May 7, 1968 F. G. PAXTON 3,381,442

METHOD OF AND APPARATUS FOR MAKING A BAG ENCLOSING A RECLOSING FACILITY

Filed Aug. 6, 1965 4 Sheets-Sheet 1

Fig. 1

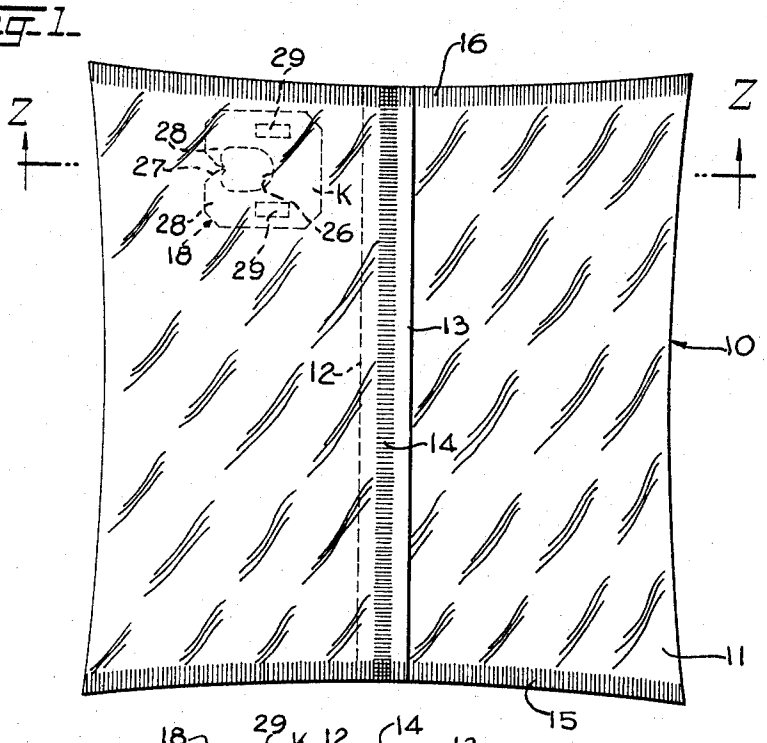


Fig. 2

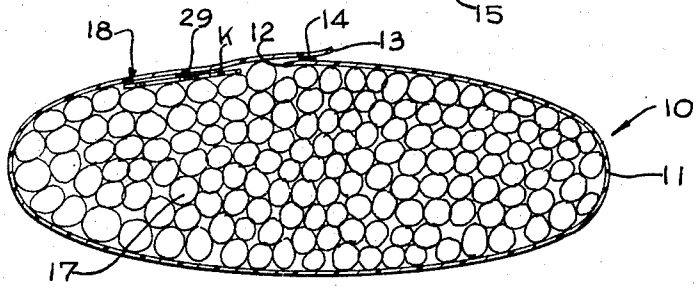


Fig. 3

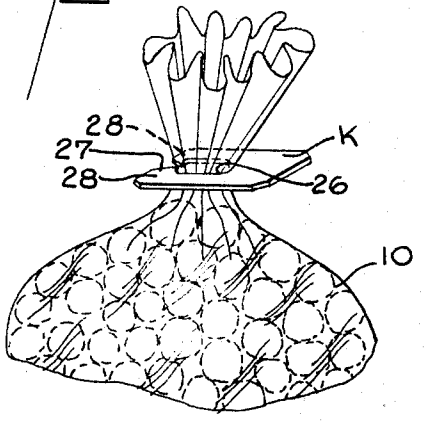
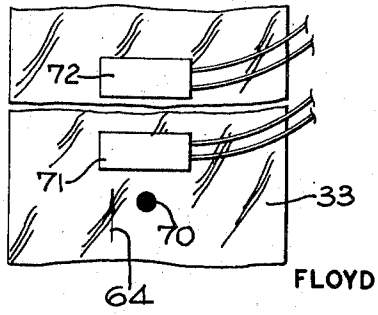


Fig. 4



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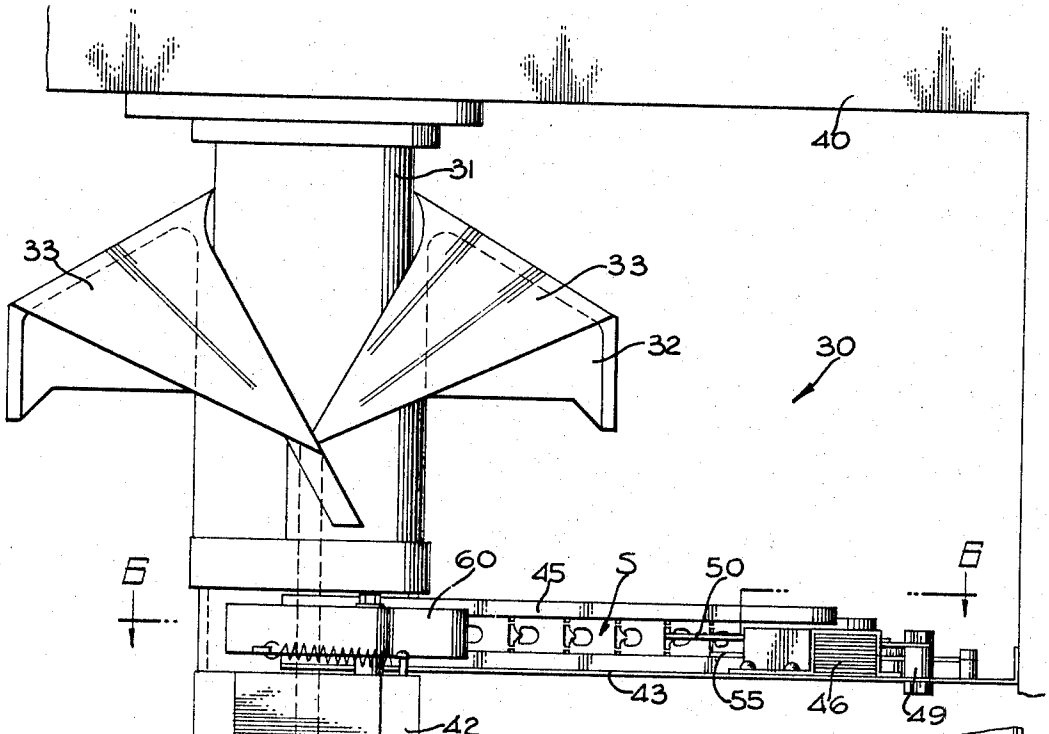


Fig. 5

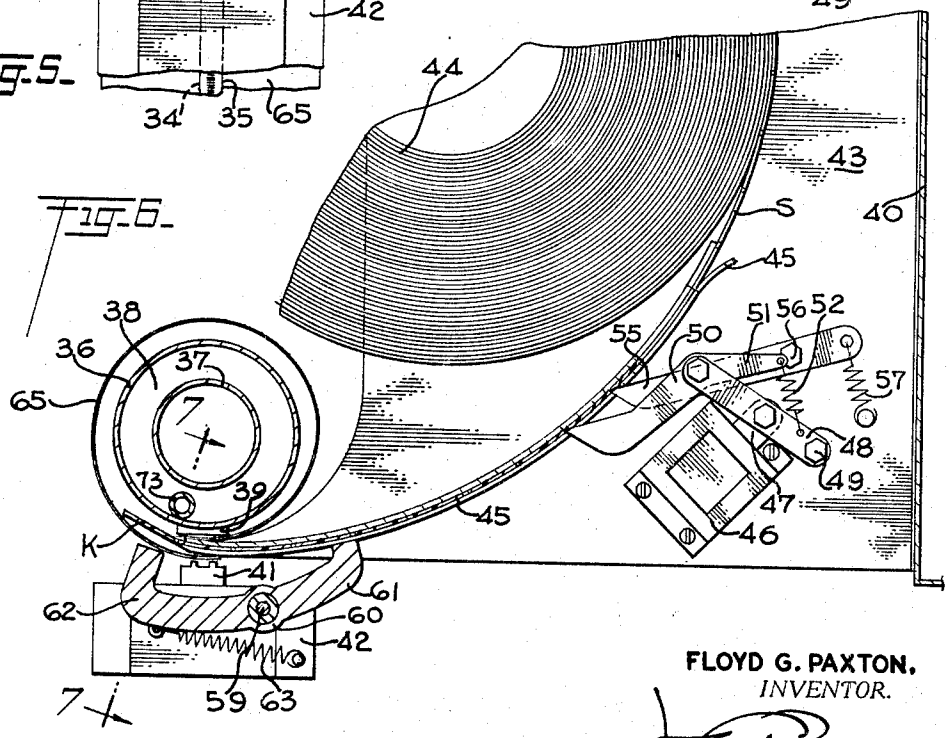


Fig. 6

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METHOD OF AND APPARATUS FOR MAKING A BAG ENCLOSING A RECLOSING FACILITY

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Fig. 8

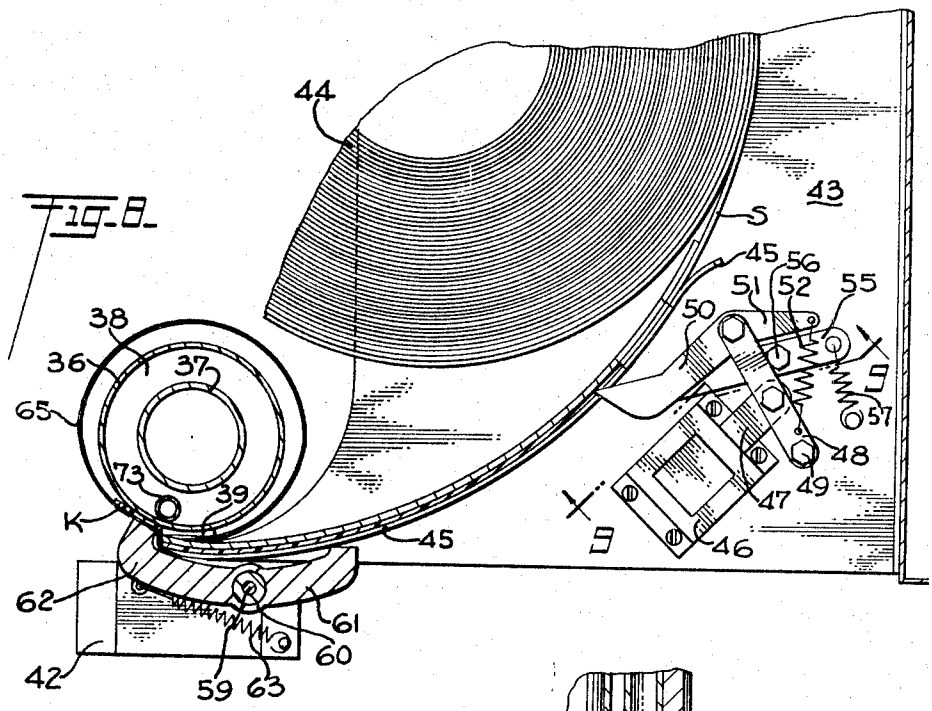


Fig. 9

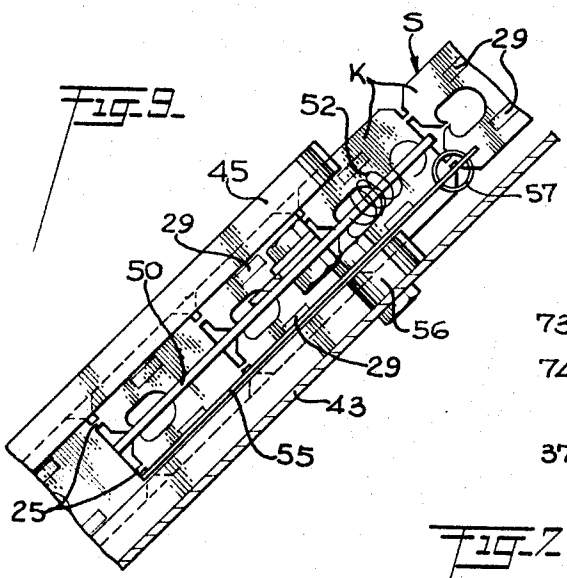
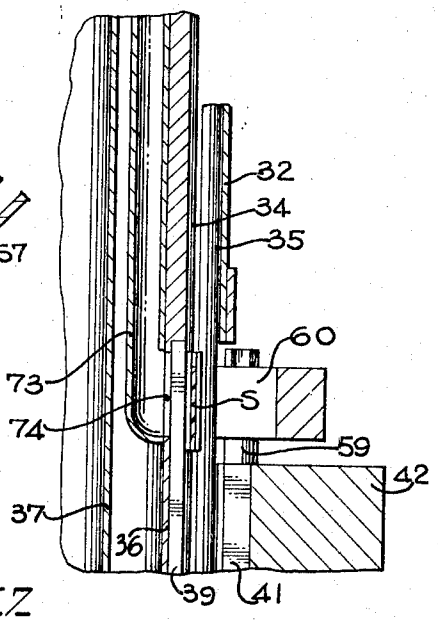


Fig. 7



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Fig. 10

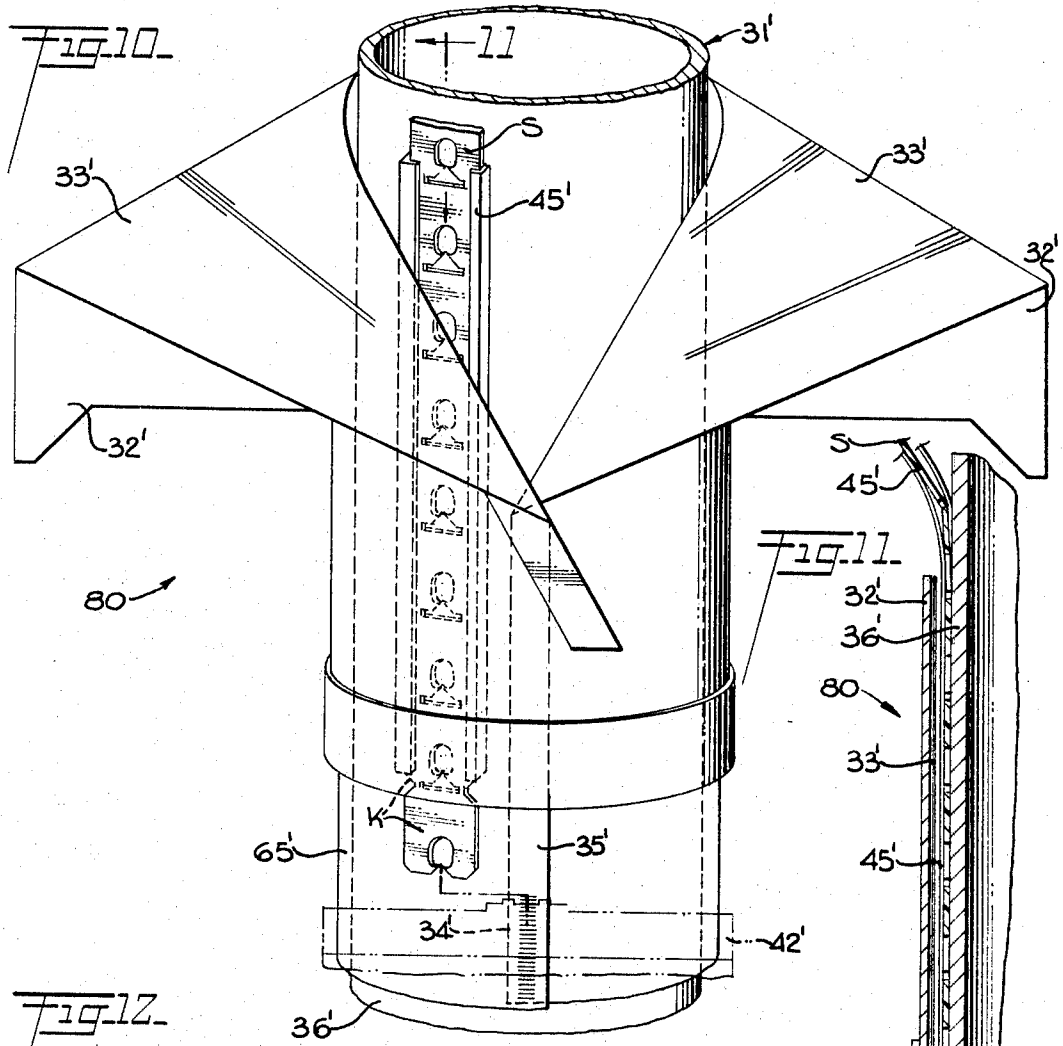
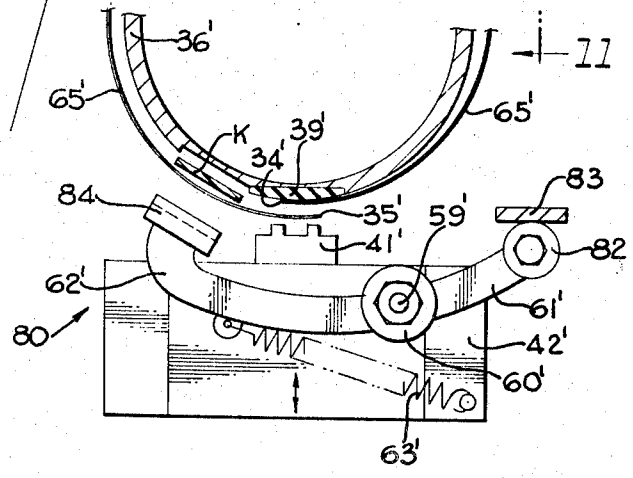


Fig. 11

Fig. 12



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United States Patent Office 3,381,442 Patented May 7, 1968

3,381,442

METHOD OF AND APPARATUS FOR MAKING A BAG ENCLOSING A RECLOSING FACILITY

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Filed Aug. 6, 1965, Ser. No. 477,797
7 Claims. (Cl. 53—28)

ABSTRACT OF THE DISCLOSURE

Modification of a conventional bag packaging machine which forms, fills and seals plastic bags so that this attaches a Kwik Lok type bag closure to the inner surface of each such bag whereby, when said bag is opened at one end for withdrawing a portion of the contents, said closure may be detached from the bag and used to reclose the same to preserve the balance of the contents of the bag.

Background of the invention

This invention relates to the "pillow" type of bag formed of thin sheet plastic material and widely used today for unitized packaging of small quantities of loose products of various kinds.

It is customary to form, fill and seal such bags on a conventional bag packaging machine. This draws a continuous band of plastic material from a roll thereof and progressively forms this into a tube, seals one end of this tube, delivers a pre-determined quantity of the product through said tube into the sealed end portion thereof, and then seals the tube transversely just above said product, and cuts the transverse area just sealed to divide it into lower and upper seals and remove the bag just formed from said tube. The first of these seals closes the upper end of the bag just severed from the tube. The second seal closes the lower end of the remainder of the tube in readiness to start another cycle in the bag forming, filling and sealing method automatically performed repeatedly by said machine.

When one end of such a bag is snipped off to open the same and start using the contents thereof, there is often a need for reclosing the bag to prevent the drying out or spoiling of a portion of the product left in the bag.

Summary of the invention

It is an object of the present invention to provide a method of and apparatus for making such a pillow-type plastic bag which will have embodied therewith, entirely enclosed therewithin, a reclosure facility which will be retained near the bag end normally opened, and will be readily detachable from the bag, from the inside, after the latter has been opened, for use in reclosing said bag.

Another object of the invention is to provide such a method and apparatus wherein the closure facility will not interfere with the formation of or impair in any way the lengthwise and transverse seals employed in the manufacture of the bag.

Yet another object of the invention is to provide such a novel method and apparatus which may be embodied with a conventional packaging machine and may be performed incidental to the automatic performance of the forming, filling and sealing functions of said machine, with a relatively slight amount of modification being required in the structure of said machine.

Brief description of the drawing

FIG. 1 is a front elevational view of a preferred embodiment produced by the "pillow" type bag of the invention.

FIG. 2 is a diagrammatic cross-sectional view taken on the line 2—2 of FIG. 1 and illustrates the manner in which a longitudinal welded seam is formed in said bag and the manner in which a reclosure facility is secured to the inner surface of the bag with said facility completely enclosed by the latter.

FIG. 3 is a fragmentary perspective view of the upper end of the aforesaid bag after the upper transverse welded seam thereof has been clipped off to open said bag and a portion of the contents removed and the reclosure facility aforesaid has also been removed from the bag and applied to the loose neck portion of the bag to close this and thus preserve the balance of the contents of the bag from exposure.

FIG. 4 is a diagrammatic view illustrating a sheet of plastic film being fed to a conventional packaging machine of the form, fill and seal type, and illustrates the manner in which the feeding of said material is electrolytically controlled by the present invention to facilitate the delivery of said reclosure facility into said bag.

FIG. 5 is a diagrammatic fragmentary front elevational view of the tube forming mandrel portion of a conventional form-fill-seal packaging machine with this modified in accordance with the present invention for the purpose of mounting a reclosure facility entirely within each bag formed by said machine.

FIG. 6 is a diagrammatic horizontal sectional view taken on the line 6—6 of FIG. 5 and illustrates the attachment for said machine provided by the present invention for advancing a "Kwik Lok" type of bag closure inside the bag forming tube being shaped by said machine as the integral foremost closure of a multi-closure strip of the "Striplok" type.

FIG. 7 is an enlarged fragmentary detail vertical sectional view taken on the line 7—7 of FIG. 6 and shows the vacuum system provided for carrying away closure-connecting webs which are separated from said multi-closure strip in the process of separating the endmost closure from said strip.

FIG. 8 is a view similar to FIG. 6 and illustrates the elements of said machine as positioned during the formation of a longitudinal side seam in said tube, this view also showing the activating of the means in the invention for separating the endmost closure from said multi-closure strip and pressing the material of said plastic tube against said endmost closure and against an adhesive applied thereto so as to cause said closure to adhere to the inner surface of said tube.

FIG. 9 is an enlarged detail sectional view taken on line 9—9 of FIG. 8 and illustrates the solenoid means employed in the invention for causing said multi-closure strip to progress with each cycle of operation of said machine to extend the endmost closure of said strip between the overlying longitudinal marginal areas of said sheet of plastic material which are in overlapping relation as a result of the formation of said tube by said machine but are still located above the level at which the longitudinal seal is formed between said areas, thereby permitting said closure to be inserted between said areas and into said tube.

FIG. 10 is a fragmentary diagrammatic perspective view of a portion of said conventional packaging machine with a modified form of the apparatus of the present invention incorporated therewith, this form of said apparatus providing for inserting the multi-closure strip axially lengthwise downwardly into the upper end portion of the aforesaid plastic tube as this is formed by said machine.

FIG. 11 is a fragmentary vertical sectional view taken on the line 11—11 of FIG. 10 and shows the endmost closure of said multi-closure strip fed downwardly axially into said tube in position to have said endmost closure removed from said strip and adhesively applied to the in-

ner surface of said tube during the next cycle of operation of said machine.

FIG. 12 is a horizontal fragmentary sectional view taken on the line 12—12 of FIG. 11.

Description of the preferred embodiment

Referring specifically to the drawings and particularly to FIGS. 1 and 2, a pillow-type bag 10 is here shown which is produced by a preferred embodiment of the method of and apparatus of the present invention. This bag has a tubular body 11 which is formed by a longitudinal sheet of flexible plastic material with its side edges wrapped around the longitudinal axis of the bag so as to provide overlapping marginal areas 12 and 13 the first of which is superimposed above the second and the two are then united by a heat weld 14 which seals said areas together and converts the aforesaid longitudinal sheet into said tubular body 11. As with all conventional "pillow" type bags, bag 10 has its lower end closed by a heat weld 15 which welds back and front portions of the tubular body 11 together. In a similar manner the upper end of bag 10 is closed by a heat weld 16 after a pre-determined amount of loose product 17 has been deposited in said bag so that the weld 16 confines said product.

The manner in which bag 10 departs significantly from the conventional, is in its having affixed to the inner surface of the tubular body 11 just inside of the upper end of the bag closed by weld 16, a reclosing facility 18.

In the broader aspects of the present invention, this facility may comprise any of the well known bag closures which embrace, among others: a closure operating by means of a pressure adhesive and a closure comprising a plastic coated wire filament which is twisted about the bag neck to close the same, or it may and preferably does comprise a closure of the type known commercially as a "Kwik Lok" closure which is made of a small, approximately rectangular sheet of flat polystyrene which is stiff but springy and has an internal bag closing aperture therein which is connected with one edge of the closure by a narrow entrance opening. The application of the "Kwik Lok" closure to a bag is effected in any of several ways but when it is done manually, the bag neck is generally bunched together, as by twisting, and the two jaws on opposite sides of the entrance opening of the closure are sprung apart to admit the bag neck between these and into said aperture, after which the pressure on the closure is removed so that these jaws spring together and trap the bag neck in said aperture.

"Kwik Lok" closures are available commercially packaged in columns of individual closures or they may be had coiled in multi-closure strip form which is known as "Striplok." The present invention, as disclosed herein, is particularly adapted to make use of multi-closure strip of the last mentioned type. Consecutive closures K are provided in this multiple closure strip S, with consecutive closures united in longitudinal sequence in the strip by a pair of connecting webs 25. The polystyrene of which the strip S is made renders these webs readily frangible in the areas of union between their opposite ends and the closures K which they connect by bodily shifting one of said closures relative to the other so as to rotate said webs simultaneously about their centers of mass. This shifting of one of said consecutive pair of closures relative to the other to effect such a separation of the connecting webs from said closures and the separation of said closures from each other may occur either in the plane of the strip, or it may occur in a direction normal to the plane of the strip and it is movement in the latter direction which is preferably utilized in the present invention for separation of each of the endmost closures K in a strip S from the balance of the strip.

Each closure K in strip S is provided with an internal bag neck confining aperture 26 which is connected to one edge of the closure by a narrow opening 27 through which the bag neck is admitted to said aperture, this opening

providing a pair of opposed jaws 28 on opposite sides thereof which spring together after the bag neck has been inserted into the aperture 26 so as to retain said neck in said aperture.

"Striplok" is made in two ways. In the first of these, the openings 27 open longitudinally of the strip through an end edge of the closure. Alternatively, "Striplok" is made with the narrow openings of the individual closures K opening laterally through side edges of the closures. The present invention is adapted to make use of "Striplok" in either of these forms although the invention is disclosed herein as employing a multi-closure strip S in which the narrow openings 27 of the individual closures are located in the end edges of the closures.

While the polystyrene of which "Striplok" is made is itself thermo-plastic, and is thus susceptible of being heat welded to the plastic bag, the multi-closure strip of this type shown herein is provided with spots 29 of adhesive which are susceptible to the application of pressure thereagainst with or without heat to make a tight bond with the element applying such pressure and which in the present invention is the sheet of plastic material P being employed in the formation of a plastic bag 10. Two of these spots are shown as being provided on each of the closures K, in a strip S, these spots being on the surface of this closure which faces outwardly towards the inner surface of the plastic material of the tube formed by the machine.

Referring now particularly to FIGS. 5 to 9 inclusive., the apparatus 30 of the present invention is seen to constitute a modification of a conventional automatic packaging machine of the type, for instance, shown in the Zwoyer Patent No. 1,986,422 and which includes a vertical, hollow, flexible-plastic-tube-forming mandrel 31. This mandrel is in communication at its upper end with a suitable product feed device which operates in timed relation with the formation of bags by said machine so that each bag has delivered thereto through said mandrel a pre-determined quantity of product which it is desired to package in said bag.

Associated with said mandrel is a flexible-sheet-plastic-shaping yoke 32 which is made of metal and is stationary and functions as a guide for plastic sheet 33 which is fed upwardly from the rear to said yoke from a roll of said material mounted at the rear of the machine, said yoke guiding said material as it is pulled downwardly about said mandrel so that said material surrounds said mandrel with opposite side edges of said sheet of material overlapping each other directly in front of the mandrel.

The mandrel 31 has outer and inner concentric tubular walls 36 and 37 which provide a free annular space 38 between said walls for the discharge of air from a bag being formed which air is displaced by the product being delivered downwardly into said bag.

The outer wall 36 of mandrel 31 is provided with a relatively stiff rubber pad 39 which is located right in front of the mandrel 31 and spaced a short distance downwardly from the lower end of the shaping yoke 32. Mounted pivotally on one side of the frame 40 of the machine (as shown in said patent) so as to be shiftable horizontally toward and away from said pad is an electrically heated longitudinal seam forming die 41 this being mounted on the front face of an electric heater 42.

Also secured to frame 40 and supported thereon is a platform 43 on which a coil 44 of multi-closure strip S is supported lying flat so that said strip may be readily drawn from the periphery of said coil thereby rotating the latter. An arcuate guide 45 is mounted on said platform for guiding said strip along a path which terminates just to the left of the lefthand edge of pad 39 as shown in FIG. 6, and this strip guide lies in the area between the upper end of said pad and the lower end of shaping yoke 32.

Mounted on the platform 43 is a solenoid 46 having an armature 47 which pivotally connects at its outer end with a lever 48 one end of which is pivotally mounted

at 49 on the platform 43 and the opposite end of which has pivotally mounted thereon a closure strip progressing dog 50, the latter having an arm 51 which is connected by a spring 52 to arm 48 so as to bias the dog 50 into engagement with the strip S confined within the arcuate guide 45.

A non-reverse dog 55 is pivotally mounted at 56 on platform 43 and is biased by spring 57 into constant engagement with strip S in said guide so as to prevent reverse movement of the strip during the intervals between forward feeding movements thereof.

Pivotally mounted on a vertical pin 59 provided on electric heater 42 is a rocker 60 including arms 61 and 62, said rocker being biased by a spring 63 so as to constantly maintain arm 61 in contact with the arcuate strip guide 45. The other arm 62 is poised in spaced relation with the position of the endmost closure K of strip S just before each sealing operation by the seam forming die 41.

As diagrammatically shown in FIG. 4, the patented machine above referred to has means for supplying itself with a sheet 33 of flexible material which travels upwardly in the direction of the arrow 64 to the point where it is draped over the shaping yoke 32 and formed into a tube 65 preparatory to forming the same into a pillow-type bag 10. This bag is formed by a pair of heated jaws mounted for vertical reciprocation together between upper and lower positions and for horizontal reciprocation between expanded and closed positions.

In the automatic operation of said machine, these jaws rise from their lower to their upper position while expanded and when they reach their upper positions they automatically are closed in gripping relation with the sheet plastic tube 65 just below the lower end of hollow mandrel 31. This forms a transverse seal for the upper end of the bag just below said jaws and for the lower end of the bag to be formed just above said jaws. A knife means is provided on one of said jaws which automatically operates on the downstroke of said jaws, while they are gripping said tube to form a seal, to sever the tube along a line midway between upper and lower edges of said seal. This serves the bag below said jaws from the tube and when the jaws are released at their lowermost position from gripping relation with the tube, the lower bag gravitates onto a conveyor belt for carrying the same away and is discharged from the machine.

The plastic sheet 33 is provided lengthwise thereof with a series of advertising imprints which are spaced on said sheet so that one of said imprints appears on each of the bags formed from said sheet. To control the location of the lower position of the gripping jaws so that the endmost imprint on sheet 33 will always be properly related with the bag severed from the lower end of plastic tube 65, the termination of the down movement of said jaws is always triggered by one of a series of spots 70 provided on the sheet 34 in like relation with the several advertising imprints printed thereon, coming directly opposite a photoelectric cell 71. By adjusting the position of cell 71, lengthwise with reference to plastic sheet 33, the advertising imprints appearing on the latter sheet may be caused to be exactly registered lengthwise with the bags formed by said machine from the terminal end portion of said sheet.

Coincidental with the opening of the sealing jaws at the lower end of their vertical travel, and the discharge of the bag just formed from said machine, the electric heater 42 carrying die 41 is shifted inwardly to compress the overlapping edge portions 34 and 35 of sheet 33 against the platen pad 39 so as to heat seal said flaps together throughout the vertical length of the die 41. This forms a longitudinal side seal in the plastic tube 65 which provides the length wise heat weld 14 of each bag 10 formed from said tube.

The inward movement of the electric heater 42 to form this weld, causes the rocker 60 to rotate as shown in FIG. 8 causing the arm 62 thereof to press the material of plastic tube 65 against the endmost closure K of strip S. This accomplishes two things. In the first place, this pressure is in a direction normal to the plane of the strip S at this point, so as to cause the fracture of the material of said strip in the areas of union between the two endmost closures of said strip and the webs 25 connecting the same. This completely frees said pair of webs from said closures and said closures from each other. The pressure thus applied by arm 61 against endmost closure K is through the material of plastic tube 65 and this material is pressed at this time against the areas on said closure occupied by adhesive spots 29 which are particularly designed to cause strong adhesion to any material pressed thereagainst and the pressure applied by arm 61 thus causes strong adhesion of the endmost closure K, which has just been separated from the multi-closure strip S, to the inner face of plastic tube 65.

Following the separation of the heat sealing jaws at the end of their downward movement, the upward movement of said jaws starts automatically and takes place during the period that die 41 is forming the lengthwise seam on plastic tube 65. As said sealing jaws arrive at their upper limit of movement and are caused to move into closed sealing position on said plastic tube, the electric heater 42 and die 41 mounted thereon are automatically retracted from engagement with the plastic tube 65 as shown in FIG. 6.

The apparatus 30 of the present invention includes a photoelectric cell 72 which is located upwardly from photoelectric cell 71 so as to be triggered by one of the spots 70 just as electric heater 42 withdraws from its sealing position shown in FIG. 8 to its non-sealing position shown in FIG. 6. Cell 72 is connected through a suitable relay with the electric circuit of solenoid 46 so that when that circuit is triggered by the energizing of cell 72 by a spot 70, this solenoid actuates the strip feed dog 50 to cause the latter to feed strip S the distance of the length of one closure K beyond the end of arcuate strip guide 45 as shown in FIG. 6.

In the apparatus 30, the annular space 38 in mandrel 31 accommodates a tube 73 which connects at its lower end with an opening 74 in the outer wall 36 of mandrel 31 and a suitable evacuating pump (not shown) is connected to tube 73 so as to extract the air from said tube and suck into and through said tube all webs 25 which are separated from closure strip S in the operation of said apparatus.

Upon the de-energizing of solenoid 46 this operates by the self-contained spring therein to return feed dog 50 to its retracted position in which this is shown in FIG. 8.

A complete cycle of operation of the apparatus 30 has now been described. It is to be understood, that this apparatus continues to automatically repeat the performance of this cycle.

The location in the machine 30 at which a closure K is introduced into the plastic tube 65 and caused to adhere to the inner surface thereof, is such that this closure will always be just below the upper end of each bag made by said machine as is shown in FIG. 1 and to one side of the lengthwise heat weld 14 of said bag. A suitable range of variations in the length of the bag which can thus be made on a conventional form, fill and seal packaging machine is offered the operator by the choice given of setting the machine so that 3, 4 or 5 bags can be made from the length of tube 65 extending from the level at which the closure K is inserted into said tube and the lowermost point of travel of the transverse tube sealing jaws of the machine.

Referring now to FIGS. 10, 11, and 12, a modified form of the apparatus of the invention is here shown which provides for introducing the multi-closure strip S vertically downwardly outside the mandrel 31 but inside the throat of shaping yoke 32 and to one side of the

longitudinal seam forming die 41 and then separating the endmost closure K from the lower end of said strip and adhesively applying the same to the inner surface of the plastic tube 65 in a similar manner as above described for the preferred embodiment of the invention. This modified apparatus, which is designated in the drawings by the numeral 80, makes use of the same conventional packaging machine as the preferred form of the apparatus above described, with the following distinctions. Parts in apparatus 80 corresponding to like parts in the preferred apparatus will be referred to by the same reference numerals with prime attached.

The outer tubular wall 36' of apparatus 80 has a stiff rubber platen pad 39' recessed therein the upper end of which pad terminates just above the upper end of the longitudinal seam forming die 41'. Incorporated with the outer surface of tubular wall 36' is a shallow strip guide 45' the upper end portion of which is broken away in FIG. 10. This guide curves outwardly and is supplied with a coil 44' of strip S which is fed along guide 45' in the same manner that the strip is fed in the preferred embodiment of the invention described above.

The lower end of strip guide 45' terminates so that when the endmost closure K of the strip is extended just beyond the lower end of said guide, said closure is located between the lower end of shaping yoke 32' and the upper end of longitudinal seam forming die 41'. Formed in the outer surface of tubular wall 36' is a wedge-shaped recess 81 with the deepest end of this recess disposed just below the lower end of the strip guide 45'. The electric heater 42' of apparatus 80 carries a vertical pin 59' on which a rocker 60' is mounted which is similar to rocker 60 in that it has arms 61' and 62' the first of which carries a roller 82 which is biased into constant engagement with a frame element 83 by a spring 63'. Arm 62' is provided on its outer end with a pressure head 84 which is shaped so as to fit into recess 81 when, in the operation of the machine, electrical heater 42' is shifted into seam forming position. Each time this takes place, in the automatic operation of the apparatus 80, it will be just following the feeding of the strip S one closure-length downwards so that the endmost closure K of the strip will be positioned opposite wedge-shaped recess 81 as shown in FIG. 11 so that the inward movement of head 84 will crack the areas of union at opposite ends of the two webs connecting the lowermost closure K with the closure next thereabove and will press the material of the plastic tube 65 against the adhesive spots 29 on the endmost closure K and will thus free this closure from the strip S and unite it with the inner surface of said plastic tube. In the apparatus 80 the strip feed mechanism is identical with that in the preferred apparatus and is thus caused to advance the strip S downwardly the length of a single closure just after the seam forming die 41' has been shifted out of engagement with plastic tube 65 and the transverse sealing jaws have gripped the plastic tube 65 and pulled this downwardly a sufficient distance to remove the closure K just applied to said tube, from the wedge-shaped recess 81.

From the above description of modified apparatus 80, it is believed clear that this offers an alternative means for producing the pillow-type bag 10 which is as fully operative as the preferred form of apparatus previously described. It is to be understood that the rockers 60 and 60' described as embodied in said two forms of the apparatus are mounted directly on electric heaters 42 or 42' and the pressure face of each of these rockers is hot when it is applied to the plastic tube 65 to press this against the endmost closure K of the strip S so that this pressure not only separates said closure from said strip but heats up the adhesive in the spots 29 on said closure so as to weld the latter in the inner surface of said plastic tube.

The claims are:

1. A method of manufacturing a bag of a flexible thin sheet plastic material such as polyethylene or the like with a self-contained device for reclosing said bag after the latter has been closed and then subsequently opened which includes the steps of: advancing a relatively long sheet of said material lengthwise of said sheet in a given direction, bringing opposite edges of said sheet into overlapping relation, as said sheet is so advanced, to form a tube of said material, adhesively attaching said reclosure device to a surface of said sheet of material which will ultimately constitute an inner surface of said bag within an area on said surface which will be located in a uniform selected position relative to a particular end of said bag and entirely within the same, sealing said opposite edges together to form a lengthwise seam for said bag, transversely sealing said tube to form the bottom of said bag, and cutting said tube transversely a given distance from said transverse seal and above the location of said reclosure facility therein to sever said bag from said tube and entirely confines said closure within said bag.

2. A method as recited in claim 1 wherein said reclosure device attaching step takes place prior to the lengthwise seam forming operation.

3. A method as recited in claim 1 wherein said reclosure device attaching step takes place after said sheet side edges are in overlapping relation by extending said reclosure device between said overlapping sheet side edges and into said tube formed from said sheet, and applying the same adhesively to the inner surface of said tube.

4. A method of manufacturing a series of separate individually closed bags from a sheet of flexible thin plastic material such as polyethylene or the like, and packaging a given quantity of loose product together with a bag reclosing device in each of said bags, said method including the steps of: advancing said sheet lengthwise in a downward direction, bringing opposite edges of said sheet into overlapping relation, as said sheet is so advanced, applying said bag reclosing devices adhesively to said sheet as it is being converted into bags, whereby one of said devices will be entirely confined within each of said bags, when the latter is completed, with said device adhering to the inner surface of the material of said bag near a particular end thereof, sealing said opposite edges of said sheet together to form a tube of said material, transversely sealing said tube to form the bottom of the first bag, delivering a measured quantity of said product downwardly through said tube into said first bag, transversely sealing said tube to simultaneously seal the top of the first bag and the bottom of the second bag, severing the last mentioned seal to separate the portions thereof pertaining to said first bag and said second bag and separate said first bag from said tube, and repeating the aforesaid steps to continue said bag forming, filling and closing operation.

5. In a plastic bag form-fill-seal packaging machine which receives a sheet of thermo-plastic material from a roll of the same and continuously shapes this about a hollow mandrel with side edges of said sheet overlapping and forms a longitudinal seam by heat sealing said overlapping edges together, to form a plastic tube, and then successively draws said tube downwardly from said mandrel to form a succession of bags into each of which a quantity of loose product is fed downwardly through said mandrel and enclosed within said bag when sealing the top end of the latter, the combination of: means actuated coordinately with the mechanism of said machine for introducing a series of reclosure facilities into said plastic tube as the latter is being formed by said machine and causing the adhesion of said reclosure facilities separately to the inner surface of said tube and in lengthwise spaced relation during the continuous sequential cyclic operation of said machine, whereby a reclosure facility is uniformly positioned entirely inside each of said bags and secured to said bag near a particular end thereof assigned for the opening of said bag whereby said reclosure facility is available when said bag is opened, as by clipping said

end therefrom, for removal from said bag and application to the open end of the latter for reclosing said bag.

6. A combination as recited in claim 5 wherein said facility comprises a flat, sheet, internally apertured bag closure with a narrow edge opening through which the neck of a bag may be inserted into said aperture and wherein means is provided for automatically feeding a strip embodying a multiplicity of said closures sequentially arranged, through the space between edge portions of said sheet of plastic material after the latter has been given the shape of a plastic tube but prior to the heat sealing of said edge portions together; and means operated in timed relation with the functioning of said machine, to separate the endmost closure from said strip, after said closure has been thus inserted into said plastic tube, and secure said closure to the inner surface of said tube.

7. A combination as recited in claim 5 wherein said facility comprises a flat sheet internally apertured bag closure with a narrow edge opening through which the

neck of a bag may be inserted into said aperture and wherein means is provided for automatically feeding a strip embodying a multiplicity of said closures sequentially arranged, lengthwise into said tube at the point where said sheet is being converted into said tube so that said strip extends axially between said mandrel and said sheet at the point of said conversion; and means operated in timed relation with the functioning of said machine, to separate the endmost closure from said strip, after said closure has been thus inserted into said plastic tube, and secure said closure to the inner surface of said tube.

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