

Aug. 12, 1969

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3,460,444

MACHINE FOR MANUFACTURING ENVELOPES, FLAT BAGS AND THE LIKE

Filed Aug. 4, 1967

2 Sheets-Sheet 1

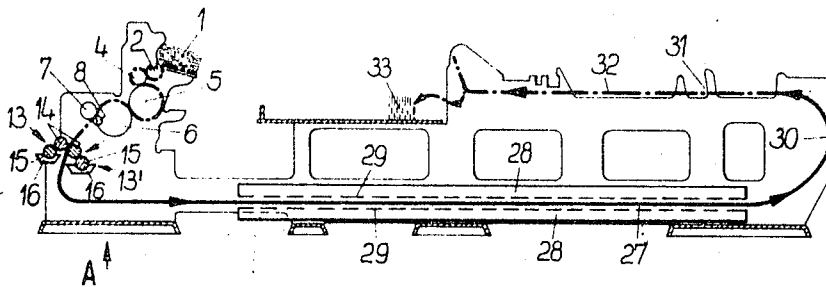


Fig. 1

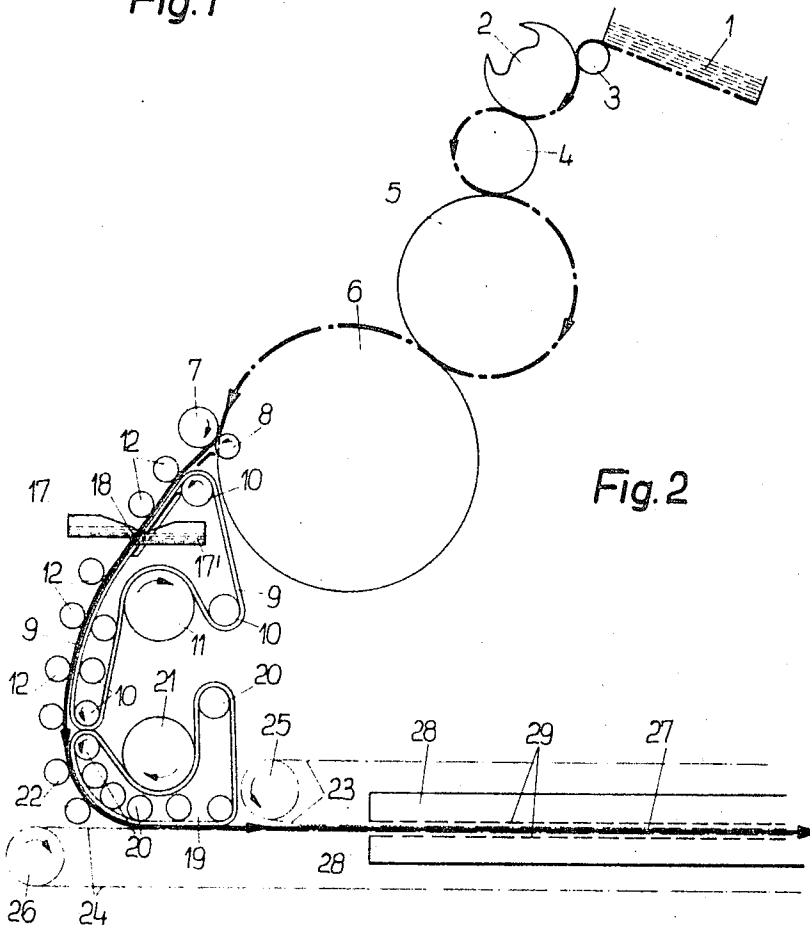


Fig. 2

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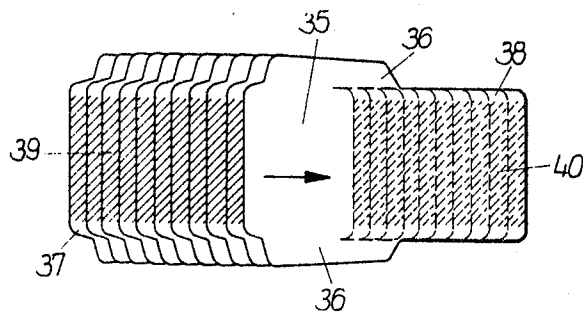


Fig. 5

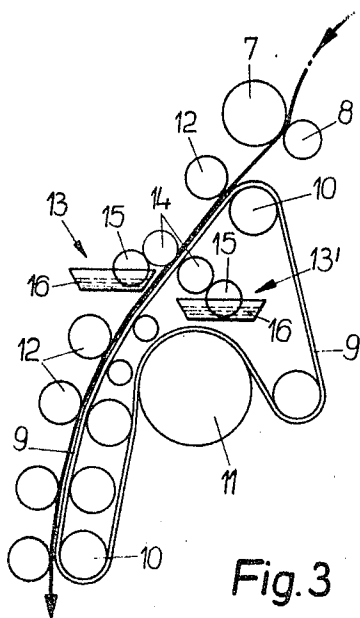


Fig. 3

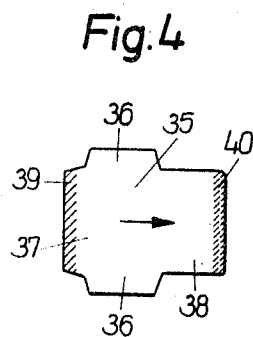


Fig. 4

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MACHINE FOR MANUFACTURING ENVELOPES, FLAT BAGS AND THE LIKE

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Filed Aug. 4, 1967, Ser. No. 658,508

Claims priority, application Germany, Feb. 25, 1967,
W 43,443

Int. Cl. B31b 21/02; B05c 3/20, 1/08

U.S. Cl. 93-62

3 Claims

ABSTRACT OF THE DISCLOSURE

A machine for manufacturing envelopes, flat bags and the like with strips of adhesive applied both to the sealing flap and to the corresponding area on the back of the envelope, so that the flaps are self-adhesive, includes adhesive applicators located opposite each other on opposite sides of the path of the envelope blanks. The applicators may consist of rollers or wipers, or a combination of the two.

This invention relates to machines for manufacturing envelopes, flat bags and similar articles which are all hereinafter referred to as "envelopes." The invention refers more particularly to machines manufacturing envelopes having self-adhesive sealing flaps, namely, flaps which adhere to the backs of envelopes by pressure only, without being previously moistened. In such envelopes a strip of latex or similar adhesive is applied both to the sealing flap and to the area on the back of the envelope which is to be contacted by the flap.

Various machines and methods for producing such self-adhesive envelopes are known in prior art. For example, the envelopes may be produced on a folding machine with a non-gummed sealing flap whereupon in a second operation, a gumming machine applies a strip of latex to the sealing flap and another strip to the corresponding contact area on the back of the envelope. Then the envelopes are dried. This method is very versatile but is also expensive by virtue of the second operation. Since the envelopes cannot be overlapped very far when drying the latex due to the fact that each envelope has two latex strips, these gumming machines are either very long or their output is quite low.

According to another method, latex or other adhesive is applied to the previously staggered or overlapped blanks to one side of the edges of the seal flaps, then the seal flaps are dried and then latex is applied on the corresponding contact area of the back of the envelope, all this taking place while the envelope blanks move in overlapped position. However, the distance of the overlap is slightly enlarged after each application of latex to prevent the gummed margins of the blanks from sticking together while being dried. This method makes it possible to overlap the blanks to a considerable extent but it requires two separate gumming operations.

An object of the present invention is to improve prior art machines and their operation.

Other objects of the present invention will become apparent in the course of the following specification.

In the accomplishment of the objectives of the present invention it was found advisable to provide a machine for manufacturing envelopes or the like with a self-adhesive sealing flap which includes conveyor means for conveying blanks in an overlapped row along a path with marginal areas of the sealing flaps exposed on one side and marginal areas of what will become the backs of the envelopes exposed on the other side of the path, an

adhesive applicator being located on one side of the path to apply adhesive to the exposed marginal areas of the sealing flaps, a second adhesive applicator being located on the other side of the path to apply adhesive to the exposed marginal areas of what will become the backs of the envelopes, the adhesive applicators being located opposite one another so that each applicator serves as a blank-support for the other applicator, and drier means located on the path downstream of the applicators and constructed to dry adhesive on both sides of the row of blanks.

Preferably the drier means are constructed to dry adhesive on both sides of the row of blanks simultaneously.

With this arrangement it is possible for the blanks to overlap one another almost completely, leaving exposed only the width of the strips of adhesive and since the two strips are applied simultaneously and may be dried simultaneously, the machine can be smaller than would be necessary if the blank was first gummed and dried on one side and then gummed and dried on the other.

The invention will appear more clearly from the following detailed description when taken in connection with the accompanying drawings, showing by way of example, preferred embodiments of the inventive idea:

In the drawings:

FIGURE 1 is a schematic longitudinal section through the machine of the present invention with a number of parts omitted;

FIGURE 2 is a detailed view of a part of FIG. 1 but showing the machine provided with differently constructed adhesive applicators;

FIGURE 3 is a detailed view similar to a part of FIG. 2 but showing the machine provided with the adhesive applicators shown in FIG. 1;

FIGURE 4 is a plan view of an envelope blank with latex applied to marginal areas on opposite sides and at opposite ends; and

FIGURE 5 shows a number of overlapped blanks to which latex has been applied and viewed in the direction of the arrow A in FIG. 1.

The machine shown in FIGS. 1 and 3 of the drawings is used for the application of latex as an adhesive to envelopes. Only the path of the envelope blanks through the machine and those parts which are of importance to an understanding of the invention have been shown. The paths of single blanks before they are arranged in overlapping relation and after they have been separated again are indicated by chain-dotted lines while the path of the overlapped blanks is shown by solid lines.

The machine has rotating segments 2 and counter-rollers 3 which draw blanks singly one after another from the bottom of a stack 1. The blanks are passed around a printing cylinder 4 for any internal printing which may be needed, and around a printing cylinder 5 for any external printing which may be required, the blanks then being passed to conveyor discs 6, as indicated by the chain-dotted line and arrows. The printing mechanisms associated with the printing cylinders 4, 5 and suction holes for holding the blanks on the printing cylinders and the conveyor discs which rotate at the same peripheral speed, are not described in further detail, nor are they illustrated, since they are not parts of the present invention.

The individual blanks arriving at the conveyor discs 6 are caused to overlap by a pair of rollers 7, 8 which are driven at a peripheral speed which is lower than the peripheral speed of the rotary members 2-6 by an amount to produce the desired overlap or degree of staggering so that only the marginal areas of what will later be the

3

sealing flaps and bottom flaps and which are subsequently to be gummed with latex are exposed.

FIG. 4 of the drawings shows a single blank 35 with two side flaps 36, a sealing flap 37 and a bottom flap which will later be the back of the completely folded envelope. As shown in FIG. 5, latex is applied to the parts of the blanks in the continuous row of blanks which are exposed by the staggering, these parts being the exposed marginal areas of the sealing flap and the bottom flap or back. The strip of latex 39 on the upper face of the blank is on the inside of what will afterwards be the sealing flap, and the other strip of latex 40 on the underside of the blank will, after folding, be the outer face of the back of the envelope. The latex strips 39 and 40 engage with each other when the envelope is sealed.

In order to convey the blanks in the staggered row, belts 9 are provided which run over a plurality of rollers and cylinders 10, 11 and move the blanks, in conjunction with spring mounted rollers 12, between two facing adhesive applicators.

In the construction shown in FIGS. 1 and 3 of the drawings, each of the adhesive applicators 13, 13', consists of an applicator roller 14, a dipping roller 15 and a trough 16 for the latex, the applicator rollers being located opposite each other on either side of the path followed by the overlapped blanks.

On the other hand, in the construction shown in FIG. 2 of the drawings, each of the adhesive applicators 17, 17' consists of a trough for the latex with a slit 18 through which the latex can emerge to be applied to the blanks as they pass by the applicator in overlapped relation. The troughs are located opposite each other on either side of the path followed by the overlapped blanks. It will be noted that as the blanks pass the stationary slits 18, adhesive is wiped onto the blanks.

In an alternative arrangement, it would be possible to combine one adhesive applicator of the construction shown in FIGS. 1 and 3 with one of the constructions shown in FIG. 2.

In all constructions, the contact points of the two adhesive applicators with the blanks which are passed between them are situated exactly opposite each other.

The belts 9 and spring-loaded rollers 12 are followed by belts 19 which run over a plurality of rollers 20, 21 and, in conjunction with spring-loaded rollers 22, continue the conveyance of the blanks. As shown in FIG. 2, pairs of cooperating roller chains 23, 24 which run over sprockets 25, 26 and are guided by guides (not shown) in the vicinity of the blanks, convey the blanks in an overlapped row along a path 27 through a drier which consists of two hot-air ducts 28 which are opposite each other, one above and one below the path 27, the ducts having holes in the walls facing the blanks through which hot air supplied by a blower (not shown) can emerge.

As shown in FIG. 1, the overlapped blanks with the dried strips of adhesive are then guided upwardly at 30 along the path indicated by the solid line, being held between belts (not shown), after which, at 31 they are spread out so that they are no longer overlapped and they

4

are then passed through a folding machine, singly and one after another, along the chain-dotted path 32, and at 33 they are placed on the delivery table of the machine.

The great advantage of the described constructions wherein the two adhesive applicators are situated one on either side of the path of the overlapped blanks and are situated exactly opposite each other, is that each adhesive applicator can serve as a blank-support for the other applicator, in contact as it is with the still wet latex coating of the overlapped blanks. Moreover, by the simultaneous gumming of both sides of the overlapped blanks, the simultaneous drying thereof in a single drying path is made possible.

In the described machine, the envelope blanks are drawn from the stack completely separately one after another. However the gumming and drying equipment can also be used in machines which receive the already overlapped blanks or which themselves produce the blanks from strips fed to the machines. Other variations and modifications are also possible within the scope of the appended claims.

What is claimed is:

1. In a machine for manufacturing envelopes, flat bags and the like which are provided with self-adhesive sealing flaps, in combination, conveyor means for conveying blanks in an overlapped row along a path with marginal areas of the sealing flaps exposed on one side and marginal areas of what will become the backs exposed on the other side of the path, an adhesive applicator located on one side of the path to apply a pressure sensitive adhesive to the exposed marginal areas of the sealing flaps, a second adhesive applicator located on the other side of the path to apply a pressure sensitive adhesive to the exposed marginal areas of what will become the backs, the two adhesive applicators being located opposite each other and at least one of the two adhesive applicators being a static applicator wiper, and drier means located at a lower level than the applicators for drying adhesive simultaneously on both sides of the row of blanks.

2. A machine in accordance with claim 1 in which each adhesive applicator is a static applicator wiper, the two wipers being located opposite one another.

3. A machine in accordance with claim 1 in which the conveyor means include endless belts for conveying the blanks past the applicators and a pair of roller chains for conveying the blanks past the drier means.

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117—43, 68; 118—226