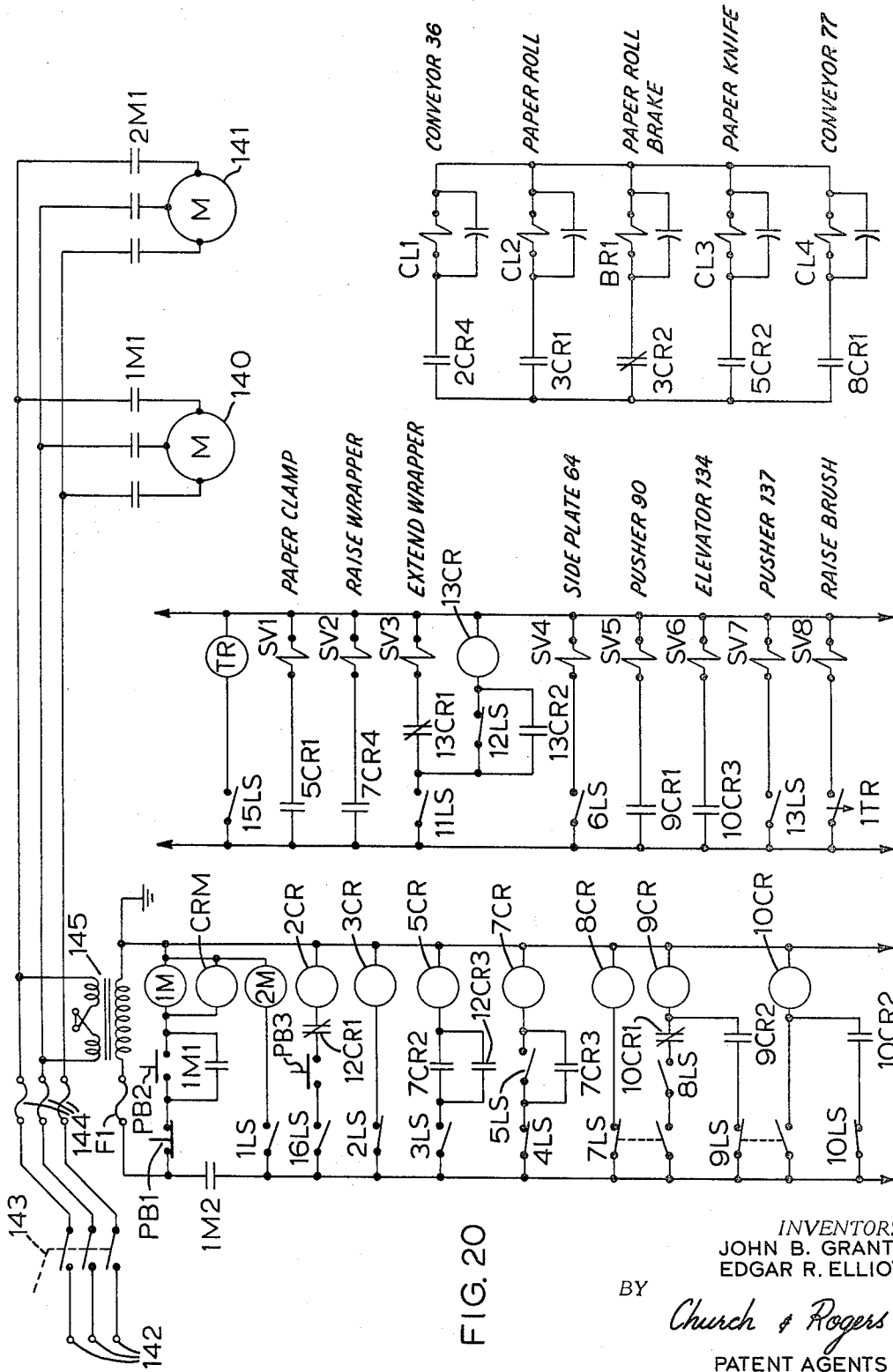
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3,383,832

PACKAGE WRAPPING MACHINE

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Filed Mar. 7, 1966, Ser. No. 532,235

12 Claims. (Cl. 53—209)

Our invention relates to improvements in package wrapping machines. An object of the invention is to provide a machine for wrapping two or more packages into one larger package by application of one or more plies of wrapping paper, and also for use in applying a paper over-wrap to a single package to increase the handling strength of the package.

Another object of the invention is to provide a machine wherein packages, after placement upon sheets of wrapping paper, automatically passes the packages and their wrapping paper sheets in succession through a number of paper folding and gluing stages whereby the packages are completely wrapped and tightly sealed before ejection from the machine, the machine being pneumatically operated under electric control.

A particular preferred embodiment of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

FIGURE 1 is a perspective view of the front end portion of the machine encompassing the first two stages of operation of the machine.

FIGURE 2 is a perspective view of the rear end portion of the machine encompassing the final stages of operation of the machine.

FIGURE 3 is a diagrammatic side elevation showing the arrangement of the wrapping paper feed rollers.

FIGURES 4 and 5 are similar cross-sectional views through a portion of the machine, being taken through the line 4—4, FIGURE 1.

FIGURES 6 and 7 are similar fragmentary vertical sectional views of a package lowering arrangement incorporated in the final stage of operation of the machine.

FIGURE 8 is a plan view of a wrapping paper slitting device incorporated in the paper feed end of the machine.

FIGURE 9 is a vertical cross-sectional view of the device through the line 9—9, FIGURE 8.

FIGURE 10 is a fragmentary plan view of a pair of slide carriages supporting the members for folding the package flaps.

FIGURES 11 to 18 are progressive illustrations of the package wrapping operation from start to completion.

FIGURE 19 is a schematic diagram of the pneumatic system of the machine, and

FIGURE 20 is a schematic diagram of the electrical system of the machine.

Like characters of reference indicate corresponding parts in the various views of the drawings.

For convenience and clarity of illustration the two electric drive motors 140 and 141 are illustrated schematically in FIGURE 20, but are not shown in the other figures of the drawing; as required they are mechanically coupled to the machine elements which they drive by means of electrically operated clutches, and their arrangement will therefore be apparent to those skilled in the art. The motors are supplied with power from terminals 142 via switch 143, fuses 144, and individual contacts 1M1 and 2M1 respectively of relays 1M and 2M respectively. The remainder of the electrical circuit is supplied with power from transformer 145 connected to two of the source terminals 142. Many of the electrical interlocks required in the electric circuit will also be omitted, for simplicity, and since their arrangement etc. will be apparent to those skilled in the art.

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Referring to FIGURE 19, the pneumatic circuit is supplied with compressed air from a supply which is not shown via a main valve 146 and filter 147. Pressure gauges 148 are provided and manual dump valves 149 to enable the pressure to be relieved when required.

Referring to FIGURES 1 and 3, a wrapping paper supply roll 10 is suitably mounted upon the end portion of the machine frame 11, a strip of paper 12 in passage from the roll to the machine passing over a spring urged tensioning roller 13, idle rollers 14, 15, and 16, adjusting roller 17 and through the bite of feed rollers 18 and 19 driven by motor 140 (FIG. 20). The strip 12 is moved forward by the feed rolls until its leading edge engages a limit switch 2LS, whereupon its forward movement stops, the switch 2LS being moveable along the path of movement of the strip to adjust the length of the corresponding wrapper.

Referring to FIGURE 20, the switch 2LS controls a relay 3CR that in turn has contacts 3CR1 controlling a clutch CL2 connecting a motor 140 to the roll 10 when required, and contacts 3CR2 removing and applying a brake BR1 for the roll as required.

A pair of longitudinal transversely-spaced paper slitting knives 20 are positioned underneath the strip 12 between the rollers 15 and 16, as shown in detail in FIGS. 8 and 9, the knives producing slits 31 which are shown in detail in FIGURES 11 to 13 and which permit the proper formation and folding of the wrapper end flaps. For support and actuation of the knives a pair of spaced apart angle bars 21 extend transversely of the frame 11 between and below the rolls 15 and 16 and upon which a U-frame 22 is slidably supported. The ends of the slitting knives 20 are vertically slidable within slots in the sides of the frame and are momentarily moved upwardly in unison to cut slits of predetermined length in the sheet under urge of a pair of pneumatic operators 23 (only one shown). To prevent the sheet 12 from lifting upwardly when engaged by the knives a pair of bars 24 are positioned in close proximity to the top surface of the sheet and have slots 25 for the reception of the knife edges as they pierce the sheet. For support of the bars 24 the U-frame 22 carries a pair of L-shaped guide rods 26 having horizontal portions slidably extending through eyes 27 on the tops of the bars 24. The slitting knives assembly is adjustable transversely of the width of the sheet by manual rotation of a screw 28 mounted in the frame 11 and threaded into an orifice in the assembly which is slidably mounted upon the angle bars 21.

Control of the operators 23 is by means of a solenoid valve SV-1 that is in turn controlled by contacts 5CR1 of relay 5CR; the control of this latter relay will be described below.

To cut the strip 12 into wrapping sheets of desired length, to suit the size of packages being wrapped a cutting blade 29 is mounted upon an endless sprocket chain 30 suitably driven and positioned transversely of the frame 12 underneath the sheet whereby movement of the chain travels the cutting blade transversely across the sheet. Thus, when the sheet 12 has been moved by the feed rolls 18 and 19 the desired length forward it is held stationary while it is traversed and cut by the blade 29.

Control of the blade 29, as well as of the operators 23, is achieved by a switch 3LS that is engaged by the blade. With this switch, as with the other electrical switches shown herein, no attempt is made to show the exact manner of connection between the switch operator and the element which connects it, since such connections will be apparent to those skilled in the art. This switch is held inoperative by a suitable interlock while the paper strip is moving, but when the strip stops the switch causes operation of relay 5CR as described above.

Another relay contact 5CR2 of the relay 5CR controls a clutch CL3 that connects the blade 29 to the motor 140 to be driven across the paper, as described above, until the switch 3LS is again contacted when the clutch CL3 will be disconnected until the strip 12 has again been moved.

The longitudinal slits 31 cut in the strip 12 by the blades 20 must be intersected and cut centrally of their length by the transverse cut produced by the transversely moving cutting blade 29. To ensure that the blades 20 will engage the strip 12 at the appropriate part of its length, despite the different lengths of strip that may be required, the roller 17 is adjustable vertically under rotation of sprocket chain connected screws 32 mounted upon the frame 11 and manually actuated by a hand crank 33. The vertical position of the roller 17 determines the length of sheet between each set of the slits 31 and the point where the paper is cut transversely.

The frame 12 supports a table top 35 extending from the vicinity of the path of travel of the cutting blade 29 to the end of the frame and upon which the severed sheets of wrapping paper slide. An endless flat conveyor belt 36 supported by bearings 37 and 38 is mounted upon the frame 11 to extend alongside the edge of the table top 35 intermediately of the width of the frame 11 with its top face in the same plane as the table top. A vertical side guide plate 39 extends along the outer edge of the conveyor belt and a vertical end plate 40 extends across the top of the belt at the feed end of the machine. The lower edges of the plates 39 and 40 are slightly spaced from the top of the conveyor belt to permit paper sheets carried by the belt to travel beneath the plates. The plates 39 and 40 form a corner 41 against which a package or stacked packages to be wrapped is positioned and thus squared in relation to a severed sheet 44 of wrapping paper lying upon the table top and the conveyor belt, the package or packages being positioned upon the sheet at rest at commencement of stage A of the wrapping operation. It will be appreciated that the positioning of the package or packages on the sheet can be performed manually or automatically by an accumulator conveyor which does not constitute part of this invention and therefore is not illustrated.

Stage A

The wrapping sheet 44 cut from the strip 10 is of such a width and so positioned that when fed unto the conveyor belt 36 and the table top 35 the portion 44a of the wrapping sheet resting upon the belt, and upon which the package to be wrapped is placed, protrudes outwardly of the side of the machine underneath and beyond the side plate 39. An adhesive applying roller 42 is mounted upon the side of the machine and is positioned to apply a strip of adhesive 43, (FIG. 12) to the top face of the edge of the said portion 44a, as the sheet 44 with a package resting thereon is carried forwardly by the conveyor belt to stage B, being the first folding and sealing operation.

Stage B

At stage B the portion 45 of the sheet of paper 44 which rests upon the table top is wrapped over to cover the sides and top of the package, this operation being illustrated by FIGS. 4 and 5. As will be seen most clearly by reference to FIG. 1, the table top 35 formed with a rectangular opening 35a intermediately of its width, over which opening the portion 45 of a sheet extends when the sheet with its package resting thereon has been moved into the position corresponding to stage B. To wrap the portion 45 of the paper sheet around the package a spring loaded roller 46 is carried upon the ends of a pair of downwardly inclined arms 47 swingably mounted upon lugs 48 depending from the bottom of a carriage 49 arranged for transverse movement on a support frame 51, the carriage having pairs of side rollers

52 mounted upon a pair of tracks 53 carried by the frame 51.

The roller 46 is spring loaded in the manner of a roller blind and has a length of 54 of canvas rolled thereon, this canvas length being unrolled therefrom against the spring load tension of the roller and constituting an over-wrapper for wrapping the portion 45 of the wrapping paper sheet firmly around the package. The free end of the over-wrapper 54 is attached to a slat 55 mounted at its ends upon a pair of parallel arms 56 attached to and extending upwardly from a shaft 57 mounted in bearings 58, the arms 58 swinging in unison between the two positions shown in FIGS. 4 and 5 under the influence of a pneumatic operator 59 attached between a stationary frame member and one of the arms 56.

The arms carrying the overwrapper roller 46 are swung upwardly and moved from the position shown in FIG. 5 to the position shown in FIG. 4 under the influence of a pair of pneumatic operators 60 and 61, shown in FIG. 1. The piston rod of the operator 60 is attached to one end of a chain 62 extending over several freely mounted guide sprockets and having its other end attached to a brace bar extending between the arms 47, the arrangement being such that retraction of the piston rod into the cylinder of the operator 60 pulls the end of the chain 62, the arms 47, and the roller 46 upwardly. The carriage 49 with its lugs 48, from which the arms 47 depend, is moved transversely of the support frame 51 under urge of the operator 61 which is mounted upon the carriage 49 with its piston rod 63 secured to one end of the frame 51; outward movement of the piston rod from its cylinder moving the carriage from the right side to the left side of the machine (as seen in FIGS. 1, 4 and 5).

Prior to such transverse movement of the carriage 49 and upward swinging movement of the arms 47 and roller 46, the portion 45 of the wrapper sheet 44 overlies the orifice 35a. As the arms 47 swing upwardly through the orifice 35a the upward movement of the roller 46 lifts the wrapper sheet portion 45 while the overwrapper 54 unrolls from the roller, against tension of the roller spring, to overlap the portion 45 of the wrapper sheet. As the roller 46 is lifted the carriage 49 supporting the arms 47 moves from right to left across the support frame 51 in unison with movement from right to left of the swingable arms 56 to which the end of the overwrapper 54 is attached, such movements bringing the members into the position shown in FIG. 4 wherein the overwrapper 54 has wrapped the wrapping sheet portion 45 over the adjacent side face and top face of the package P. Upon reference to FIG. 4 it will be noted that the free end 145 of the wrapping sheet portion 45 protrudes beyond the top edge of the outer side face of the package.

The initiation of the above-described part of the wrapping operation at Stage B is caused by the engagement of the leading edge of the sheet 44 with a switch 5LS which is in series with a switch 4LS, (FIG. 5) the latter switch ensuring that the wrapping operation cannot begin until the carriage 49 is correctly located.

Operation of switch 5LS causes corresponding operation of relay 7CR controlling solenoid valve SV2 that in turn controls operation of operators 59 and 60. The operator 61 is controlled by solenoid valve SV3 that is under control of two switches 11LS and 12LS. The switch 11LS is operated by the arm 47 when it reaches its upper position and causes the above-described right-to-left movement of the carriage 49, while the switch 12LS is operated by the carriage when it reaches the left hand position to return it to its extreme right-hand position; a relay 13CR and contacts 13CR1 and 13CR2 provide the necessary interlock between the switches 11LS and 12LS.

For completion of the wrapping operation at Stage B a paper-engaging, vertically-slidable, side fold plate 64 is mounted upon the side of the machine for movement

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in parallel relation to the outer side face of a package being wrapped. The plate is carried for such movement upon a pair of arms 65 extending from a slide bar 66 slidably within a pair of vertical tracks 67, the plate and bar being raised or lowered by a mechanism comprising a pair of endless sprocket chains 68 mounted upon sprockets carried upon the tracks 67 and carrying the slide bar 66. The sprocket chains are actuated by a pneumatic operator 69 through the medium of a rack and pinion assembly 70. Downward movement of the side plate 64 brings it into engagement with the free end 145 of the wrapping sheet to turn the sheet end downwardly over the outer face of the side guide plate 39 against the inner face of which the outer side of the package rests. Upon completion of this movement the fold plate 64 is retracted upwardly.

As the fold plate 64 moves upwardly a revolving brush 71 moves upwardly behind the fold plate. Upon reference to FIG. 4 it will be seen that the brush in its lower position is located beneath the portion 144 of the wrapping sheet so that upon upward movement it lifts the sheet portion 144 upwardly and folds it against the outer face of the downturned sheet portion 145. As the strip of adhesive 43 has been applied to the top face of the sheet portion 144, such portion adheres to the downturned sheet portion 145. The roller brush is rotatably mounted upon the upper ends of a pair of upwardly extending arms 72, which are in turn fixedly mounted upon a pair of vertically swingable arms 73 actuated by a pneumatic operator 74. The brush is revolved by any suitable mechanism, such as an electric motor 75 connected to the brush by a chain train 76. Upon completion of the foregoing operation the conveyor belt 36 carries the partly wrapped package beyond the end of the side guide plate 39 which slips out from between the side of the package and its wrap, the partly wrapped package having the form shown in FIG. 13 and being conveyed by the belt 36 unto a conveyor belt 77 (FIG. 2) to enter the Stage C of the operation.

By the use of the side guide plate 39 the package or stack of packages maintains its desired shape under the sideways thrust applied thereto by the overwrapper 54, when the package or packages are not themselves sufficiently firm to withstand this thrust without distortion or movement relative to one another e.g. as with packages of flour or sugar. Similarly, the machine is able to effect a firm bond between the portions 144 and 145 by squeezing them between the plate 39 and the brush 71 without the application of corresponding sideways thrust to the package or packages.

The control of the movement of the plate 64 by the operator 69 is effected by solenoid valve SV4, which is itself controlled by switch 6LS that is engaged by the assembly 70 when in its lower position, while the operator 74 for moving the brush 73 is under the control of solenoid valve SV8, controlled in turn by contacts 1TR of a timing relay TR having its winding in series with switch 15LS (FIG. 5). When the carriage 49 reaches its extreme left position the switch 15LS is actuated thereby to raise the brush, the timing of the relay being such that the brush remains in contact long enough for the glue to set. A switch 16LS is engaged by the brush support in its lower position and prevents movement of the conveyor 36 until the brush has returned, the switch controlling the relay 2CR that in turn controls clutch CL1 connecting the conveyor to the motor 140.

Stage C

The conveyor belt 77 is in the same plane as the conveyor belt 36 and is contained within a slot 78 in the table top 88 of a second frame 89 of the machine, the table top being in the same plane as the conveyor belt. The conveyor belt 77 carries each partly wrapped package to a position in front of a vertical package pushing plate 90 mounted upon a pair of brackets 91 depending

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from a carriage 92 positioned in tandem with a second carriage 93 (FIGS. 1 and 10). The carriages are supported by a sub-frame 94 mounted upon the machine frame 89, being furnished with sets of rollers 95 rollable upon a pair of tracks 96 extending above and transversely of the belt 77. The second or trailing carriage 93 is detachably coupled to the carriage 92 by a bell-crank lever 97 swingably mounted on the trailing carriage and having a notch 98 in one arm engagable with a stud 99 on the carriage 92 under the urge of a spring 100 and which the carriages are coupled. The other arm of the bell-crank lever protrudes from the side of the carriage 93 to engage a stop 111 as the coupled carriages move in unison, such engagement swinging the lever out of attachment with the stud 99 to break the coupling connection between the carriages in their movement, as shall now be described.

The carriage 93 carries two similar end fold mechanisms for folding the flaps 100 (FIGS. 13, 14 and 15) of the partly wrapped package into place as shown in FIG. 14. Each mechanism comprises a wedge shaped quadrilateral plate 101 tapering to a height somewhat less than the height of the package and pivotably connected to a spring loaded spindle 102 by a crank arm 103. The lower end of the spindle carries a radial arm 104 having a roller 105 engageable with a concave surface cam 106; both mechanisms (apart from the cams which are mounted upon the table top 88) being mounted upon the ends of a bar 107 extending behind and parallel to the package pushing plate 90 and carried by a pair of brackets 108 depending from the carriage 93. The carriages 92 and 93 are moved in a reciprocating motion by a pneumatic operator 109 (FIG. 2) extending above the plane of movement of the carriages and in their direction of travel, the piston rod 210 of the operator being attached to the carriage 92.

When the carriages 92 and 93 are in the retracted position, as shown in FIG. 2, the pushing plate 90 is behind a partly wrapped package (i.e. as illustrated by FIG. 13) the package resting upon the stationary conveyor belt 77 and the plates 101 being swung outwardly, as shown in solid lines in FIG. 2, under engagement of their mechanisms with the cams 106. This package operates a switch 7LS (FIG. 10) which causes operation of a relay 8CR and relay 9CR, the former operating contact 8CR1 to disengage clutch CL4 and stop the conveyor 77, while the latter causes operation of a solenoid valve SV5 which controls the operator 109. Upon retraction of the piston rod 210 the coupled carriages 92 and 93 move forwardly, the pushing plate 90 pushing the package. As the mechanisms of the plate 101 move out of restraint of the cams 106, the plates swing inwardly to the position shown in FIG. 10 under the urge of the spring loaded spindles 102 and engage the package flaps 100 to fold them to the position as shown by FIG. 14. At that moment the protruding end of the bell-crank lever 97 engages the stop 111 and swings to break the coupling between the carriages. The carriage 93 stops while the carriage 92 continues its movement, the package being pushed from off the belt 77 and along the table top 88 to Stage D.

Stage D

To fold the package end flaps 112 (FIGS. 13-15), a pair of dual-fingered flap folders 113 are positioned upon either side of the path of sliding movement of the package, whereby their somewhat resilient fingers 114 are engaged by the flaps 112 so that continued movement of the package causes the fingers to fold the flaps, resulting in a package as illustrated in FIG. 15. Upon completion of this folding operation, movement of the carriage 92 and pushing of the package stops, the carriage being returned to its initial position wherein it recouples to the carriage 93. At this moment of operation, the package, as shown in FIG. 15, is left at rest beyond the flap folders 113. To turn the top flap 115 downwardly into position

shown in FIG. 16 a pair of brushes 116 are provided. The brushes are mounted upon downwardly turned end arms 117 of a U-shaped rod 118 extending transversely of the path of movement of the package and rotatably mounted by bearings mounted on the sub-frame 94. The arms 117 and brushes are vertically swung upwardly and downwardly by a pneumatic operator 119 which has its piston rod connected to a lever 120 attached to the rod 118, the operator being under the control of a cam operated valve 150 that is engaged by the carriage 92. A pair of adhesive applicator guns 121 are suitably supported and positioned to apply strips of adhesive 122 upon the inner faces of the lower flaps of the package wrap, as shown in FIG. 16, the guns being supplied from a tank 151 and their operation being controlled by cam operated valves 151 and 152 in the path of the pushed package, the guns only being operated when both valves are engaged so as to obtain the proper spray coverage. In this operation the brushes 116 first descend to brush the package wrap flaps 115 downwardly, the movement being succeeded by application of the adhesive strips to the lower flaps 124, the package then being ready for passage to final stage E.

Stage E

The portion of the table top 88 upon which the package rests during its final "at rest" position in stage D comprises an elevator platform 125 contained within an aperture 126 in the table top 88 when in its upper position. Each end of the elevator platform carries a pair of rollers 127 and 128, the rollers 127 being rollable within a pair of vertical tracks 129 which are straight throughout the lower portions of their length and curved in their upper portions towards the path of travel of the package in stage D, the rollers 128 being rollable within straight tracks 130 positioned in parallel relation to the straight portions of the tracks 129 and whereby the elevator platform 125 in being guided downwardly by the tracks gradually swings from the horizontal position shown in FIG. 6 to the vertical position shown in FIG. 7. The elevator platform is supported and actuated by a pair of cables 131 running over suitably positioned pulleys 132 to the piston rod of a pneumatic operator 133, mounted upon the sub-frame 94. Upon said downward movement of the elevator platform 125 carrying a package, the package is deposited upon its side and resting upon a platform 134, after which the elevator platform is returned to its top position.

Operation of the operator 133 is initiated by engagement of a pushed package with relay switch 9LS (FIG. 6) that controls relay 10CR, which in turn controls solenoid valve SV6. Also seen in FIGURE 6 is switch 8LS which is connected in series with switch 7LS and is engaged by the elevator platform in its lowered position, the switch preventing operation of the operator 109 while the platform is in this position.

The final operation presses the package wrap flaps 124, to which the adhesive 122 has been applied, against the folded wrap flaps 115. This operation is achieved by the provision of a package receiving chute having side walls 135 spaced apart a distance somewhat greater than the length of the package and carrying a plurality of horizontal extending outwardly curved leaf springs 136 which lightly bear against the ends of the package in its passage through the chute and thus press the flaps 124 into place.

To move the package from the position shown in FIG. 6 into and through the chute a mechanism is provided and which consists of a vertical pusher plate 137 positioned behind the downwardly deposited package and movable towards the chute under urge of a pneumatic operator 138, the cylinder piston rod being connected to the plate by a link assembly 139. A driven conveyor belt 140 is contained within the bottom of the chute, the pusher plate 137 sliding the package forward a sufficient distance to deposit it upon the conveyor belt which con-

veys the package to the sealed package ejection end of the chute, shown in FIG. 2.

The movement of the pusher plate is initiated by a switch 13LS which is engaged by the elevator platform as it reaches its lowest position, the switch controlling solenoid valve SV7 that controls the operator 138. Another switch 10LS must be engaged by the plate 137 in its rearmost position before the elevator platform can be lowered, thereby ensuring that the two do not collide. As the package is pushed forward it engages a switch 1LS controlling the motor 141 and causes indexing movement of the package into the chute until the switch 1LS is again disengaged.

Other controls that are provided comprise a stop pushbutton PB1, and a start pushbutton PB2, these being mounted in a conveniently located box 153 (FIG. 1). A third jogging pushbutton PB3 is associated with relay 2CR to permit the conveyor to be inched forward when required for adjustment purposes.

We have found that a very secure sealing of the package wrap end flaps 125 is attained by having the flaps wide and rectangular as opposed to the usual V-shaped flaps obtained in normal wrapping of paper about a package, and it is for this reason that we cut the slits 31 in the end edges of the wrapping sheets 44, the sheet portions between the slits forming the relatively wide rectangular flaps 124.

Although we have shown and described a particular embodiment of our invention it is to be understood that we may make any desired changes or alterations in the machine without departing from the scope of the invention as defined in the appended claims.

What we claim is:

1. In a package wrapping machine, a table top for reception of a sheet of wrapping paper and a package to be wrapped, the package being positioned upon one side portion of the paper sheet, one end portion of the table top receiving the other side portion of the paper sheet and having an orifice therein across which said portion extends, a pair of arms positioned above the table top and protruding downwardly into the orifice past the ends of the portion of the paper sheet extending across the orifice, a spring loaded roller rotatably mounted upon the arms to extend therebetween and initially positioned underneath the paper sheet, a fabric overwrapper rolled around the roller and unrollable therefrom against the spring load of the roller, a member located underneath the table top and moveable in a horizontal direction towards the portion of the table top upon which the package is received and to which the free end of the overwrapper is attached, means for simultaneously swinging the arms and their roller upwardly in a path of movement across the top of the package and under which movement the overwrapper unrolls upwardly from the roller in following the movement of the roller to bear against and lift the portion of the sheet of wrapping paper extending across the orifice and deposit said portion against one side face and the top face of the package in the roller's movement across the top face of the package, a reciprocal element moveable downwardly towards the table top to engage the portion of the sheet of wrapping paper deposited on the top face of the package and folding said portion downwardly about the other side face of the package, reciprocal means moveable upwardly towards the table top and engaging the portion of the sheet of wrapping paper upon which the package is positioned and folding said portion of the sheet upwardly to lie alongside the portion of the sheet downturned by the reciprocal element and thus partly wrap the package, and means for subsequently folding the end flaps of the sheet of wrapping paper about the end faces of the partly wrapped package.

2. A package wrapping machine as defined in claim 1, wherein the swingable arms depend from a carriage positioned above the table top and moveable from a position

above the table orifice to a position above the package to be wrapped.

3. A package wrapping machine as defined in claim 1, wherein a mechanically actuated conveyor belt forms part of the table top and is positioned along one side thereof to be moveable in the direction of the end portion of the table top containing the orifice, the belt receiving the portion of the wrapping sheet upon which the package is positioned and conveying the sheet and package towards the orifice containing end portion of the table top, and an adhesive applicator positioned adjacently to the belt for application of adhesive to the adjacent edge portion of the wrapping sheet during movement of the sheet by the conveyor belt.

4. A package wrapping machine as defined in claim 3, wherein a vertical guide plate extends along and is spaced above the conveyor belt, the space between the plate and the belt receiving the outer edge of the portion of a wrapping sheet upon which a package is positioned, the guide plate retaining the package in position upon the wrapping sheet in its movement under movement of the conveyor belt.

5. A package wrapping machine as defined in claim 1, wherein a roll of wrapping paper is rotatably mounted at the end of the table top remote from the table top orifice and from which roll lengths of paper forming the wrapping sheets are cut off, driven rollers feeding a strip of wrapping paper unrolled from the roll in sliding motion upon the table top, means actuated by the strip in its sliding motion for stopping motion of the strip, and a mechanically actuated blade moveable to traverse the strip and cut off a length of package wrapping sheet from the strip when the strip is stationary upon the table top.

6. A package wrapping machine as defined in claim 1, wherein the downwardly moveable reciprocal element is a horizontally extending plate carried by a pair of vertical tracks and connected to a driven vertical endless driving chain.

7. A package wrapping machine as defined in claim 1, wherein the upwardly moveable reciprocal means is a roller rotatably mounted upon a pair of upwardly swingable arms mounted below the table top.

8. A package wrapping machine as defined in claim 1, wherein the downwardly movable reciprocal element is a horizontally extending plate carried by a pair of vertical tracks and connected to a driven vertical endless driving chain, and wherein the upwardly reciprocal means is a roller rotatably mounted upon a pair of upwardly swingable arms mounted below the table top.

9. A package wrapping machine as defined in claim 1, wherein the means for subsequently folding the sheet of wrapping paper about the end faces of the partly wrapped package includes a pair of horizontally moveable carriages positioned in tandem and furnished with rollers rollable upon a pair of tracks positioned above and in parallel relationship to the table top, the trailing carriage being releasably coupled to the leading carriage, a package pushing plate depending from the leading carriage to engage a side of the partly wrapped package, a pair of members for folding portions of the end flaps of the wrapping paper against the ends of the package and carried by the trailing carriage, such members comprising spring urged horizontally swingable plates swingable upon movement of the carriages to engage and fold portions of the wrapping paper against the ends of the package, driving means connected to the leading carriage for moving the coupled carriages in unison, means for releasing the coupling between the carriages to permit the trailing carriage to stop and the leading carriage to continue movement pushing the package, a pair of end flap folding members positioned alongside the path of movement of the pushed package and folding other portions of the package and flaps as the package is pushed past the members, adhesive guns applying adhesive to the folded flaps, vertically movable brushes engaging the

uppermost flaps and folding them against the ends of the package, and means for stopping package pushing motion of the leading carriage.

10. A package wrapping machine as defined in claim 9, wherein means is provided for stopping movement of the leading carriage and the pushed package in a position wherein the package rests upon an elevator platform contained in the table top, means for lowering the platform and package downwardly to a position wherein the package is resting upon its side, a horizontally extending chute through which the package is delivered upon its side from the machine, and fingers protruding inwardly of the sides of the chute and engaging the ends of the package to press the end flaps of the wrapping paper in place.

11. A package wrapping machine as defined in claim 5, wherein the means for subsequently folding the sheet of wrapping paper about the end faces of the partly wrapped package includes a pair of horizontally moveable carriages positioned in tandem and furnished with rollers rollable upon a pair of tracks positioned above and in parallel relation to the table top, the trailing carriage being releasably coupled to the leading carriage, a package pushing plate depending from the leading carriage to engage a side of the partly wrapped package, a pair of members for folding portions of the end flaps of the wrapping paper against the ends of the package and carried by the trailing carriage, such members comprising spring urged horizontally swingable plates swingable upon movement of the carriages to engage and fold portions of the wrapping paper against the ends of the package, driving means connected to the leading carriage for moving the coupled carriages in unison, means for releasing the coupling between the carriages to permit the trailing carriage to stop and the leading carriage to continue movement pushing the package, a pair of end flap folding members positioned alongside the path of movement of the pushed package and folding other portions of the package end flaps as the package is pushed past the members, mucilage guns applying mucilage to the folded flaps, vertical movable brushes engaging the uppermost flaps and folding them against the ends of the package, and means for stopping package pushing motion of the leading carriage.

12. A package wrapping machine as defined in claim 9, wherein means is provided for stopping movement of the leading carriage and pushed package in a position wherein the package rests upon a downwardly moveable elevator platform contained in the table top, a pair of rollers carried upon each end of the elevator platform, two of the rollers being rollable within a pair of vertical tracks which are straight in the lower portions of their lengths and curved in their upper portions, the other two rollers being rollable within a pair of straight tracks positioned in parallel relation to the straight portions of the other tracks, the tracks guiding the platform in its downward movement and turning it from a horizontal position to a vertical position and whereby the package upon the platform is also turned from a horizontal position to a vertical position resting upon its side, a stationary platform upon which the turned package is received, a horizontal chute extending from said platform for delivering the package from the machine, an endless conveyor belt for carrying the package through the chute and unto which the package is delivered from the stationary platform, and resilient fingers protruding inwardly of the sides of the chute and engaging the ends of the package to press the end flaps of the wrapping paper in place.

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