April 27, 1965 J. B. HOGLUND 3,180,311

APPARATUS FOR CONTROLLING GLUE PATTERN

Filed Jan. 15, 1962

FIG. 1

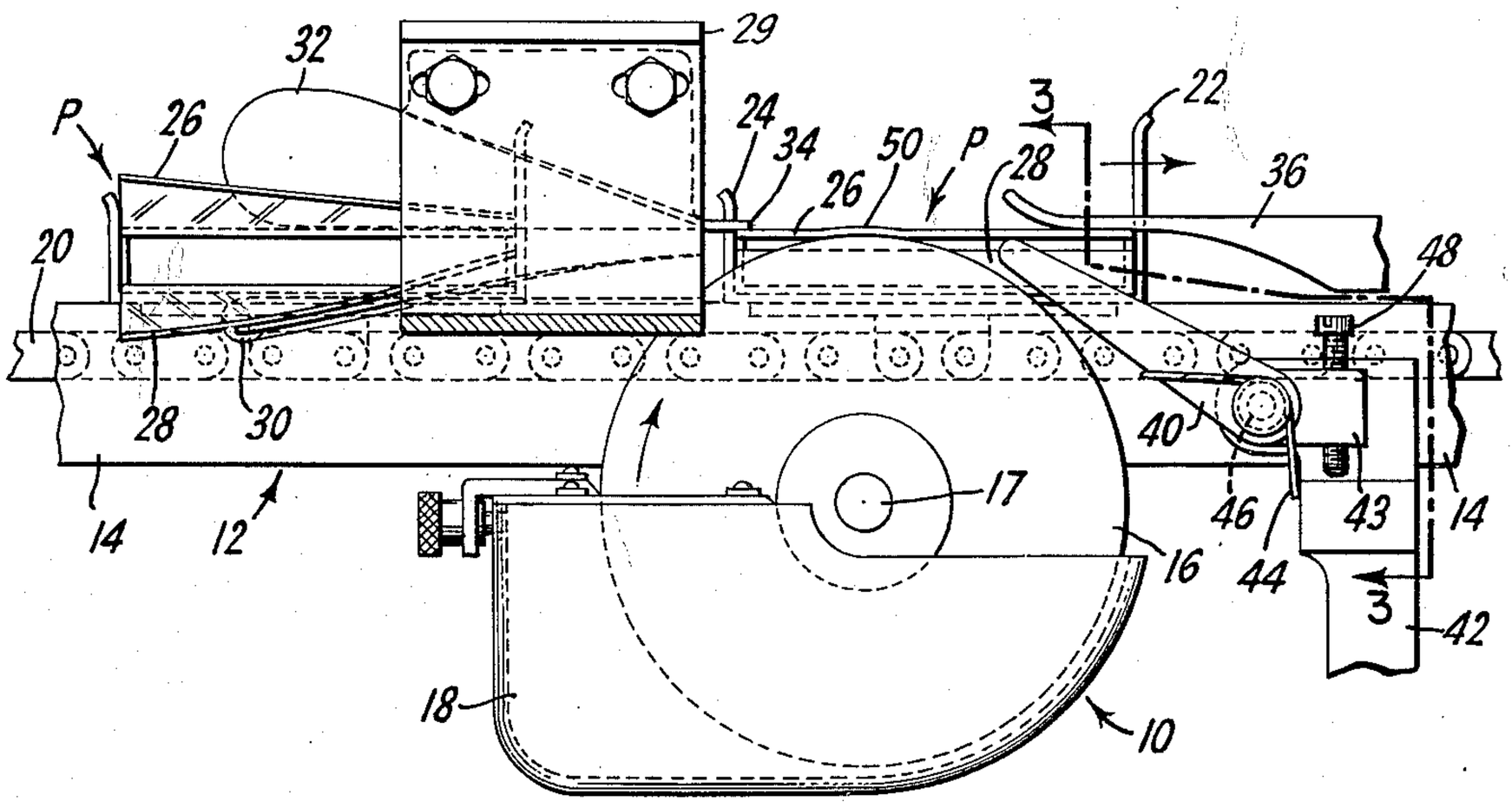


FIG. 2

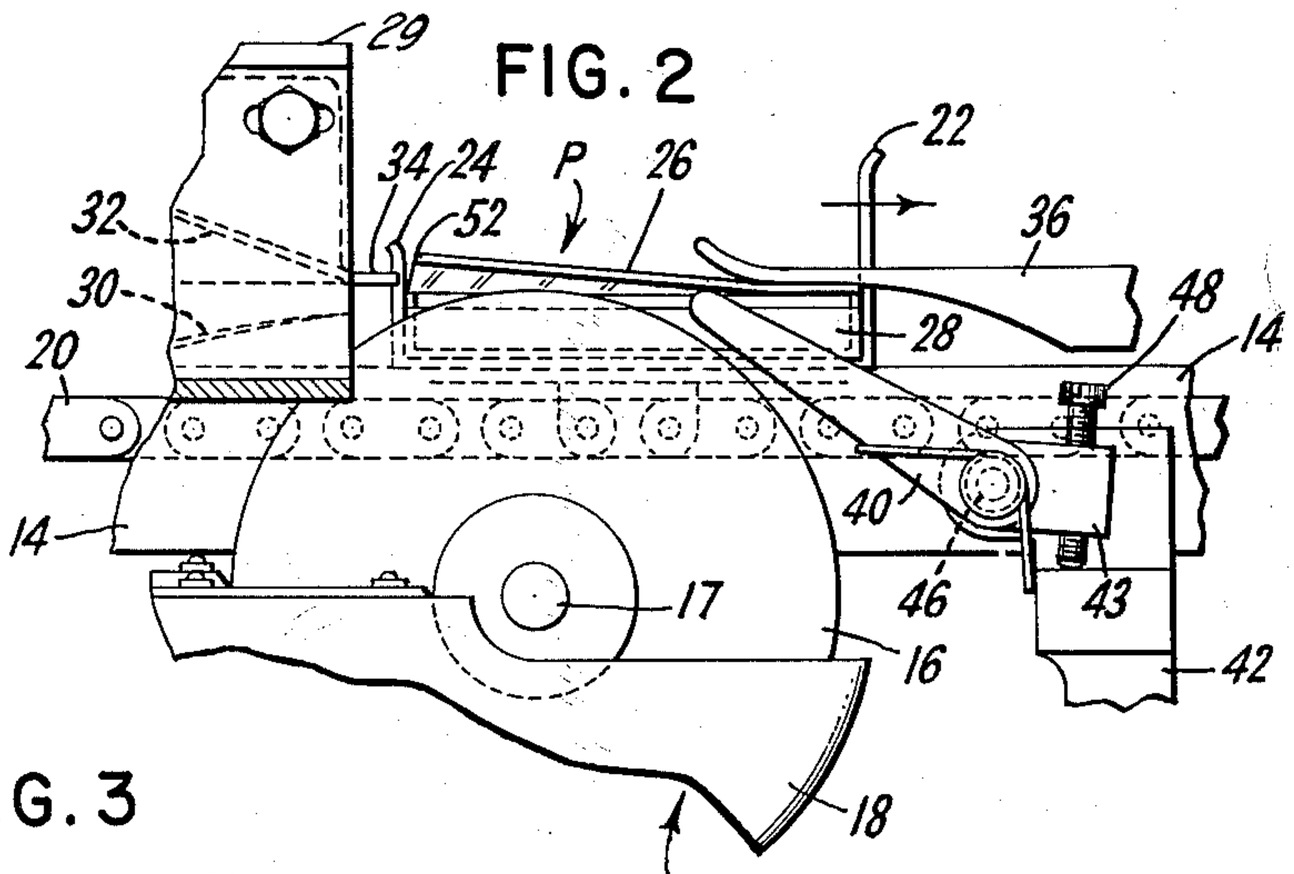
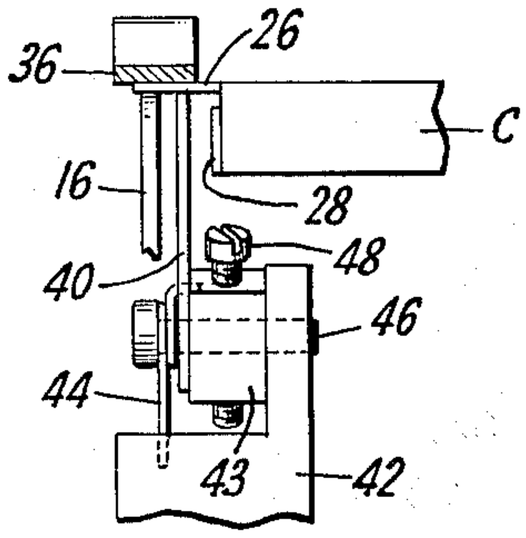


FIG. 3



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APPARATUS FOR CONTROLLING GLUE PATTERN

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The present invention relates to improvements in packaging machinery and in particular to an improved method and apparatus for controlling the automatic application of an adhesive to a closure flap on cartons or the like.

The present invention has particular utility in a packaging machine of the type described in the copending application S.N. 73,265, filed on December 2, 1960, in the name of Frank Hollenton. This application describes an automatic packaging machine wherein a plurality of cigars are inserted in an open-ended, preformed carton, which is then indexed through a series of steps for closing the upper end and sealing the lower end. In sealing the lower end, the closure flap is passed over a continuously rotating glue applicator wheel, which deposits a layer of adhesive on the underside of the flap. The flap is thereupon mechanically folded and heat treated to form a permanent seal.

It has been found in this machine, as in many of similar purpose, that the application of the adhesive is difficult to control, particularly if the glue wheel and the carton move at different relative speeds. Generally, the trailing edge of the flap is overladen with an excess amount of glue which, when the flap is closed, oozes out of the closing, fouling the packaging apparatus and making an unattractive and messy box.

The primary object of the present invention is to provide an apparatus for controlling the application of glue in machines of the type described.

It is a more particular object of the present invention to provide apparatus for improving the operation of the packaging machine described in S.N. 73,265.

It is the further object to provide a simple, inexpensive means for controlling the application of an adhesive from a glue wheel to a moving package member which means is independent of both the apparatus operating the glue wheel or moving the carton.

These and other objects will be apparent from the following description and from the accompanying drawings wherein:

FIG. 1 is a side elevational view of a portion of a packaging machine showing the present invention installed;

FIG. 2 is a view similar to FIG. 1 showing the further operation of the invention, and;

FIG. 3 is cross-sectional view taken along lines 3 of FIG. 1 showing the relation of the present invention with the apparatus of the packaging machine.

The present invention will be described in detail as a part of the machine shown in S.N. 73,265 for the sake of making a representative disclosure. Further, only those portions of the machine shown in U.S. S.N. 73,265 as are necessary to create an environment for the present invention will be shown here. It is to be understood that the present invention may be adapted to virtually any machine where a continuously rotating glue wheel is used to apply an adhesive to a moving carton member. Accordingly, the present description is to be taken illustratively only and that the invention is not to be limited thereto.

Turning now to the drawings there is shown that portion of a packaging machine, relating specifically to the adhesive sealing of an end closure of a preformed carton C, including generally a glue applicator **10** and conveyor **12** for moving a series of cartons relative thereto.

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The glue apparatus **10** is mounted on frame members **14** and comprises a glue wheel **16** secured on a rotating shaft **17** connected by mechanical linkages (not shown) to a source of controlled power for continuous rotation. The glue wheel **16** is adapted to rotate clockwise dipping into a pot or receptacle **18** containing a quantity of adhesive.

The conveyor **12** comprises an endless chain belt **20** (adapted to periodically index to the right in the drawing) on which is mounted a number of pockets P, each pocket having a relatively large front wall **22** and a shallower rear wall **24**. Into each pocket P is inserted a preformed open-ended carton C which is loaded with a charge, such as a number of cigars. The carton feed, charge loading mechanism and mechanism for moving the conveyor are not shown since they do not bear upon the present invention.

As the carton C is moved toward the glue applicator **10** the carton is presented in a substantially horizontal position with an upper closure flap **26** and a lower closure flap **28** extending outwardly therefrom. At a point preceding the location of glue wheel **16** there are adjustably positioned on bracket **29** a pair of plow members **30** and **32**. The lower plow member **30** is shaped and adapted to fold the lower closure flap **28** vertically against the bottom of the carton C (see FIG. 3). The upper plow **32** is shaped and adapted to retain the upper closure flap **26** in a substantially horizontal position, extending directly outward from carton C. The upper plow member **32** has a forward portion **34**, extending horizontally directly above the glue wheel **16**. As the carton is indexed through the plow members **30** and **32**, to the glue wheel **16**, the lower closure flap is thus folded while the upper closure flap is presented in substantially horizontal position directly on the glue wheel **16** for the application of the adhesive directly to its bottom face.

As the glue is applied the carton continues its movement toward another plow member **36**, forward of the glue wheel **16**, which is shaped and adapted to then fold the upper flap **26** downwardly into engagement with the already folded bottom closure flap **28**. Thereafter the closure is dried and sealed with apparatus not shown.

In accordance with the present invention, there is mounted on frame **14**, forward of the wheel **16** and beneath the plow **36**, a finger **40** which extends upwardly between the conveyor and the wheel **16**, into contact with the underface of the upper flap **26**. The finger **40** preferably of flat sheet metal stock is pivotally mounted on an adjustable bracket **42** comprising a collar **43** which is spring biased by member **44** to conjointly swing the finger upwardly a limited distance. As the carton C is indexed over the glue wheel **16**, the forward end of the upper flap **30** enters between the plow **36** and the extending finger **40**, which is then slightly depressed and placed under tension. As the conveyor continues its forward movement, the rear end of the carton C and the upper flap **26** disengages from the flat horizontal extension **34** of the rear upper plow **32**, whereupon the extending finger **40** forces the flap **26** to immediately twist upwardly, away from the glue wheel **16**, preventing further application of adhesive to the trailing edge of the flap.

The collar **43** and finger **40** are biased together to pivot about a pin **46**. A screw member **48** is furnished which may be adjusted to vary the extent of movement of the finger **40**. Alternately the collar **43** may be mounted to the bracket **42** in fixed position and reliance placed solely on the spring tension of the pivotal finger **40**. The finger **40** may be adjusted in its bracket **42** as well as by the spring **44** so that the elevation of the flap **26** may be varied and the passage of the flap between the plows and the finger controlled as desired. Furthermore the distance between the forward and aft plows **32** and **36** may

be varied for the purpose of locating the point at which the flap 26 should be made to disengage from the wheel 16.

It will be observed that during most of the passage of the carton C over the wheel 16 the flap 26 rests on the wheel either through the action of the rear and forward plows 36 and 32, respectively. In fact, when the carton flap 26 is engaged beneath both plows, it is under some stress as seen by the slight bow 50 made in flap 26 over the wheel 16. This tension facilitates the release of the flap 26 from the wheel when its trailing edge 52 disengages from the extension 34 of rear plow 32. Because of the position of forward plow 36 and the finger 40 (as in a simple lever arrangement) the flap 26 is caused to twist, as previously indicated, immediately upon disengagement from plow 32. The application of adhesive to the flap 26 is thus controlled regardless of the speed of movement of either the wheel 16 or conveyor 18.

Certain obvious advantages accrue to the present structure amongst which are: (1) the present invention may be simply and economically manufactured and installed on nearly any machine in present use without the necessity of their being redesigned; (2) the application of glue is controlled without utilizing segmented glue wheels and without providing expensive mechanisms for the synchronization of glue wheel and moving conveyor; (3) glue is prevented from being applied only to the trailing edge of the carton where the normal tendency would be to apply an excess amount of glue.

It will be obvious to those skilled in the art that the present invention may be effectively adapted for use on any variety of machines and as various changes may be made in the form, construction and arrangements of the device, without departing from the spirit and scope of the invention and without sacrificing any of its advantages, it is to be understood that all matter herein is to be interpreted as illustrative and not in a limited sense.

What is claimed is:

1. In an automatic packaging machine, apparatus for controlling the deposition of an adhesive to a closure flap of a carton or the like comprising, adhesive applicating means, means for conveying said carton past said applicating means with said flap in contact therewith, and means for lifting the trailing edge of said flap out of contact with said applicating means at a predetermined position in the movement of said carton whereby adhesive is not deposited at said trailing edge.

2. In an automatic packaging machine, apparatus for controlling the deposition of an adhesive to a closure flap of a carton or the like, comprising adhesive applicator means, means for conveying said carton past said applicator means with said flap in contact therewith, means located fore and aft of said applicator for maintaining said flap in engagement therewith, and means, operable upon the passage of said flap beyond said aft maintaining means, for causing said flap to disengage from said applicator means whereby adhesive is only deposited on a predetermined portion of said flap.

3. In an automatic packaging machine, apparatus for controlling the deposition of an adhesive to a closure flap of a carton, or the like, comprising adhesive applicator means, having a rotary wheel, means for conveying said carton past said applicator with said flap overlying said glue wheel, means associated with said conveying means located fore and aft of said applicator for maintaining said flap in engagement with said glue wheel during the passage of said carton, and spring biased finger means engaging the underside of said flap for lifting said flap out of engagement with said glue wheel upon the passage of said flap beyond said aft maintaining means.

4. The apparatus of claim 3 including means for varying the point at which said flap is disengaged from said applicator wheel.

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