

April 19, 1932.

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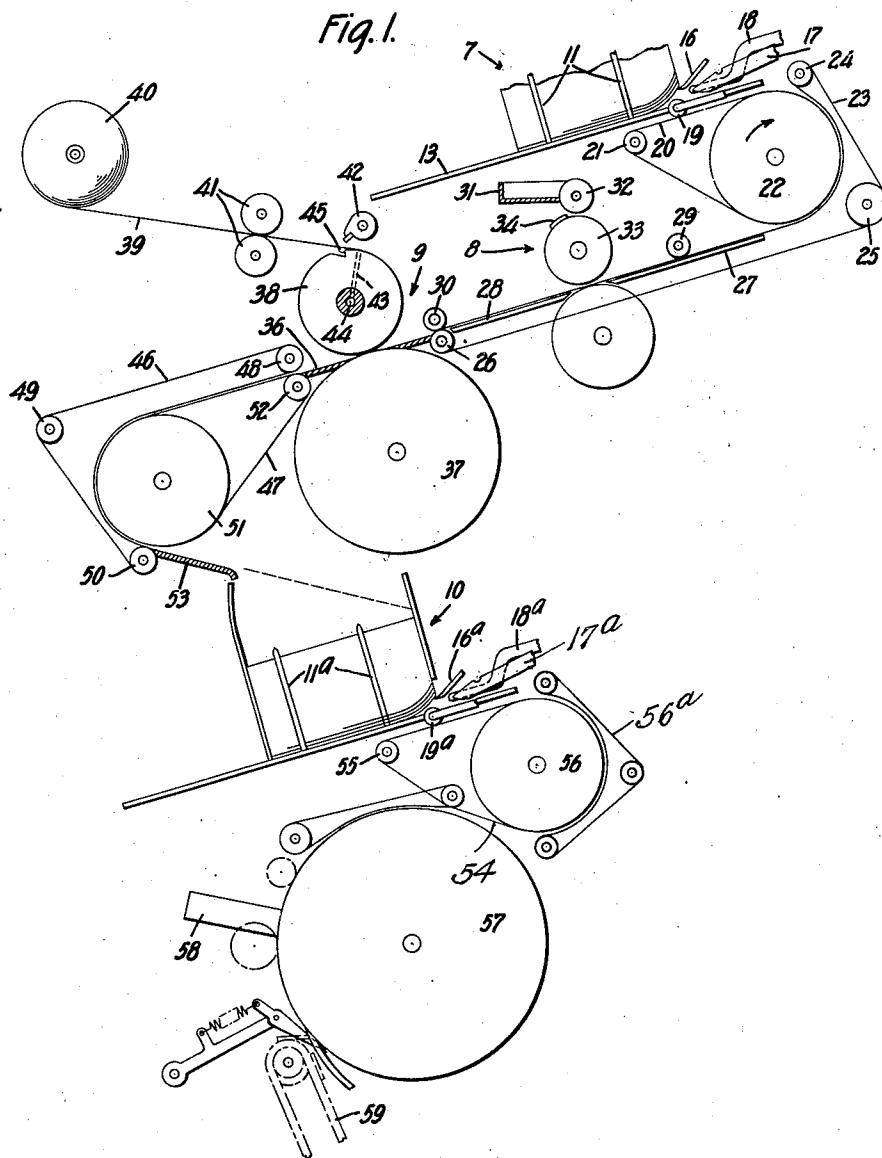
1,854,217

ENVELOPE MACHINE

Filed Nov. 15, 1928

2 Sheets-Sheet 1

Fig. 1.



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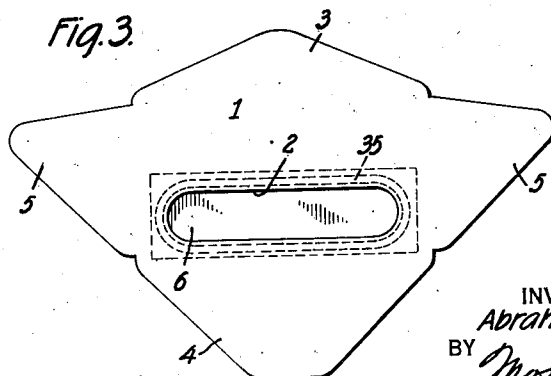
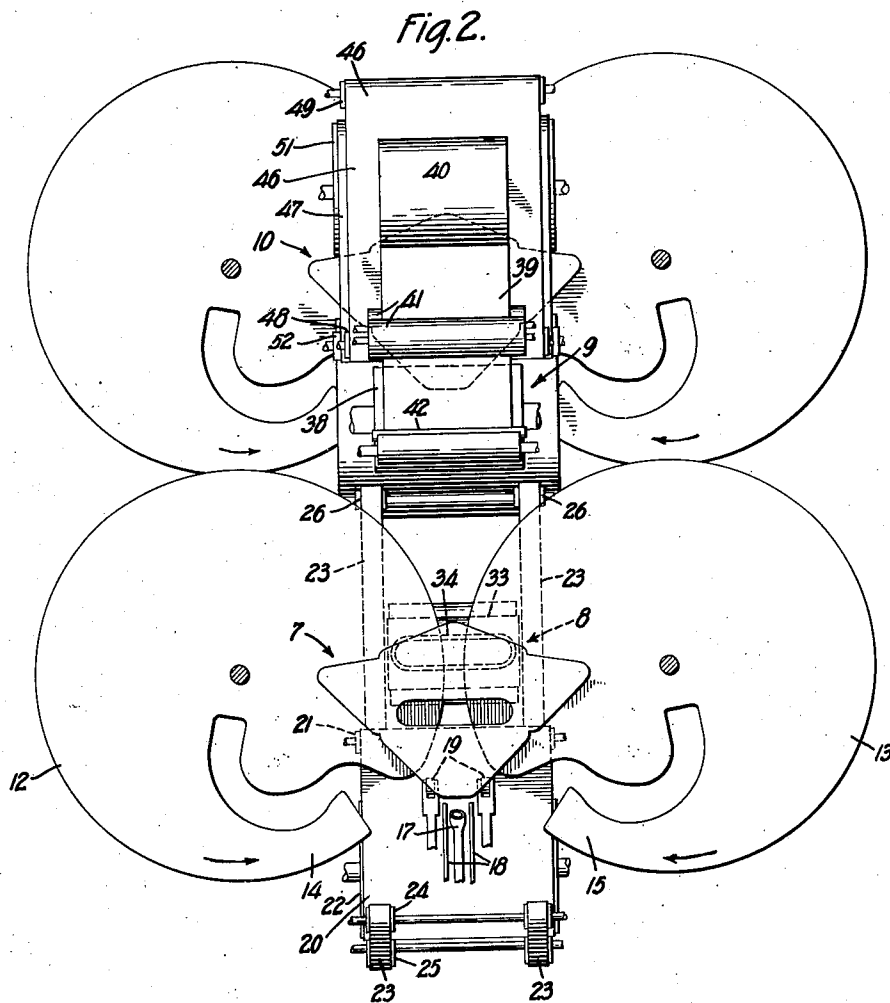
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## UNITED STATES PATENT OFFICE

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## ENVELOPE MACHINE

Application filed November 15, 1928. Serial No. 319,502.

This invention relates to envelope making machinery and has for an object the provision of mechanism which may be conveniently combined with a standard envelope machine for adapting said machine to manufacture window envelopes.

The invention is shown herein for purposes of illustration as applied to a machine of the kind disclosed in my pending application Serial No. 319,501, for Feeding mechanism for envelopes and the like, filed November 15, 1928.

It is a feature of the invention that all of the additional mechanism employed for thus converting the machine forms a simple and compact addition which may be put into place and operated without substantial alteration of the normal parts of the machine or modification of the operation of such parts.

Other objects and advantages will herein-after appear.

In the drawings forming part of this specification:

Figure 1 is a sectional, side elevation showing an embodiment of the invention combined with a standard machine of the type referred to;

Figure 2 is a plan view of the mechanism illustrated in Figure 1; and

Figure 3 is a plan view of an envelope blank of the type operated upon by the mechanism illustrated, and showing the blank in the condition in which it is delivered by the novel mechanism to the standard part of the machine.

Referring first to Figure 3, it will be observed that the envelope blank comprises a central body portion 1 having a window opening 2 provided therein and having top and bottom flaps 3 and 4 and side flaps 5 projecting therefrom. The novel mechanism of the present invention is designed to receive a blank in the condition described above, to apply to the blank a transparent window patch 6, and to deliver such blank to the mechanism for gumming the blank and folding it into a finished envelope.

Briefly stated, the operation performed by the illustrated mechanism is as follows: The blanks are placed in a magazine hopper 7,

are withdrawn singly from the bottom of the hopper and are carried by conveying means, past gumming mechanism 8 which applies gum around the window opening, thence past a patch applying mechanism 9, and finally to a second magazine 10 which forms the introductory magazine illustrated in my application referred to above. The blanks are withdrawn singly from the bottom of this second magazine and are fed through the subsequent instrumentalities of the machine in the usual way for the performance of the subsequent operations upon the blanks.

The magazine 7 comprises upright rods 11 arranged to maintain the blanks in registering stacked form, and supporting means for the stack consisting of oppositely rotating discs 12 and 13. The discs 12 and 13 are slotted to form separating fingers 14 and 15 which are arranged to pass between the lowermost blank and the remainder of the stack to segregate such blank from the stack.

As seen in Figures 1 and 2 the bottom flaps of the blanks are turned toward the front of the machine in a position to be operated upon by blank separating mechanism which prepares the lowermost blank for complete separation from the stack by the discs 12 and 13. The forward extremities of the bottom flaps are supported somewhat above the plane of the separator discs by a finger 16 and the blanks are withdrawn past this finger one by one and swung downward by a reciprocating pneumatic picker 17. After a blank has been thus separated at its forward edge and swung downward, the separating fingers 14 and 15 advance to blank engaging position and perform their separating function. Presser fingers 18 advance to press the separated blank beneath rollers 19 and against the traveling belt 20 against which the rollers 19 bear. The mechanism thus far described is, element for element, a duplicate of the magazine and separator mechanism of the standard machine. This is a feature of value since replacement of parts in both mechanisms may be taken care of from the same stock of spare parts.

Such mechanism differs, however, from that described in my pending application, 100

referred to above, in that the separator fingers 14 and 15 are cut away at their extremities and made blunt, the inner ends of their leading edges being located to escape engagement with the window openings of the envelopes. This obviates all danger of snagging and tearing the envelopes by said fingers.

The conveying belt 20 runs upon a roller 21 and a drum 22. As the blanks pass downwardly around the drum 22 they come under the influence of a second conveyor consisting of a belt 23 which runs upon rollers 24, 25 and 26. This belt serves to grip the blanks to the belt 20 and in cooperation with the drum 22 and the belt 20 inverts the blanks. The belt 23 has its active stretch supported in part by tables 27 and 28, and serves, in conjunction with feed rolls 29 and 30, to conduct the inverted blanks past the gummer 8.

The gummer comprises a gum box 31, the lower end of which is closed by a gum transferring roller 32. A roller 33 rotates beneath the roller 32 and carries a raised gum applying segment or die 34, which receives gum from the roller 32 and applies it to the margin of the window opening of an envelope blank at a short distance outward from the edge of such opening. The gummed area is indicated at 35 in Figure 3 and the gum applying die has a gum applying surface of the same shape as the gummed area.

The conveyor belt 23 feeds the gummed blanks onto a short table 36 which extends between a feed roller 37 and a patch applying member 38, and which lies in a groove of the roller 37 with its upper surface substantially tangent to the periphery of such roller. Each blank, while supported on this table, has a window patch applied to it.

A web of window patch material 39 is supplied from a reel 40, being drawn from the reel by feed rollers 41 driven at a peripheral speed such that a patch length of the web is fed for each envelope blank separated from the magazine 7. The web is advanced by rollers 41 between the patch applying member 38 and a severing member 42. The patch applying member 38 makes one complete revolution for each envelope blank separated from the magazine 7 and is equal in circumferential extent to the extent of movement of the conveyor belt 23 occurring in one complete cycle of the blank separating mechanism. The member 38 is provided with radial passages 43 which extend from the periphery of the member 38 and communicate through an axial passage 44 with a source of suction. Immediately following the open ends of the passages 43 in the member 38 provision is made of a cutting blade 45. The mechanism is so timed that as the suction passages 43 come beneath the end of the patch web in position to act upon it, the cutting member 42 in cooperation with the blade 45, severs a

patch from the end of the web. The patch is then held to the member 38 by the suction means and is carried around and applied to the gummed envelope blank.

From the table 36 the envelope blank passes between conveyor belts 46 and 47. The former belt runs upon rollers 48, 49 and 50 and partially embraces a drum 51. The belt 47 runs upon a roller 52 and the drum 51. These conveyor belts cooperate to carry the blanks around the drum 51 and thereby to re-invert the blanks so that the patch side is turned downward and the blanks are discharged in the identical position which they occupied in the magazine 7. The blanks pass from between the belts 46 and 47 across an inclined shelf or table 53 and are delivered one by one into the receiving magazine 10. In this magazine they are re-stacked with the patches turned downward, such arrangement being requisite for proper presentation of the blanks to the subsequent operating mechanisms, such mechanisms of the standard machine being so arranged that they will operate to fold the blanks with the window patches on the inside if the blanks are delivered from the magazine with the window patches turned downward.

The magazine 10 and the separating mechanism for taking the blanks therefrom are, element for element, duplicates of the magazine 7 and the separating mechanism for taking the blanks from the magazine 7. The corresponding elements have accordingly been numbered with corresponding numerals followed by the letter "a", and will not be described in detail. The two separating mechanisms operate in unison, so that for each blank delivered to the magazine 10 at the top thereof, a blank is withdrawn from the bottom of the magazine. The conveying mechanism for conducting the blanks away from the magazine 7, however, is operated at such a speed that the blanks are completely separated and spaced from one another so that they may be individually treated in passing beneath the gumming mechanism 8 and the patch applying mechanism 9, whereas the conveying mechanism for conducting the blanks away from the magazine 10 operates at relatively low speed to carry the blanks away in fanned out relation. From the magazine 10 the blanks pass to the mechanism of the standard machine described in my application referred to. Such mechanism comprises a conveyor belt 54 which runs upon a roller 55 and a drum 56. A belt conveyor 56a cooperates with the belt 54 and the drum 56. The blanks are conducted around the drum 56 and onto a drum 57 in fanned out relation, being carried beneath a gummer 58 for applying gum to the exposed margins of the sealing flaps of the fanned out envelope blanks. From the drum 57 the blanks are delivered to a drying belt 59 and

thence conducted to the remaining operating mechanisms of the machine.

While I have described what I believe to be the best embodiment of my invention, I do not wish to be limited to the embodiment shown, but what I desire to secure by Letters Patent is set forth in the appended claims.

What I claim is:

1. In an envelope machine, in combination, means for taking window envelope blanks singly from a stack, mechanism for applying window patches to the upper faces of the blanks, a receiving magazine, means for conveying the blanks from the patch applying mechanism to the receiving magazine, arranged to invert the blanks to turn them patch side down while they are being conveyed, and means for withdrawing the blanks from said receiving magazine and gumming marginal portions of those faces of said blanks which are turned downward in said receiving magazine.

2. In an envelope machine, in combination, means for taking window envelope blanks singly from a stack, mechanism for applying window patches to the upper faces of the blanks, a receiving magazine, means for conveying the blanks from the patch applying mechanism and depositing them patch side down in the top of the receiving magazine, and means for separating and feeding the blanks singly from the bottom of the receiving magazine, and gumming marginal portions of those faces of said blanks which are turned downward in said receiving magazine.

3. In an envelope machine, in combination, a magazine, separating means for removing blanks singly from the bottom of the magazine and inverting them, means for applying patches to the faces of the blanks turned upward by such inversion, a second magazine, means for reinverting the blanks and depositing them in stacked formation in the second magazine, separating means for removing blanks singly from the bottom of the second magazine, the second magazine and separating means being of the same construction as the first magazine and separating means referred to, and means for applying gum to the faces of the blanks which were turned downward in the second magazine.

4. In an envelope machine, in combination, a blank magazine, separating means for withdrawing the blanks singly from the magazine, conveying means for conducting the withdrawn blanks away from the magazine so rapidly that the blanks are conveyed in spaced relation, means for applying window patches to the faces of the blanks which are turned upward while they are being so conveyed, the conveying means being arranged to invert the blanks after application of the patches, a second magazine into which the blanks are delivered by the conveying means,

a second separating means operating in unison with the first, conveying means operating at relatively low speed to conduct the blanks away from the second magazine in fanned out relation, and means for applying gum to the faces of the blanks which were turned downward in the second magazine.

5. In an envelope machine, in combination, means for feeding envelope blanks past a window patch applying station in spaced, definitely timed relation, means for feeding a window patch web at a rate such that a patch of the desired length may be supplied for each blank, means for severing patches from the web and applying them to the envelope blanks comprising a pair of cutting elements, one of said elements constituting also a rotary patch carrier and being provided with means for holding a patch by suction, and the other being adapted to follow the severed patch for a short distance to assist in accelerating it to the peripheral speed of the patch carrier.

6. In an envelope machine, in combination, means for feeding envelope blanks in definitely timed, spaced relation, a patch carrying and applying member running in engagement with the blanks and synchronously with the timing thereof, means for feeding a patch web a distance of one patch length for each envelope blank, and means cooperating with the patch carrier in severing patches from the web, and in accelerating the severed patches to the peripheral speed of the patch carrier.

7. In a window patch applying mechanism for an envelope machine, in combination, a patch applying member adapted to run in engagement with the envelope material including suction means for holding a patch to the applying member, means to feed the end of a web over said member and means to sever a patch from the end of the web as the suction means comes opposite such end of the web, and to assist in accelerating the patch to the peripheral speed of the carrier.

8. In a window patch applying mechanism for an envelope machine, in combination, means for feeding a patch web, a cutting and carrying member rotating adjacent the path of the web, said member including suction means and a severing blade closely following the suction means, and means cooperating with said blade to sever a patch from the end of the web while the suction means is in position to hold the patch so severed, and following the severed patch for a short distance to positively prevent slipping of the patch relative to the carrier.

In testimony whereof I have affixed my signature to this specification.

ABRAHAM NOVICK.