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METHOD AND MACHINE FOR WRAPPING BLOCK-SHAPED ARTICLES FOR EXAMPLE CIGARETTE-PACKAGES

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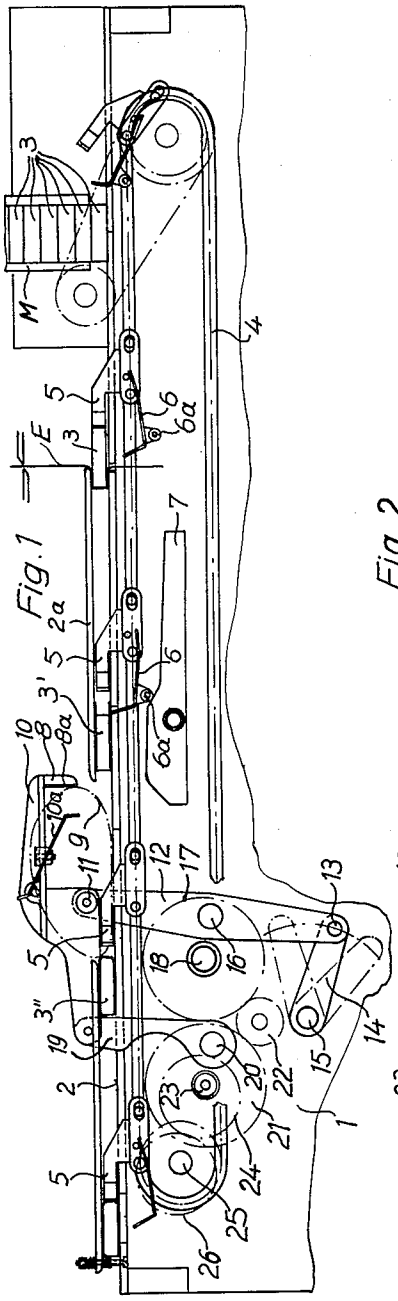


Fig. 1

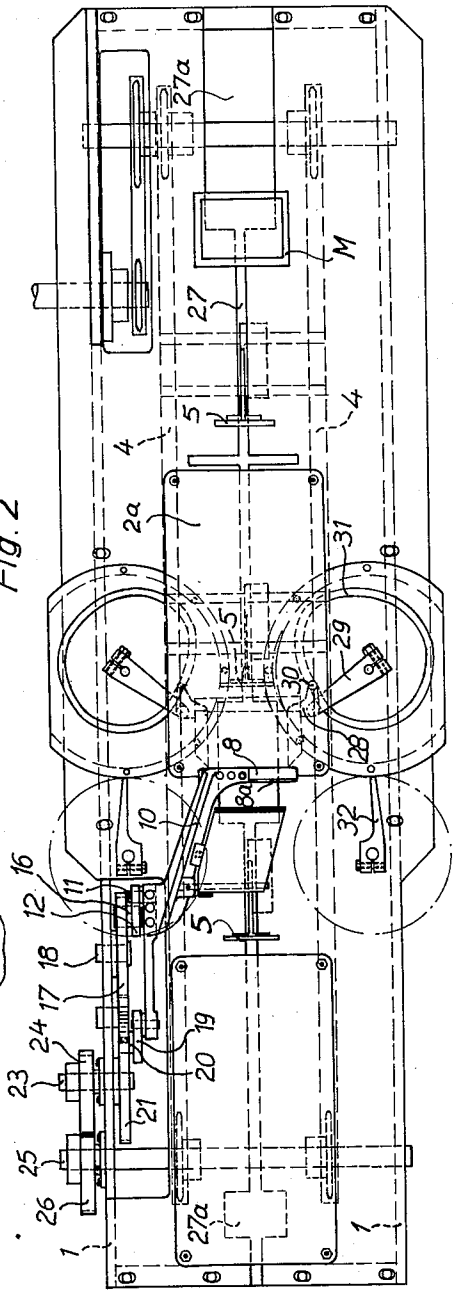


Fig. 2

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# METHOD AND MACHINE FOR WRAPPING BLOCK-SHAPED ARTICLES, FOR EXAMPLE CIGARETTE-PACKAGES

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The present invention relates to a method and machine for wrapping block-shaped articles, for example cigarette packages.

In the known methods and machines for wrapping block-shaped articles, for example cigarette packages, operation is normally performed with stoppage at least in the region of the folding station for the closure of the tubular wrapper since this closure operation is effected by reciprocating folders in stationary holders or guides or in stationary supports. Moreover, the heating or sealing of the tube closure is not effected immediately in the region of the folding station for this closure, but only at a later moment after several transfers, and in some cases even only in the storage column. The speed of the machine is, however, limited by this stoppage, and moreover as a result of the sealing point being away from the folding station there is the danger of opening of the tube closure in the path to the sealing station, or at least the tube closure will loosen particularly if regenerated cellulose sheeting or like material is employed which tends to revert to its original flat form, which adversely effects the appearance of the package. The disadvantages previously referred to are avoided or minimized by the method and machine according to the invention by the fact that the tube closure and the sealing of the package is effected during the movement of the latter.

The method according to the invention utilizes a machine with a feedway on which the packages are fed through the various handling stations by driver elements secured to a roller chain, are withdrawn from the driver elements in the region of the folding stations by rotating fingers, and after closing of the tube by means of a bottom and top folder are again engaged by the driver elements and folded at further folding stations to form the finished package. This machine is characterized according to the invention by the fact that each driver element of the roller chain carries a folder element engageable with a common control member for folding down the lower flap of the tubular wrapper of the package moving along a guide and for laying down the upper flap of the tube a heated gripper is provided to which is fitted an element for holding down the package.

In order to extend the period of heat action upon the tube closure an elliptical drive is interposed in a compound drive means operating the heated gripper.

In the drawing which illustrates diagrammatically one example of the invention,

FIG. 1 is an elevation of the machine, and

FIG. 2 is a plan of the machine shown in FIG. 1.

The machine comprises a main frame **1** with a feedway **2** for the packages **3**, which are supplied from a magazine M. Driver elements **5** are provided on roller chains **4** for feeding the packages **3**. A folder blade **6** is provided on each driver element **5** for folding the bottom flap of the tube closure, a guide roller **6***a* being lifted from a control rail **7** so that the bent end of the blade lifts the bottom flap of the tube closure of the package **3** during the movement thereof while the package is being moved along a guide **2***a* with a comparatively small bearing pressure.

For folding down the upper flap of the tube closure



a heated gripper **8** is provided above the feedway **2** which is provided with a spring **10***a* for holding down the package and is moved in the closed path **9** shown in dotted lines by the compound drive system to be described hereinafter.

The gripper **8** is secured to a gripper arm **10** which with the bearing **11** is pivoted to one end of a two-armed lever **12**, the other end of which is pivoted by a bearing **13** to one end of a lever **14**, the other end of which is fastened to a spindle **15** secured to the machine frame. A crank pin **16** on a crank disc **17** rotatable on a bearing **18** rocks the two-armed lever **12** backwards and forwards about the bearing **13**. At the end of the gripper arm **10** opposite the gripper **8** is pivoted a lever **19**, the other end of which is rotatable on a crank pin **20** secured to the crank disc **21**. The two crank discs **17** and **21** are in the form of gear wheels and are connected by means of an idler pinion **22**. They are driven by means of an ellipse wheel **24** secured on the driving shaft **23** and which is driven at a nonuniform speed by a further ellipse wheel **26** on the shaft **25**. The ellipse wheel drive **24** and **25** has for its object to retard that section of the path **9** of the gripper **8** in the region of the feedway **2** in order that the heating plate **8***a* of the gripper **8** acts for as long as possible on the tube closure and sticks this down satisfactorily.

In the plan view according to FIG. 2 slots **27** and **27***a* will be seen through which the driving elements 5 project and which move downwardly at the two reversal points of the chain **4**. For removing the packages from the driver elements the co-operating rotating fingers **28** are arranged on both sides of the packing feedway **2**. The to rotating arms **29**. Guide rollers **30** are secured to the fingers **28** and are controlled by a cam groove **31**.

For folding in the rear side flaps rotary folders **32** are provided in known manner following the fingers **28** and arranged on both sides of the packages feedway **2**. The further fold procedures are also effected in known manner and it has not therefore been judged necessary to describe them in detail.

The device operates as follows:

The driver elements **5** in succession slide a package **3** from the magazine M and feed it against the wrapper material E which is folded in U-form around the package on further feed thereof. Then the package **3** is slid by the driver element **5** into the region of the fingers **28** and advanced from the driver elements **5** thereby. During the movement of the driver elements **5** over this section of the apparatus the guide rollers **6***a* of the associated folder blades **6** run on to the control rail **7** and apply the folder blade **6** to the lower rear flap of the wrapper E in the position **3'** of the package **3**. The folder blade **6** now slides the package **3** taken over from the fingers **28** along the upper guide **2***a* with simultaneous folding of the lower flap of the tube closure in the region of the path **9** of the heated gripper **8**. This gripper **8** now takes over the package from the folder blade **6**, holds this down by the spring **10** on the feedway **2** and feeds the package with simultaneous folding down of the upper flap thereof at the position **3''** in which it is again taken over by the driver element **5** concerned and fed to the further folder means not shown. During the feeding from the position **3'** to the position **3''** the tube-like wrapper is folded and sealed during the course of movement of the package.

What I claim is:

1. A machine for packing block-shaped articles comprising a magazine for such articles, a linear feedway for said articles, a feeder chain, said chain having projecting driving elements extending through the feedway, means to feed a wrapper strip transversely of the feedway which is wrapped in U-form around the article by

the displacement thereof in the feedway, means to advance the article from the driver element engaging it, folder means adapted to lay down the under flap on to the trailing end face of the article while advanced from said driver element, a heated gripper adapted on continuing movement of said article to press down and to seal the upper projecting end flap of the wrapper, compound drive means for actuating said heated gripper in a closed approximately elliptical path, and rotary means adapted to fold down the short side flaps of said wrapper after the operation of the heated sealing means upon the upper end flap, said articles being thereafter carried along the feedway by the driver elements to a delivery point from said feedway.

2. A machine for wrapping block-shaped articles, such as cigarette packages in a tubular wrapper, a feedway along which said articles are moved, means to feed a wrapper strip transversely of said feedway, driving elements for moving said articles along said feedway to receive said wrapper, a lower folder, an upper folder, said folders being arranged to engage the flaps of said



wrapper and fold the same at one end of the block-shaped article, means for disengaging the partially wrapped article from the driving element during the folding of the lower flap and the upper flap of said wrapper, a guide rail beneath said feedway, means on the lower flap folder engageable with said rail to move said lower flap folder into its operative position, a heated gripper on the upper flap folder to seal the flaps after the folding operation, means for driving the heated gripper through an elliptical closed pathway and elliptical gear drive means for the heated gripper for delaying movement of said heated gripper during its travel through the major portion of its elliptical movement and when said gripper is in engagement with the folded flaps.

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