May 28, 1940. A. W. LINDHOLM 2,202,213

METHOD OF PACKAGING

Filed May 13, 1938 2 Sheets-Sheet 1

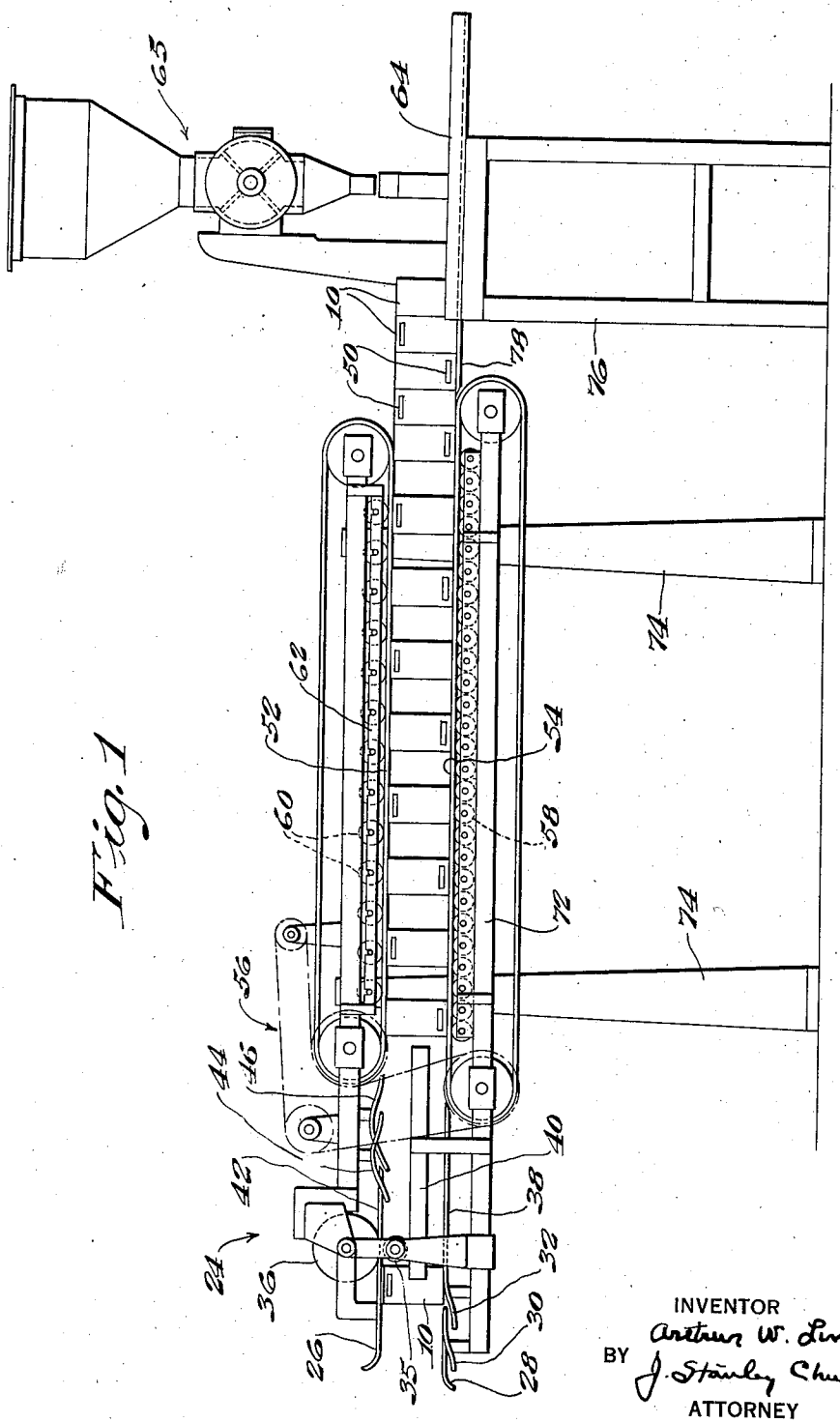


Fig. 1

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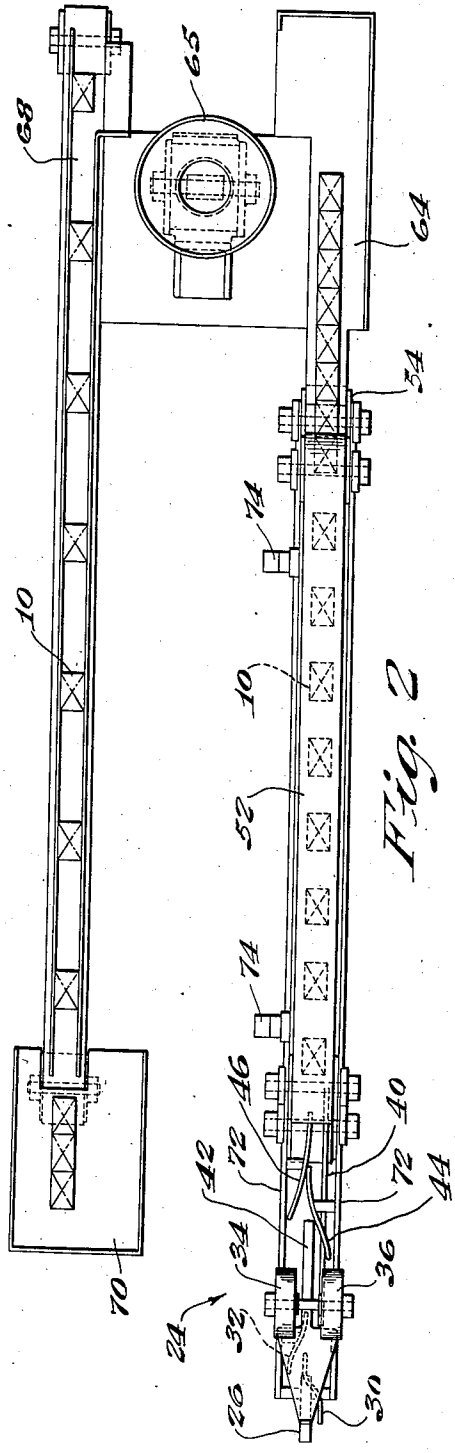


Fig. 2

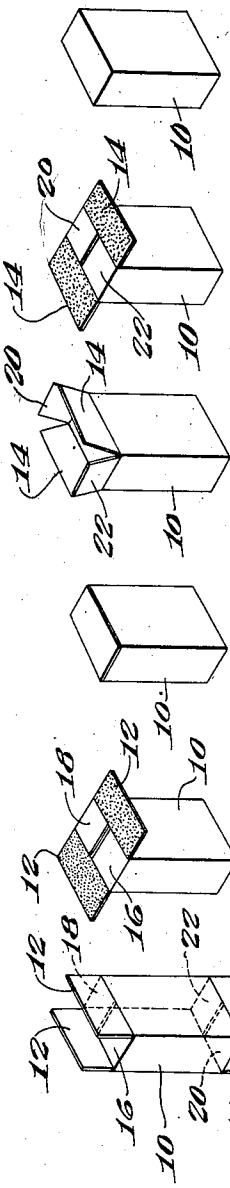


Fig. 3 Fig. 4 Fig. 5 Fig. 6 Fig. 7 Fig. 8

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METHOD OF PACKAGING

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3 Claims. (Cl. 93—6)

This invention relates to a method of packaging materials.

The object of the invention is to provide a novel and improved method of economically and efficiently closing, filling and sealing cartons.

With this general object in view, and such others as may hereinafter appear, the invention consists in the method of packaging materials 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 the apparatus for closing, filling and sealing cartons; Fig. 2 is a plan view of the apparatus shown in Fig. 1, and Figs. 3 to 8 are perspective views illustrating the various steps in the production of the filled and sealed package.

In general, the present invention contemplates a novel method of packaging materials in cartons in a simple and economical manner and which is particularly adapted for use in a small plant where economy in first cost of the apparatus and in the maintenance of the same is an important factor.

In its preferred embodiment, the present method is practiced in a machine of the semi-automatic type wherein an empty carton is first passed through mechanism for closing and sealing one end thereof and after being inverted and filled in any usual or preferred manner, the carton is again passed through the same closing and sealing mechanism to produce the completely filled and sealed package. In practice, an operator sets up a flat carton and passes it through the closing and sealing mechanism upside down. Provision is then made for setting the adhesively sealed flaps and for transferring the empty carton to a second operator where the carton is inverted and filled. The filled carton is then returned to the first operator and is again put through the closing and sealing mechanism to close the other end. In this manner, in the operation of the machine, the second operator receives alternately first an empty carton which is inverted and passed back to the first operator and then a completely-filled and sealed package which is removed from the machine.

Referring now to the drawings, 10 represents a carton provided with the usual closing flaps at either end and herein indicated as side flaps 12, 14 and end flaps 16, 18 at one end and 20, 22 at the other end. The carton is initially set up in its rectangular form, with the flaps extended, by an operator who then proceeds to tuck down the rear end flaps 16, 20, manually. With the carton in this condition, it is passed through the closing and sealing mechanism, generally indicated at 24, first engaging top and bottom rails 26, 28 which operate to tuck down the forward end flaps 18, 22 leaving the carton in the condition shown in Fig. 3. As the empty carton is advanced, the lowermost side flaps 14 are engaged by curved rails 30, 32 which operate to fold these flaps inwardly and at the same time the uppermost side flaps 12 are spread outwardly by engagement with the flared edges of the top rail 26 presenting the carton in the condition illustrated in Fig. 4. Further movement of the carton will present the extended flaps 12 to glue rolls 34, 36 where a coating of adhesive is applied as shown in Fig. 4. Idler rolls 35 support the flaps 12 during the gluing operation. At this time the carton is supported at its lower end by a bottom rail 38 and a side rail 40 in order to align the carton in proper register with the adhesive applying rolls 34, 36. The end flaps 16, 18 are held down during the adhesive applying operation by a narrow extension 42 from the flared rail 26. The carton is now advanced past curved top rails 44, 46 which operate to fold down the two side flaps 12 to close the uppermost end of the carton.

It will be understood that the above described operations are performed upon the empty carton with the latter disposed in a position upside down from the position it will eventually assume when filled. For purposes of illustration, the end of the carton, which is assumed to be the top, has been marked with a rectangular label indicated at 50 in the drawings, see Fig. 1.

The carton is now received between driven belts 52, 54 which operate to press the carton endwise and firmly set the glued flaps. The belts may be driven in any usual or preferred manner as by an electric motor, not shown, and through the chain and sprocket drives, generally indicated at 56. The lower belt is supported on its underside by rollers 58 and pressure is applied to the upper belt 52 by the weight of the rollers 60 which are loosely mounted in vertical slots in a bar 62 supported from the machine frame.

After passing through the pressure belts, the carton is transferred to a shelf 64 to a position where an operator may invert the carton, open up the previously closed, but not sealed flaps, and fill the carton in any usual or preferred manner, such as a measuring device of any well-known standard construction, such as is diagrammatically indicated at 65 in the drawings.

When the carton is filled it is placed upon a

driven conveyor belt 68 which guides the carton back to a shelf 70 in a position where the operator may grasp the filled carton and again pass it through the closing and sealing mechanism 24, as was previously done with the empty carton. It will be observed that since the bottom flaps 12, 16, 18 have been previously closed and sealed, the bottom rails 28, 30, 32 are inoperative during this operation, serving only to support the bottom of the package during its travel through the mechanism. During this trip through the mechanism, the top flaps 14, 20, 22 are closed and sealed in the same manner that the bottom flaps 12, 16, 18 were sealed, whereupon the carton is again passed between the driven belts 52 and 54 to be pressed, and thereafter the carton is removed from the machine.

As herein shown, the sealing and pressing mechanisms are supported upon longitudinal side bars 72 secured to the floor stands 74. The table 76 upon which the filling mechanism is supported is connected to the pressing mechanism by a bridge plate 78. The conveyor 68 for returning the filled cartons to the sealing mechanism may be driven in any preferred manner, as by an electric motor, not shown.

From the description thus far it will be observed that the present invention is simple in construction and economical in operation and may be used with advantage in a small packing establishment where economy is an important factor. It will also be observed that but one closing and sealing mechanism is required to close and seal either end of the carton, thereby eliminating the necessity for duplicate mechanisms and providing a simplified and convenient method of packaging materials into cartons.

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. The method of producing filled and closed cartons with a top flap closing machine, which consists in passing successive set-up cartons through the machine and closing both upper and lower sets of flaps but sealing only the upper set of flaps of each carton during their passage therethrough, then inverting the cartons into a position with the unsealed end thereof uppermost, opening up the unsealed end then filling the carton through the open upper end thereof, then passing the filled carton while maintaining the open upper end uppermost through the same top closing machine and closing and sealing the second set of flaps during the second passage of the carton through the machine whereby to produce a completely closed and sealed carton.

2. In the method of producing filled and closed cartons with a single top closing machine, the steps comprising passing a series of cartons through the machine, some of the cartons being unfilled and open at both ends and some of the cartons being closed at their lower ends and filled, closing and sealing the uppermost flaps of each of the cartons as they are passed through the machine and also closing but not sealing the lower flaps of said unfilled cartons, then separating the completely sealed and filled cartons and the unfilled cartons, having one end sealed, opening up and then filling the latter, and then passing the thus filled cartons a second time through the machine together with additional unfilled cartons, closing the lower flaps of said unfilled cartons and closing and sealing the upper flaps of all the cartons.

3. The method of producing filled and closed cartons with a top flap closing machine, which consists in passing successive set-up cartons through the machine and closing both upper and lower sets of flaps but sealing only the upper set of flaps of each carton during their passage therethrough, applying pressure to the ends of the carton thus closed to firmly set the sealed end, then inverting the cartons into a position with the unsealed end thereof uppermost, opening up the unsealed end, then filling the carton through the open upper end thereof, then passing the filled carton while maintaining the open upper end uppermost through the same top closing machine and closing and sealing the second set of flaps and applying pressure to the sealed ends during the second passage of the carton through the machine whereby to produce a completely closed and sealed carton.

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