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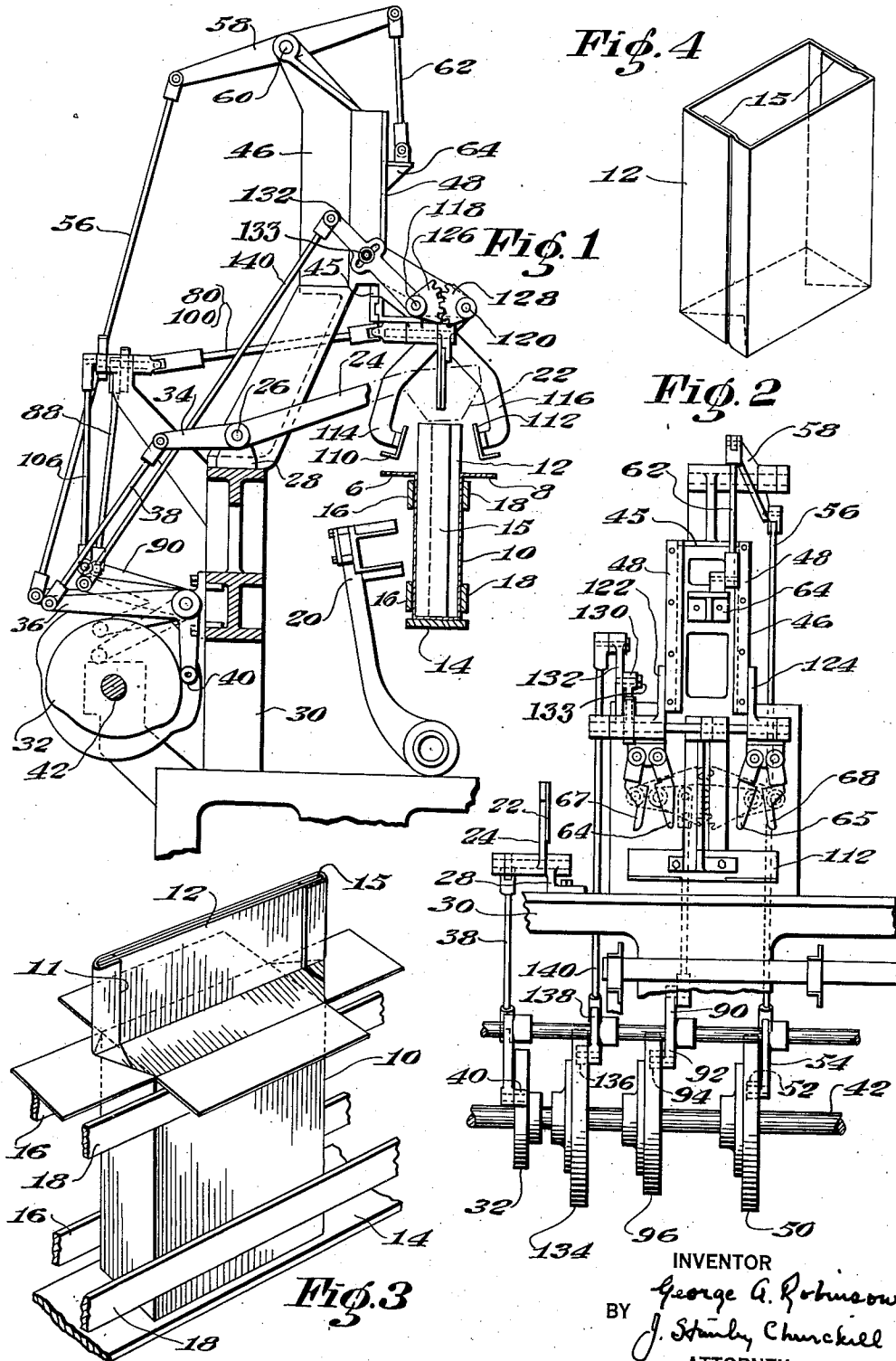
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2,168,241

PACKAGING MACHINE

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2 Sheets-Sheet 1



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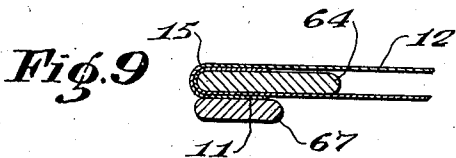
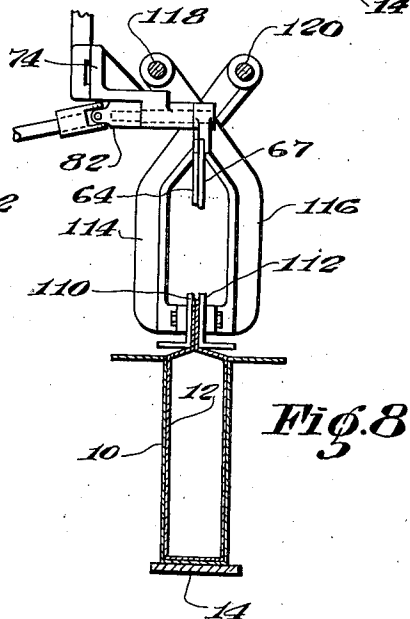
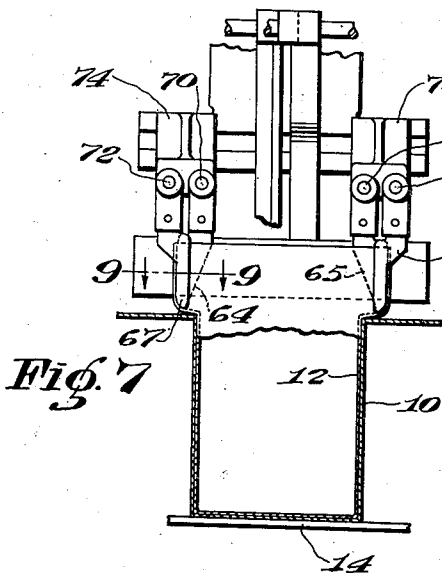
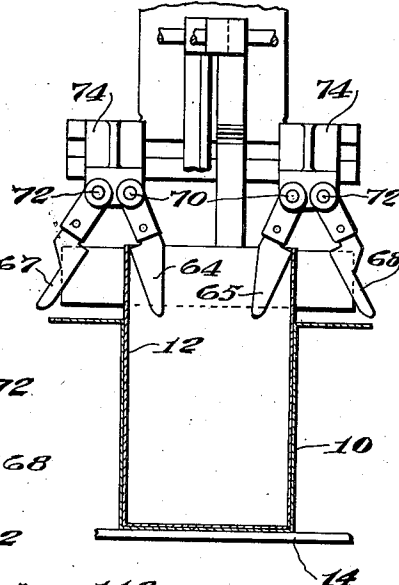
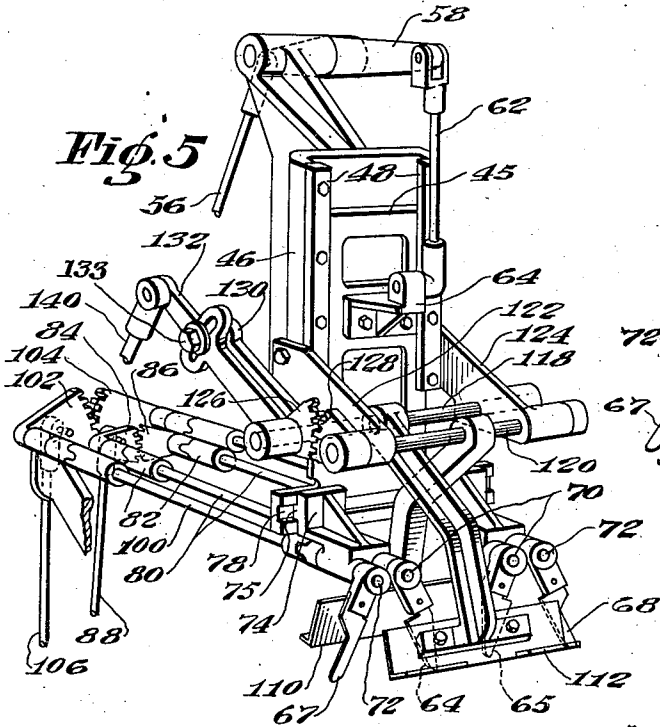
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PACKAGING MACHINE

2 Sheets-Sheet 2



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PACKAGING MACHINE

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6 Claims. (Cl. 93—6)

This invention relates to a packaging machine.

The invention has for an object to provide a novel and improved packaging machine in which provision is made for closing the open end of a liner or bag by making an elongated fold in the top or mouth portion of the bag in a novel and superior manner to produce a superior and efficiently closed container.

Another and more specific object of the invention is to provide a novel and improved packaging machine in which provision is made for closing the open end of a lining bag having side seams by making an elongated fold in the top or mouth portion of the bag and in which provision is made for retaining the side seams in closed position while the elongated fold is being made to thereby prevent them from opening during such operation.

With these general objects in view and such others as may hereinafter appear, the invention consists in the packaging machine and in the various structures, arrangements and combinations of parts hereinafter described and particularly defined in the claims at the end of this specification.

In the drawings illustrating the preferred embodiment of the invention, Fig. 1 is a side elevation of a sufficient portion of a packaging machine embodying the present invention to enable the present invention to be understood; Fig. 2 is a front view of the machine shown in Fig. 1; Fig. 3 is a perspective view of the elongated top fold in a lining bag produced by the present machine; Fig. 4 is a perspective view of a lining bag illustrating a type of liner produced by sealing the overlapping portions of a sheet to form side seams; Fig. 5 is a perspective view of the mechanism shown in Fig. 1; Figs. 6, 7 and 8 are enlarged details illustrating the mechanism for producing the top fold, in different positions of operation, Figs. 6 and 7 being front views and Fig. 8 being a side view, and Fig. 9 is an enlarged cross-sectional detail taken on the line 9—9 of Fig. 7.

In general, the present invention contemplates a packaging machine having provision for closing the mouth of a lining bag by first spreading apart two opposed sides of the open end of the mouth lining to produce an elongated fold and thereafter pressing together the elongated fold thus formed in order to form a partial closure in the top of the bag. The inner edges of the liner may be provided with adhesive, so that the pressing operation may serve to seal the elongated sides together or, if paraffin paper is used, the pressers may be heated so as to form a heat seal or the elongated

folded portion may be left unsealed and may be folded over the top of the lining bag by the carton flaps and sealed therewith during the carton sealing operation.

A packaging machine embodying the present invention may include the usual and known mechanisms for producing a lining bag and for inserting the lining into a carton and weighing or filling mechanism for charging the lined carton with material, and only a sufficient portion of such a packaging machine has been herein shown as will enable the present invention to be understood.

The present invention is particularly adapted for forming an elongated fold in a liner of the type provided with overlapping side seams as illustrated in Fig. 4. In producing a liner of this type the overlapping portions may be adhesively or otherwise sealed together and in the operation of the machine the liner is inserted in a carton and advanced to a succeeding station of operation to be filled whereupon the filled package is advanced to the present top closing mechanism illustrated herein.

In attempting to produce an elongated top fold in a liner of the type above described, with the usual type of top closing mechanism of the prior art, it was found that the side seams would tend to separate during the operation of spreading the top of the liner. This was due to the strain applied by the spreading arms before the adhesively sealed portions of the seams had time to dry sufficiently to become permanently set or in the case of the heat sealed paraffin liner, the strain imposed was great enough to separate the overlapping and paraffin sealed seams. In accordance with the present invention provision is made for preventing the side seams from opening up during the spreading operation of producing the elongated fold.

Referring now to the drawings, the package, comprising a carton 10 provided with a liner 12 and containing the material to be packaged, is advanced to the present top closing station by a conveyor belt 14 and is supported between guide rails 16, 18. The liner 12 extends above the top of the carton and the side flaps 6, 8 of the carton 10 may be held down out of the way by suitable rails, not shown, during the top closing operation. A suitable stop 20 may be arranged to rock into the path of the oncoming package in order to position the package in operative relation to the top closing mechanism. A second stop 22, preceding the stop 20 is provided to hold back the line of cartons being advanced upon the conveyor

belt 14 and is arranged to release one carton at a time to the top closing mechanism in timed relation to the operation of the machine. As herein shown, the stop 22 is secured to one arm 24 of a two armed lever mounted to rock upon a stud 26 fixed in a bracket 28 secured to the frame 30 of the machine. The stop 22 is arranged to be rocked from a cam 32 through connections including a second arm 34 connected to one arm 36 of a bell-crank by a link 38, the other arm of the bell-crank being provided with a cam roll 40 which cooperates with the cam 32. A suitable spring, not shown, may be used to hold the roll 40 against its cam 32.

The cam shaft 42, upon which the various cams for actuating the top closing mechanism are mounted, may be driven in any usual or preferred manner, not shown, and in timed relation to the various mechanisms of the machine.

Referring now to Figs. 1 and 2, the spreader mechanism for producing the elongated fold in the mouth of the lining bag is mounted to be raised and lowered upon a vertically reciprocated slide 45, slidably mounted in a bracket 46 and retained therein by gibbs 48. The slide 45 is arranged to be lowered to present the spreader mechanism into operative relation to the lining and to be thereafter raised, to permit the package to pass and a new package to be advanced. As herein shown, the slide is reciprocated through connections from a closed cam 50 mounted upon the cam shaft 42, including a cooperating cam roll 52, bell-crank 54, link 56, a two armed lever 58 pivoted at 60 in the bracket 46, and a link 62 connected to a bracket 64 secured to the slide 45.

As herein illustrated, the spreader fingers 64, 65 and the cooperating seam retaining fingers 67, 68 are arranged in pairs and are fixed upon the ends of studs 70, 72 respectively, mounted to rock in brackets 74. The brackets 74, provided with tongues 75 are adjustably mounted in grooves 78 provided in the lower end of the slide 45. The spreader fingers 64, 65 are arranged to be rocked through connections including links 80, see Fig. 5, provided with universal joints 82 which are operatively connected to move in unison by cooperating gear segments 84, 86. The gear segment 84 is connected by a link 88 to one arm 90 of a bell-crank, the other arm 92 being provided with a cam roll 94 which cooperates with a closed cam 96 mounted upon the cam shaft 42. The retaining fingers 67, 68 are similarly arranged to be rocked in unison through universally connected links 100 and cooperating gear segments 102, 104. A link 106 connected to the gear segment 102 is similarly connected to a cam, not shown, which operates to rock the fingers 67, 68.

As herein shown, a pair of presser plates 110, 112 mounted upon arms 114, 116 are arranged to close in upon the elongated fold formed by the spreader mechanism and to press the folded sides of the mouth of the bag together. The arms 114, 116 are fixed to rocker shafts 118, 120 which are rockingly mounted in brackets 122, 124 secured to the sides of the bracket 46. Provision is made for rocking the presser arms simultaneously and as herein illustrated, cooperating gear segments, 126, 128 are secured to the ends of the rocker shafts 118, 120 respectively. The segments 126 are provided with an arm 130 which is adjustably secured to a lever 132 loosely mounted upon the shaft 118. Adjustment of the arm 130 with relation to the lever 132 is effected through the slot 134 and bolt connection 133 whereby the amount of

pressure applied by the presser plates 110, 112 may be varied. The lever 132 is arranged to be rocked from a closed cam 134 through the connections including a cooperating cam roll 136, bell-crank 138 and link 140.

In the operation of the machine, when the package with its extended lining is positioned in operative relation to the top closing mechanism, the slide 45 is lowered to present the spreader fingers 64, 65 within the lining bag and the retaining members 67, 68 outside of the bag as illustrated in Fig. 6. The fingers are then rocked to spread the ends of the bag and form the elongated fold as shown in Fig. 7. During the spreading operation, it will be seen that the retaining fingers 67, 68 cooperate with the spreader fingers 64, 65 so as to press and retain the overlapping edge 11 of the seam 15 of the lining bag 12 between the fingers to prevent the side seam from spreading apart, as clearly illustrated in Fig. 9. The fingers are now rocked apart again and raised to a position above the extended lining while the presser plates 110, 112 are brought together to press the fold as illustrated in Fig. 8.

From the above description, it will be seen that the top folding mechanism of the present invention is particularly adapted for forming an elongated fold in a lining bag having seams running up the sides thereof and for preventing said seams from becoming separated or opened up during the spreading operation to the end that a superior and efficiently closed liner may be produced.

While the preferred embodiment of the invention has been herein illustrated and described, it will be understood that the invention may be embodied in other forms within the scope of the following claims.

Having thus described the invention, what is claimed is:

1. In a top closing device for a packaging machine, in combination, a pair of spreader arms for producing an elongated fold in a lining bag having side seams, and means cooperating with said spreader arms for preventing the side seams from opening up during the spreader operation.

2. In a packaging machine, in combination, top closing mechanism including means for producing an elongated fold in the mouth of a lining bag having side seams comprising a pair of spreader arms for lengthening out the open mouth of the bag, and auxiliary arms cooperating therewith for preventing said side seams from opening up during the spreading operation.

3. In a top closing device for a packaging machine, means for producing an elongated fold in a lining bag having side seams comprising a pair of spreader arms, and means cooperating with said spreader arms for preventing the side seams from opening up during the spreading operation, and presser plates for pressing together the elongated fold after the top spreading operation.

4. In a packaging machine, in combination, top closing mechanism for producing an elongated fold in a lining bag provided with side seams, comprising spreader arms mounted for vertical reciprocation, means for lowering said spreader arms into the open end of the lining bag, means for rocking the spreader arms into the open end of the lining bag, means for rocking the spreader arms to effect an elongated fold in the mouth of the bag, and means cooperating therewith for preventing said side seams from

becoming separated during the spreading operation.

5 5. In a packaging machine, in combination, means for operatively supporting a carton having a lining bag provided with side seams at
10 two of the sides thereof, top closing mechanism for closing the top of the lining bag of a carton thus supported including a pair of movable
15 spreader arms, means for moving the spreader arms to fold outwardly and towards said side seams the opposite ends of the top of the liner, and a pair of auxiliary members cooperating with said spreader arms to press portions of the thus folded top of the bag against said arms whereby
to prevent opening up of the side seams during the spreading operation, and means for moving the spreader arms into and from the interior of the top of the lining bag.

6. In a packaging machine, in combination,

means for operatively supporting a bag having side seams at two of the sides thereof, top closing mechanism comprising movable spreader arms for producing an elongated fold in the mouth of the bag, auxiliary arms cooperating
5 therewith for pressing the outwardly folded portions of the top of the bag against the spreader arms, said presser arms being disposed without the bag and movable into and from a position with the spreader arms disposed within the
10 mouth of the bag, and operating mechanism for moving the spreader arms and pressing arms toward each other to spread outwardly opposed portions of the mouth portion of the bag and for
15 simultaneously pressing folded portions of the bag against the spreader arms whereby to prevent opening up of the side seams of the bag during the bag closing operation.

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