

[54] **METHOD AND APPARATUS FOR PRODUCING ENVELOPES HAVING A CLOSURE FLAP**

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[51] Int. Cl.² **B31B 1/90**

[58] Field of Search **53/31, 206; 93/61 B, 61 R, 93/61 A, 1 A, 8 WA, 84 TW, 84 FF; 24/30.5 R**

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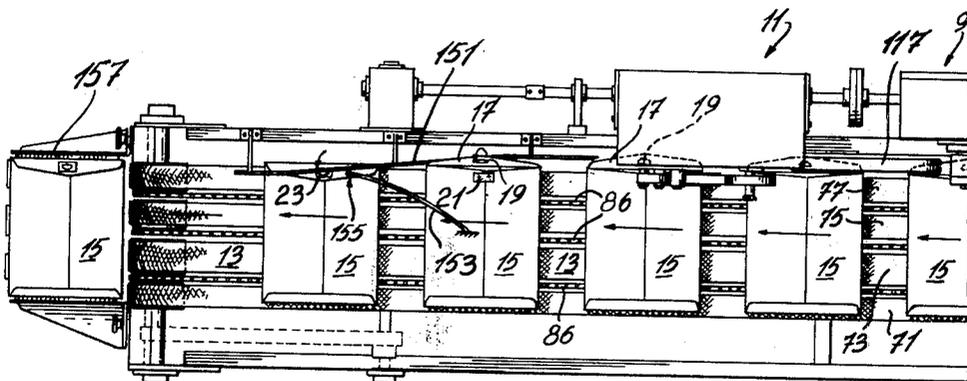
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[57] **ABSTRACT**

The present invention relates to an apparatus for producing envelopes having a closure flap capable of sealing a plurality of times to the main body of the envelope which comprises a conveyor which is adapted for moving the envelopes one by one from one end to the other end of the apparatus, means operative to open the closure flap as the envelope is being moved along by the conveyor, means to cut an opening in the flap, means for fixing on the envelope a band of material having a glossy surface, the band of material being disposed in a position corresponding to the closed flap opposite the opening, and means for fixing an adhesive tape on the flap over the aperture.

The invention also relates to a method for producing envelopes having a closure flap capable of adhering a plurality of times to the main body of the envelope which comprises feeding the envelopes one by one to a conveyor, while the envelopes are moving on the conveyor, blowing a jet of air underneath the flap to lift it, thereafter, causing the flap to revolve until it lays flat open on the conveyor, punching an opening in the opened flap, thereafter further moving the envelope on the conveyor, fixing on the envelope a band of material having a glossy surface, the band of material being disposed in a position corresponding to the closed flap opposite the opening, and fixing an adhesive tape on the flap over the opening, finally, closing the flap against the main body of the envelope and removing the envelopes from the conveyor.

23 Claims, 11 Drawing Figures



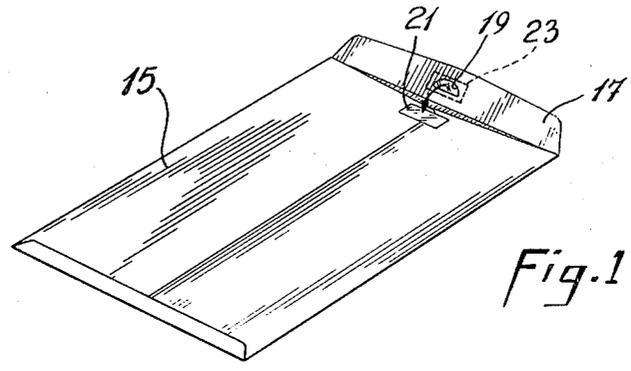


Fig. 1

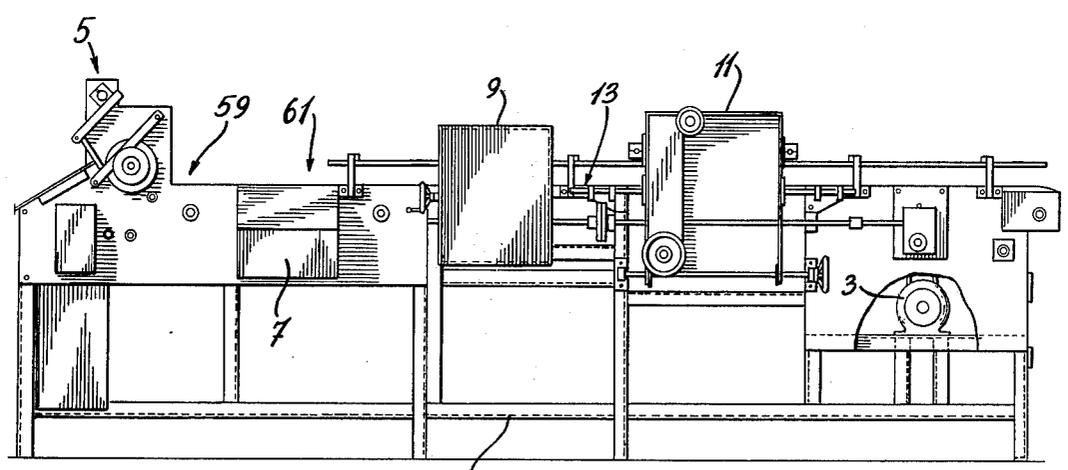


Fig. 2

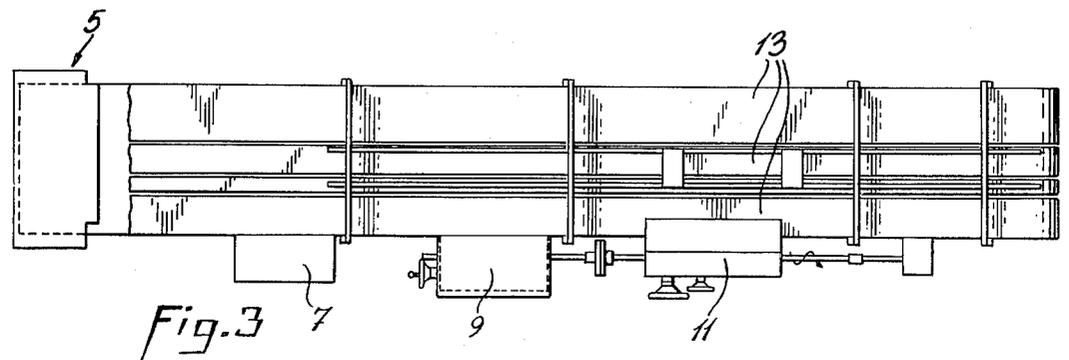
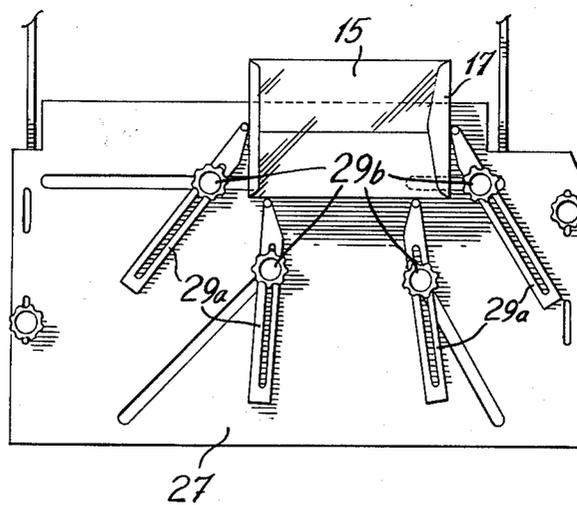
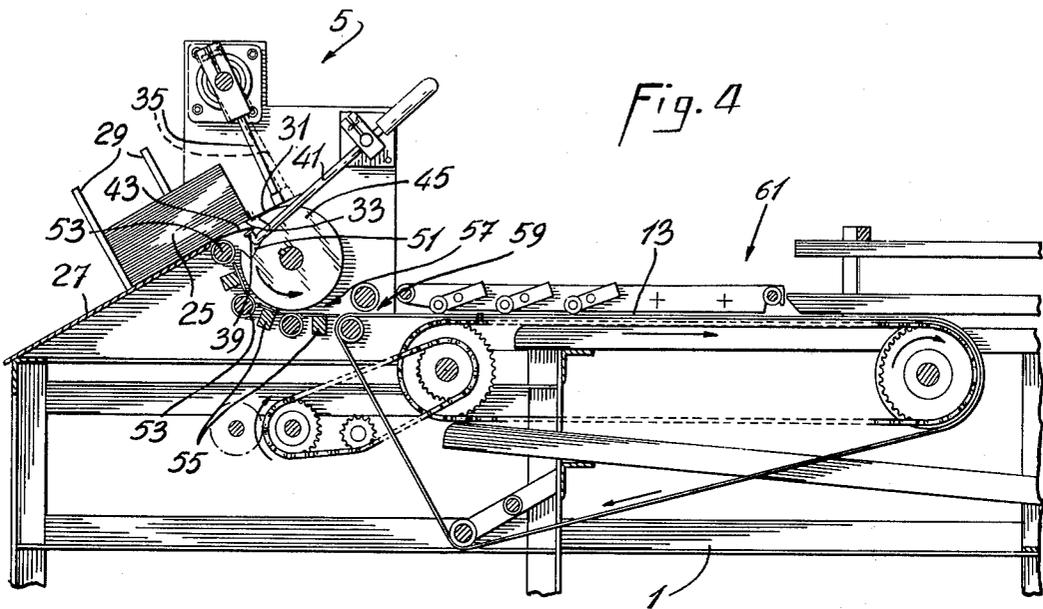


Fig. 3



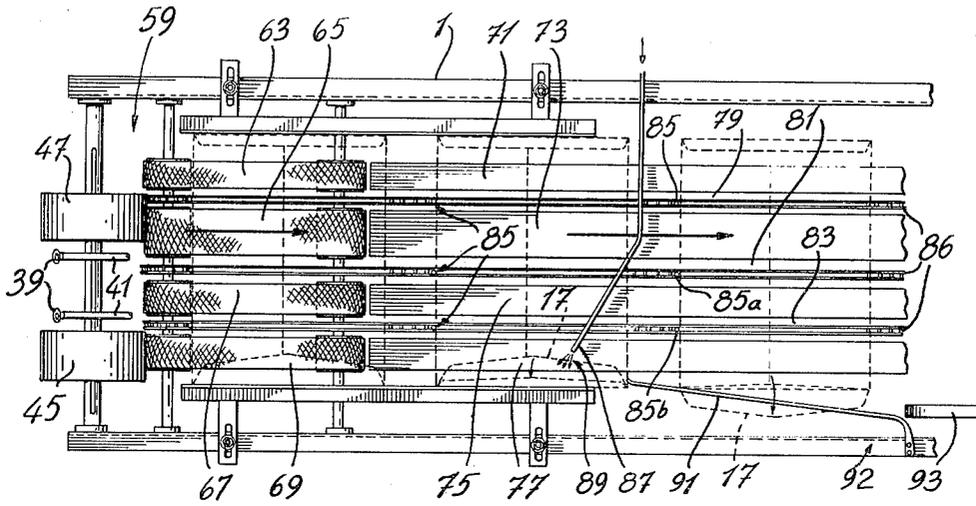


Fig. 6

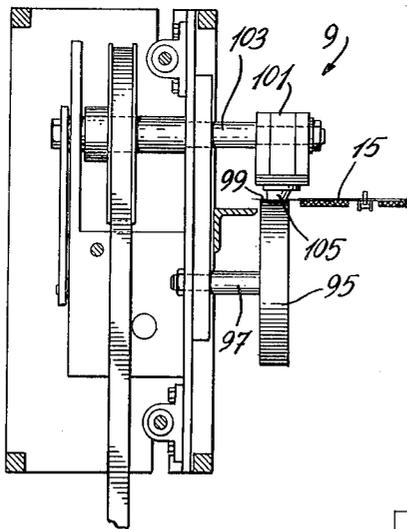


Fig. 7

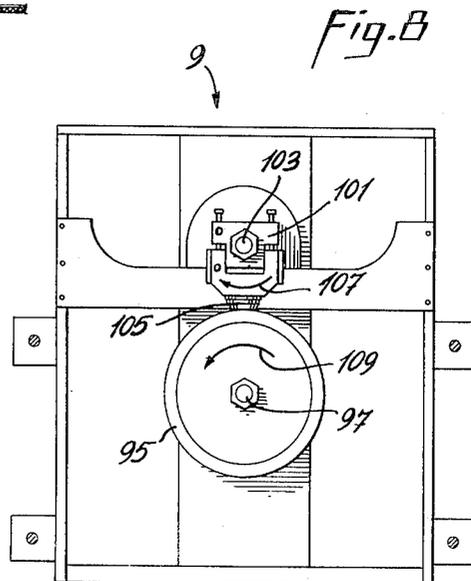


Fig. 8

METHOD AND APPARATUS FOR PRODUCING ENVELOPES HAVING A CLOSURE FLAP

BACKGROUND OF THE INVENTION

1. Field of the invention

This invention relates to a method and an apparatus for producing envelopes having a closure flap. More particularly, the invention relates to a device of the type which is adapted for producing envelopes having a closure flap capable of adhering a plurality of times to the main body of the envelope.

2. Description of the invention

There is presently on the market a type of envelope having a closure flap which may adhere to the main body of the envelope and can be pulled away from the envelope after which it can be caused to adhere again a plurality of times to the envelope without losing its sealing effectiveness. At first, these envelopes were more or less produced manually, i.e. a good number of manual steps were involved in making the opening in the flap and also in applying strips of adhesive material both on the main body of the envelope and over the opening. The demand for such envelopes is forever increasing and at the same time, the cost of labor is higher and higher. Consequently, in order to meet the demand, one must stay away from the manual steps as much as possible and the operation to produce these envelopes must be automated as much as possible. However, due to the complexity of producing the opening in the closure flap and in applying strips of adhesives both on the main body and over the closure flap, it has not been possible to this date to rely on an apparatus or a device which would enable the production of these envelopes to be carried out automatically.

SUMMARY

The present invention relates to an apparatus for producing envelopes having a closure flap capable of sealing a plurality of times to the main body of the envelope which comprises a conveyor which is adapted for moving the envelopes one by one from one end to the other end of the apparatus, means operative to open the closure flap as the envelope is being moved along by the conveyor, means to cut an opening in the flap, means for fixing on the envelope a band of material having a glossy surface, the band of material being disposed in a position corresponding to the closed flap opposite the opening, and means for fixing an adhesive tape on the flap over the aperture.

The invention also relates to a method for producing envelopes having a closure flap capable of adhering a plurality of times to the main body of the envelope which comprises feeding the envelopes one by one to a conveyor, while the envelopes are moving on the conveyor, blowing a jet of air underneath the flap to lift it, thereafter, causing the flap to revolve until it lays flat open on the conveyor, punching an opening in the opened flap, thereafter further moving the envelope on the conveyor, fixing on the envelope a band of material having a glossy surface, the band of material being disposed in a position corresponding to the closed flap opposite the opening, and fixing an adhesive tape of the flap over the opening, finally, closing the flap against the main body of the envelope and removing the envelopes from the conveyor.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings which illustrate the invention, FIG. 1 is a perspective view of an envelope produced with the apparatus according to the invention; FIG. 2 is a schematical side elevation view of an apparatus according to the invention; FIG. 3 is a schematical top plan view of the device according to the invention; FIG. 4 is a view of the feeding mechanism; FIG. 5 is a top view of the feed table; FIG. 6 is a top plan view of a portion of the conveyor showing the opening of the flap; FIG. 7 is a view of the cutter taken from the exit end of the apparatus; FIG. 8 is a side view of the cutter; FIG. 9 is a perspective view of the cutter showing the means of removing a cut piece of paper from the cutter housing; FIG. 10 is a top view of a portion of the conveyor between the cutter and the exit also showing the tape dispenser; FIG. 11 is a schematical side view of the top tape dispenser.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawings, more particularly FIGS. 2 and 3, the apparatus according to the invention comprises a frame 1 and a motor 3 for operating the movable parts of the apparatus. The main sub-assemblies of the apparatus also comprise a feed 5, a control panel 7, a cutting device 9, a tape dispenser 11, and a conveyor 13. These are the main parts of the apparatus and each of these parts will now be described in detail.

However, before turning to that portion of the description, it is preferable to describe first of all the envelope which is intended to be produced using the apparatus illustrated in FIGS. 2 and 13 of the drawings. The envelope 15 (FIG. 1) which is of standard construction and is preferably of the large type, comprises a closure flap 17 which is shown in the opened position in FIG. 1 of the drawings. The closure flap 17 has an opening 19 which in the example illustrated is of ovoidal shape. However, any shape can be used depending on the design and preference of the producer of the envelope. A band of material 21 having a glossy surface has been disposed on the main body of the envelope in a position corresponding to the closed flap opposite the opening 19. Finally, an adhesive tape 23 has been fixed on the closure flap over the opening 19.

Going back to the envelope 15, before the latter has been formed with an opening 19 and before it has been provided with a band of material 21 and adhesive tape 23, it will be realized that for an automatic production, the envelopes 15 must be stacked in a pile for the purpose of automatically feeding them into the apparatus. The pile will be shown at 25 in FIG. 4 of the drawings. It will be seen that the pile 25 will be disposed on a feed table 27 which is slanted at an angle ahead of the feed mechanism and over which there are provided four paper guides 29 which are mounted perpendicularly to the surface of the feed table 27 and are all adjustable by means of slotted guide holders 29a and knobs 29b to form the corners of a trapeze of various size (see FIG. 5). This will of course all depend on the size of the envelopes which are intended to be fed to the machine.

Having thus disposed the envelopes in a pile 25 in front of the apparatus, the idea is now to feed these envelopes 15 one by one from the pile 25 through the apparatus which will take care of all the operations. This will be done by the feed mechanism 5 which we will now describe.

The feed mechanism 5 comprises first of all a separator 31 which as will be seen from FIG. 4 of the drawings is a type of plate with a sharp leading edge 33 to enable the separator 31 to be inserted at the bottom of the pile 10 for the purpose of separating the bottom envelope from the remainder of the pile of envelopes. To operate in this manner, the separator 31 is mounted at the end of an arm 35 the latter being coupled to a cam not shown which will serve to oscillate the arm 35 between the position illustrated in full line in FIG. 4 where the separator 31 is inserted between the bottom envelope and the remainder of the pile and the position illustrated in dotted lines in FIG. 4 wherein the separator 31 has moved out of the pile to be prepared to be reinserted between the next envelope and the remainder of the pile. The feeding mechanism also comprises a suction cup 39 which is connected to a vacuum tube 41. It will obviously be realized that the suction cup 39 will serve to grip the bottom envelope which has been separated from the pile 25 by the separator 31. The suction applied to the suction cup 39 will cause the front edge 43 of the bottom envelope to be bent toward the suction cup 39. By selecting a suitable timing in the control panel 5, the front edge 43 of the envelope 15 will be bent in the position illustrated in FIG. 4 of the drawings, exactly when the feed disc 45 is in a position to engage the front edge of the envelope 15. To better illustrate this invention, we will now describe the remaining portions of the feed mechanism 5 of the apparatus according to the invention. There are provided two feed discs 45, 47 (FIG. 6) but for the purpose of clarity, we will describe only one of those discs, i.e., disc 45. The feed discs 45 and 47 are both rotatable and are each formed with a jaw 51 which will serve to engage the bottom envelope. The jaw 51 as shown in FIG. 4 of the drawings is rectangular in cross-section. The remaining part of the feed mechanism consists of alternate feed rollers 53 and feed roller spacers 55. This combination of feed rollers 53 and feed roller spacers 55 forms a type of support which is arcuately arranged to correspond to an arc portion of the feed discs 45 and 47. It will therefore be seen that as soon as the envelope has been picked up by the jaws 51, it will be engaged between the outer periphery of both feed discs 45 and 47 and the cushion formed by the feed rollers 53 and feed roller spacers 55. The envelope will exit at 57 to be deposited on the conveyor 13 of which we will now describe the portion between the feed mechanism 5 and the cutter 9.

The idea is now to take the envelope 15 which has been deposited to lie transversely on the conveyor 13 and while leading it to the cutter 9, previously taking steps to open the closure flap 17 of the envelope 15. Between a location 59 which is immediately at the exit from the feeding mechanism 5 and a position 61 (see FIG. 2) which is intermediate between the feeding mechanism 5 and the cutter 9, the conveyor consists of four spacedly mounted fabric belts 63, 65, 67 and 69 which run longitudinally and forwardly of the frame 1. The remaining portion of the conveyor 13 consists of

which are in the continuation of the four fabric belts 63, 65, 67 and 69 respectively and are also longitudinally mounted with respect to the apparatus and in which their axes correspond to the axes of the four spacedly mounted fabric belts 63, 65, 67 and 69. The spaces formed between the four fabric belts 63, 65, 67 and 69 and the four top plates 71, 73, 75 and 77 are respectively continuous and define three longitudinal channels 79, 81 and 83 which extend from one end to the other end of the apparatus. Referring again to the drawings more particularly to FIG. 6, it will be seen that lugs 85 which are carried by corresponding sprocket chains 86 are mounted to travel from one end to the other end of the channels 79, 81 and 83. It will be realized that three corresponding lugs 85, 85a, 85b of separate channels 79, 81 and 83 must always be perfectly aligned because these lugs will be used to abut the rear end of the envelope and to feed them from one end to the other end of the apparatus while lying perfectly transversely relative to the conveyor. The apparatus could also be operable without the use of the fabric belts 63, 65, 67 and 69, however, it has been found out that the envelope is much more easily set on the top plates 71, 73, 75 and 77 if it is first of all engaged at the exit from the feeding mechanism 5 by fabric belts. It should be mentioned at this time that the control box 7 should also be set to arrange for the fabric belts to be movable at a speed lower than the lugs in order to prevent wobbling of the envelopes as they move forward on the conveyor 13. Once wobbling has been prevented, the task assigned to the fabric belts is over and this is why the conveyor then can consist only of the top plates 71, 73, 75 and 77. After the envelope has left the fabric belts and now that it is running over the top plates and it is being moved forward by means of three lugs 85, it is necessary, previous to forming the opening 19 in the closure flap 17, to open the closure flap 17.

It will be realized that the envelope 15 is fed to the apparatus with the closure flap just merely closed. After the envelope has travelled over a certain distance over the conveyor, with the flap closed, but not sealed, it will be understood that the flap will have a natural tendency to lift even for a very minute amount. In this position reached by the envelope 15, there is provided a nozzle 87 (see FIG. 6) which is connected to an air supply under pressure to produce a jet of air 89. This will obviously force the closure flap to lift for a substantial amount. The idea is now to take this substantially lifted closure flap and making it possible for the closure flap 17 to revolve 180° and to lay flat open against the top face of the conveyor. This is made possible by the provision of a flat horizontal bar 91 which as shown is angularly disposed with respect to the longitudinal axis of the conveyor and is spaced from the top surface of the conveyor to enable the envelope to pass underneath it. As illustrated, the bar 91 extends outwardly from a location near the air jet 89 to a second location 92 before the cutter 9. It will be seen that the bar 91 will engage over the closure flap which has been substantially lifted by the air jet 89 and as the envelope will move over the conveyor, the bar will completely open the flap and will cause it to revolve 180° after which the closure flap will lay flat open against the top face of the conveyor. To retain the closure flap in the flat open position against the top face of the conveyor, there is provided a longitudinal flat covering strip 93 which is provided in the continuation of the horizontal bar 91 and

extends parallel to the longitudinal axis of the conveyor to a location just immediately before the envelope 15 reaches the cutter 9. It will be realized that the longitudinal flat covering strip 93 will retain the closure flap 17 flat open against the top surface of the conveyor while the envelope travels on the conveyor until it reaches the cutter 9.

The envelope 15 is now ready to be treated by the cutter 9 to form opening 19 in the closure flap 17.

We will now describe the cutting device 9 illustrated in FIGS. 7, 8 and 9. For forming the opening 19 in the closure flap 17, there is first provided a rotatable cutter wheel 95 which is mounted at the end of a shaft 97 and is disposed in such manner on the apparatus that its outer boundary 99 when viewed in the uppermost portion of the cutter wheel 95 lies in the same general plane as the top surface of the conveyor. The cutting device also comprises a rotatable cutter housing 101 which is of a generally prismatic shape and is also mounted at the end of a shaft 103. The rotatable cutter housing 101 is mounted to rotate above the rotatable cutter wheel and is arranged to rotate in a direction which is opposite that of the rotatable cutter wheel 95. The rotatable cutter housing 101 has an ovoidal cutter 105 mounted on one of its faces in the manner illustrated in FIG. 8 of the drawings. As shown, the cutter 105 projects outwardly from that face and it will be seen that upon rotation of the rotatable cutter housing 101, the cutter 105 will be engageable with the outer boundary 99 of the rotatable cutter wheel 95 to cut an ovoidal opening in the closure flap.

Both shafts 97 and 103 respectively of the cutter wheel 95 and of the cutter housing 101 are operatively connected to the motor 3 in known manner. It must, however, be remembered that the cutter wheel and the rotatable cutter housing must rotate in opposite direction as indicated by arrows 107 and 109 in FIG. 8 of the drawings.

Obviously, after having cut the opening 19 in the closure flap 17, the cutter 105 will have removed an ovoidal piece of paper which as a result of the rotation of the rotatable cutter housing will be received inside the rotatable cutter housing 101. In order to remove this small ovoidal piece of paper, the cutter housing is formed with a pair of openings 111 and 113. Opposite the cutter housing there is provided a U-shaped tubular member 114 which is connected to a source of air under pressure and which will introduce two jets of air in said the housing. These jets of air will cause the small ovoidal piece of paper to be removed from the cutter housing 101 through the opening 115 where it will be sent to a box not shown through a chute also not shown.

After the opening 19 has been made in the closure flap 17, the envelope 15 will obviously continue to travel on the conveyor 13 and for reasons which will be given hereinafter, the closure flap must again be lying flat open on the top surface of the conveyor 13. For this purpose, there is provided a second bar 117 (see FIG. 9) which extends outwardly from a location immediately past the cutter 105 and the cutter wheel 95 to a location intermediate the cutter 105 and the tape dispenser sub-assembly 11 which will be defined later. It will be seen with reference to the drawings in FIGS. 9 and 10 that the second horizontal bar 117 will engage over the closure flap 17 after the opening 19 has been formed therein, where the closure flap 17 will have

slightly lifted upwardly as a result of its own inherent energy. As shown, the second horizontal bar 117 will cause the closure flap 17 to return to a revolved flat open position against the top face of the conveyor 13 after which the closure flap will be retained in the same flat open position while travelling on the conveyor 13 by means of a second longitudinal flat covering strip 119 which is provided in the continuation of the second horizontal bar 117 and extends parallel to the longitudinal axis of the conveyor 13 to a location immediately before the envelope reaches the tape dispenser sub-assembly 11.

We shall now describe the tape dispenser sub-assembly 11. Referring to FIG. 11, the sub-assembly comprises a dispenser 121 which is used for supplying a continuous band of adhesive 123 having a glossy surface thereon. The sub-assembly also comprises a rotatable applicator wheel 125 which is used to receive the glossy surface of the continuous band of adhesive material 123 against its outer boundary 127. It must be indicated here that the outer boundary must be capable of sliding relative to the glossy surface of the adhesive material and the reason for that will be given later. Of course, proper tension is maintained in the continuous band of adhesive material 121 by the provisions of small pulleys 129, 131, 133, 135. These pulleys will adjust in known manner the tension in the band of adhesive material. The sub-assembly also comprises a rotatable band cutter 137 which is provided with a knife 139 and it will be seen with reference to FIG. 11 of the drawings that the axis of the rotatable band cutter 137 is in the same horizontal plane as the axis of the applicator wheel 125. The rotatable band cutter 137 will rotate in opposite direction to the applicator wheel 125 and the directions of both these units 137 and 125 will be indicated by the arrows 141 and 143. Obviously, upon rotation of both units 137 and 125, the knife 139 must be capable of engaging the applicator wheel 125 to transversely cut the continuous band of adhesive material 121.

It must be said here that a proper feed control must be exercised in the dispenser 121 to deliver to the rotatable applicator wheel 125 a length of continuous band of adhesive material only sufficient to overlap the outer periphery of the opening 19 after which the band is cut by means of the knife 139. To achieve such results, the rotatable applicator must be capable of sliding relative to the continuous band of material. Proper control should be exercised to both the dispenser 121 and the cutter 137 to cause the continuous band of material to advance only a necessary length before transversely cutting the band. The rotatable applicator is associated with a suction (not shown) which will cause the length of adhesive material to be retained against the outer periphery 127 of the rotatable applicator until the length of adhesive material meet the main body of the envelope opposite the opening 19 in the closed position of the flap.

In order to make sure that the knife 139 is always in proper operating condition, the sub-assembly also comprises a rotatable lubricator 147 which rotates in the direction of the arrow 149 and contacts the knife 139 at each turn.

At the same time as the piece of adhesive material 21 is applied to the main body of the envelope 15 in the position indicated in FIG. 1 of the drawings, a piece of adhesive 23 (FIG. 1) is applied over the closure 19 ex-

actly in the same manner as the piece of adhesive 21 is applied on the main body. However, the device for carrying out this operation is mounted at a level below the top surface of the conveyor and is slightly offset with respect to the applicator wheel 125 in order to apply the piece of adhesive 23. For convenience, this portion of the sub-assembly has not been illustrated and will not be described it being understood that it is identical to the preceding one except that some modification must be made for the purpose of mounting it below the surface of the conveyor. It must be said here that although we have shown a tape dispenser for the adhesive material 21 above the conveyor 13 and another tape dispenser for the piece of adhesive 23 mounted below the level of the conveyor 13, it is obvious that both these dispensers can be mounted one after the other above the conveyor. In this case it is only sufficient to provide a means for closing the flap 17 between the two tape dispensers.

Now that the two pieces of adhesive 21 and 23 have been applied to the envelope in the manner illustrated in FIG. 1 of the drawings, it only remains to close the envelope and to set it aside. For this purpose, there is provided a third horizontal bar 151 (see FIG. 10) which is angularly disposed with respect to the longitudinal axis of the conveyor and is spaced from the top surface of the conveyor to enable the envelope 15 to pass underneath the bar 151 after the closure flap has been closed. For this purpose, the third horizontal bar extends inwardly from a location immediately past the applicator wheels to another location at the further end of the apparatus. It will be seen that the horizontal bar 151 is shaped to first of all engage over the flap after the envelope has passed through the applicator wheels and the closure flap has lifted to some extent as a result of its own inherent energy. Having engaged the outer surface of the closure flap, the horizontal bar 151 extending inwardly will completely close the closure flap as the envelope travels on the conveyor 13. In order to make sure that the envelope is stable over the conveyor 13 there is also provided another horizontal bar 153 which is spaced from bar 151 and merges therewith at 155.

After this operation is over, the envelope will be received in a basket 157 at the end of the apparatus.

The operation of the machine is self-explanatory after having read the preceding description. However, to summarize, it may be said that a pile of envelopes 25 is disposed at one end of the machine, after which the envelopes are separately fed one by one to the conveyor 13 by means of the letter engaging discs 47 and 45. Once on the conveyor which is first formed of the fabric belts 65, 67, 69, the envelopes will be engaged at their rear end by the lugs 85, 85a, 85b and will proceed towards the other end of the machine. At one point, a jet of air 89 will start opening of the closure flap 17 and complete opening of the flap will be made possible by the horizontal bar 91. The closure flap 17 will thereafter remain flat opened in the position indicated in the drawings by means of the flat covering strip 93. Then the cutter 105 operating in association with the cutter wheel 95 will cut the opening 19 in the closure flap 17. While retaining the closure flap 17 flat open by means of the bar 117 and flat covering strip 119, the envelope will then proceed to the tape dispenser sub-assembly where pieces of adhesive 21 and

23 will be applied in the position indicated in FIG. 1 of the drawings. Thereafter, the closure flap will be closed by means of the horizontal bar 151 and will be fed out of the apparatus in a manner known per se towards the basket 157.

I claim:

1. An apparatus for producing envelopes having a closure flap capable of adhering a plurality of times to the main body of the envelope which comprises:

- a. a conveyor which is adapted for moving said envelopes one by one from one end to the other end of said apparatus,
- b. means operative to open said closure flap as said envelope is being moved along by said conveyor,
- c. means to cut an opening in said flap,
- d. means for fixing on said envelope a band of material having a glossy surface, said band of material being disposed in a position corresponding to the closed flap opposite said opening, and,
- e. means for fixing an adhesive tape on said flap over the said aperture.

2. An apparatus according to claim 1, which further comprises:

- f. means to close said flap in engagement over said band of material.

3. An apparatus according to claim 2, which comprises means for simultaneously carrying out fixing of said band of material and of said adhesive tape while said flap is open after which said flap is closed and said envelope is moved towards said other end of said apparatus to be stored away.

4. An apparatus according to claim 2, which is so constructed and arranged that fixing of said band of material is first carried out, then said flap is closed, after which said adhesive tape is applied on said opening.

5. An apparatus according to claim 1, wherein said conveyor comprises spacedly mounted longitudinal top plates and lugs which are disposed between said top plates and project above the surface of said top plate, said lugs being longitudinally movable in the spaces between said top plates.

6. An apparatus according to claim 5 which comprises four spacedly mounted said top plates defining three longitudinal channels in which said lugs are adapted move.

7. An apparatus according to claim 6, which comprises sprocket chains to carry said lugs said chains being engaged by corresponding roller chain sprockets, said roller chain sprockets operatively connected to a motor.

8. An apparatus according to claim 7, wherein a first shorter portion of said conveyor consists of fabric belts which are movable at a speed slower than said lugs to prevent wobbling of said envelopes as they move forward on said conveyor, said conveyor thereafter consisting of said top plates.

9. An apparatus according to claim 1, wherein said means operative to open said closure flap comprises a jet of air and means for projecting said jet of air underneath said flap thus causing lifting of said flap, said apparatus also including means for keeping said flap continuously opened when said opening is cut in said flap, said band of material having a glossy surface is fixed on said envelope in a position corresponding to the closed flap opposite said opening and said adhesive tape is fixed on said flap over said aperture.

10. An apparatus according to claim 1, which comprises:

g. means for individually feeding said envelopes to said conveyor.

11. An apparatus according to claim 10, which comprises means for stacking envelopes in a pile in front of said means for individually feeding said envelopes to said conveyor, means for gripping the bottom envelope from said pile and bringing the same forward toward said conveyor and letter engaging feed disc means adapted to engage said bottom envelope and means associated with said feed disc means upon rotation of the latter to carry said bottom envelope to said conveyor.

12. An apparatus according to claim 11, which comprises a separator which is insertable at the bottom of said pile of envelopes to separate the bottom envelope from the remainder of the pile of envelopes, said separator mounted at the end of an arm and a cam to actuate said arm and to cause said separator to separate said bottom envelope at each rotation of said feed disc means.

13. An apparatus according to claim 12, which comprises a suction cup operatively connected to a vacuum device to grip said bottom envelope which has been separated from said pile by said separator and to bend its front edge toward said feed disc means, after which said envelope is engaged by said feed disc means to be forwarded to said conveyor.

14. An apparatus according to claim 13 wherein said feed disc means comprise a pair of rotatable discs each formed with a jaw to engage said bottom envelope, and alternate feed rollers and feed roller spacers arcuately arranged to enable said bottom envelope to be engaged between said discs and said alternate feed rollers and said feed roller spacers and to thereafter be forwarded toward said conveyor.

15. An apparatus according to claim 9, which comprises a first horizontal bar which is angularly disposed with respect to the longitudinal axis of said conveyor and is spaced from the top surface thereof to enable said envelope to pass underneath said first horizontal bar, said first bar extending outwardly from a first location near said jet of air to a second location before said means to cut said opening, said bar engaging over said closure flap after the same has been lifted by said jet of air to completely open said flap and to cause the same to revolve 180° and to lay flat open against the top face of said conveyor, and a first longitudinal flat covering strip provided in the continuation of said first horizontal bar and extending parallel to the longitudinal axis of said conveyor to a third location immediately before said envelope reaches said means to cut said opening in said flap, said first longitudinal flat covering strip to retain said closure flap flat open against the top of said conveyor, while said envelope travels on said conveyor between said third location and said means to cut said opening in said flap.

16. An apparatus according to claim 15, wherein said means to cut said opening in said flap comprise a rotatable cutter wheel in which the outer boundary lies in the same plane as the top surface of said conveyor, a rotatable cutter housing mounted above said rotatable cutter wheel and arranged to rotate in a direction which is opposite that of said rotatable cutter wheel, said rotatable cutter housing having a cutter mounted thereon and projecting outwardly therefrom, said cutter engageable upon rotation of said cutter housing

with said outer boundary of said rotatable cutter wheel to cut said opening in said closure flap, and means to cause rotation of said rotatable cutter housing and of said rotatable cutter wheel.

17. An apparatus according to claim 16, which comprises a second horizontal bar which is angularly disposed with respect to the longitudinal axis of said conveyor and is spaced from the top surface thereof to enable said envelope to pass underneath said second horizontal bar, said second bar extending outwardly from a fourth location past said cutter and said cutter wheel to a fifth location intermediate said cutter and said means for fixing on said envelope a band of material having a glossy surface, said second horizontal bar engaging over said closure flap after an opening has been cut therein and said closure flap has been slightly lifted by its own inherent energy, said second horizontal bar to cause said closure flap to return to said revolved flat open position against the top face of said conveyor after which said closure flap is retained in said flat open position while travelling on said conveyor by means of a second longitudinal flat covering strip provided in the continuation of said second horizontal bar and extending parallel to the longitudinal axis of said conveyor to a fifth location immediately before said envelope reaches said means for fixing on said envelope a band of material having a glossy surface.

18. An apparatus according to claim 17 wherein said means for fixing on said envelope a band of material having a glossy surface comprise a dispenser for a continuous band of adhesive material having a glossy surface, a rotatable applicator wheel to receive the glossy surface of the continuous band of adhesive material against its outer boundary, said outer boundary capable of sliding relative to said glossy surface a rotatable band cutter in which the axis is in the same horizontal plane as the axis of the applicator wheel, said rotatable band cutter adapted to rotate in opposite direction to said applicator wheel and to be engaged therewith, to transversely cut said continuous band of adhesive material, feed control means delivering to said rotatable applicator wheel a length of said continuous band of adhesive only sufficient to overlap the outer periphery of said opening, whereby upon rotation of said rotatable applicator said length of said continuous band of adhesive will be applied on said main body of said envelope opposite said opening in the closed position of said flap.

19. An apparatus according to claim 18, which comprises suction means associated with said applicator wheel to retain said piece in adhering contact with said applicator wheel until said piece is applied on said main body.

20. An apparatus according to claim 19, which comprises a rotatable lubricator which is engageable upon rotation with said band cutter to lubricate the same.

21. An apparatus according to claim 20, wherein said means for fixing said adhesive tape on said flap over said aperture is identical to said means for fixing on said envelope a band of material having a glossy surface except that it is mounted at a level below said top surface of said conveyor and is arranged to affix a piece of adhesive tape over said opening.

22. An apparatus according to claim 21, which comprises a third horizontal bar which is angularly disposed with respect to the longitudinal axis of said conveyor and is spaced from the top surface thereof to enable said envelope to pass underneath said third horizontal

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bar after said closure flap has been closed, said third horizontal bar extending inwardly from a sixth location past said applicator wheels to a seventh location where said envelope is fed out of said apparatus, said third horizontal bar shaped to engage over said flap after said envelope has passed said applicator wheels, to fold said flap over said main body.

23. A method for producing envelopes having a closure flap capable of adhering a plurality of times to the main body of the envelope which comprises feeding the envelopes one by one to a conveyor, while the envelopes are moving on the conveyor, blowing a jet of air

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underneath the flap to lift it, thereafter, causing the flap to revolve until it lays flat open on the conveyor, punching an opening in the opened flap, thereafter further moving the envelope on the conveyor, fixing on the envelope a band of material having a glossy surface, the band of material being disposed in a position corresponding to the closed flap opposite the opening, and fixing an adhesive tape on the flap over the opening, finally, closing the flap against the main body of the envelope and removing the envelopes from the conveyor.

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