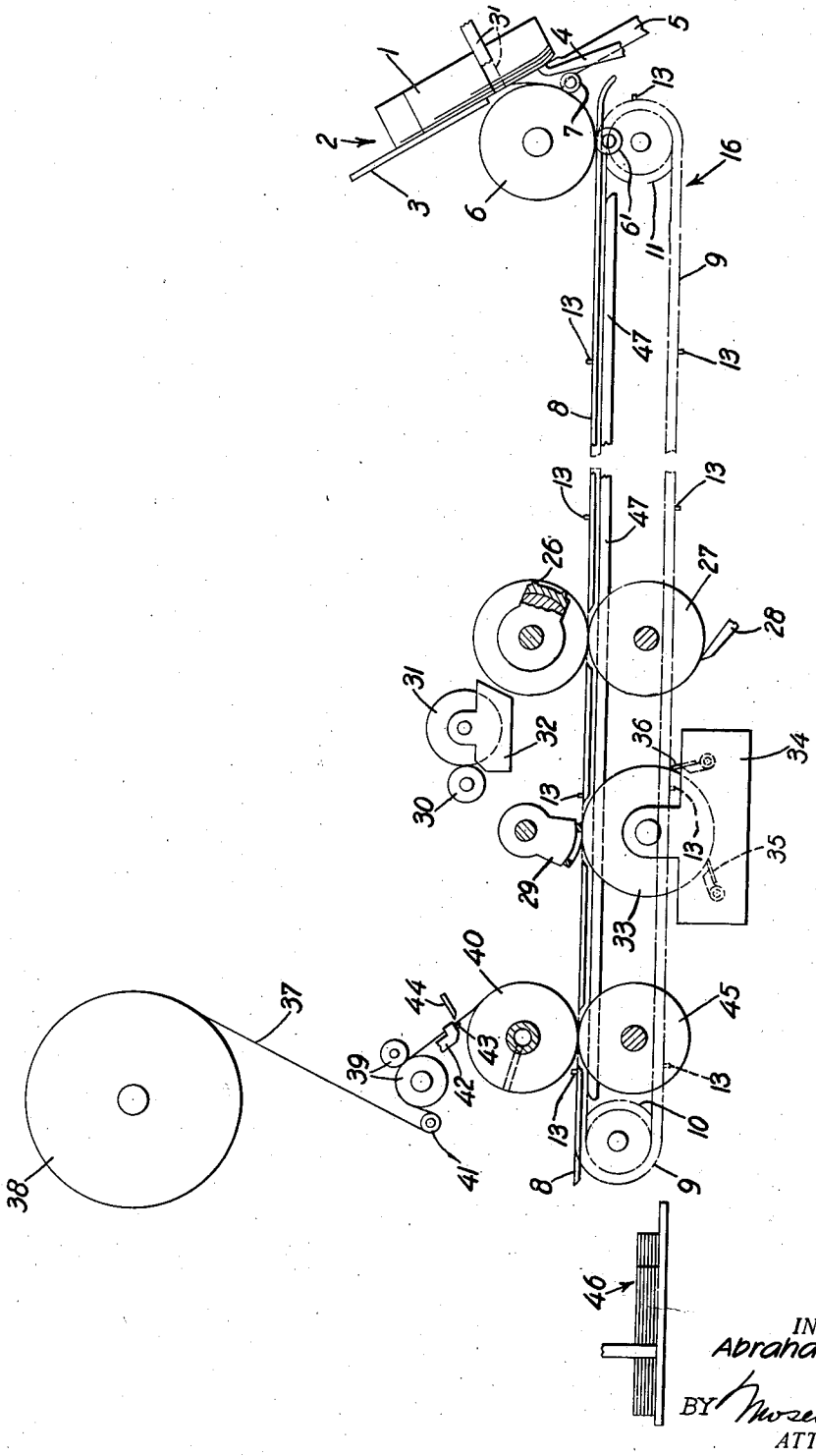
Feb. 27, 1940. A. NOVICK 2,191,496

MACHINERY FOR MAKING WINDOW ENVELOPES

Original Filed Aug. 29, 1934



INVENTOR.
Abraham Novick.

BY Mosses & Nolte
ATTORNEYS.

Patented Feb. 27, 1940 2,191,496

UNITED STATES PATENT OFFICE

2,191,496

MACHINERY FOR MAKING WINDOW ENVELOPES

Abraham Novick, Flushing, N. Y., assignor to F. L. Smithe Machine Co. Inc., New York, N. Y., a corporation of New York

Application August 29, 1934, Serial No. 741,921
Renewed February 17, 1939

10 Claims. (Cl. 93—61)

This invention relates generally to machinery for making window envelopes; and more particularly to means for conveying pre-formed envelope blanks through instrumentalities which further operate upon the blanks.

One feature of the invention consists in the provision of such conveying means constructed and arranged to operate in timed relationship with the instrumentalities to which the envelope blanks are delivered.

Another feature consists in the provision of such conveying means of unitary structure for delivering envelope blanks to a plurality of instrumentalities which successively operate upon the blanks.

Other features and advantages of the invention will hereinafter appear.

The drawing is a view in sectional side elevation, partly broken away and largely diagrammatic, illustrating a practical and advantageous embodiment of the invention.

Referring to the drawing; stacked blanks 1 are supported by a magazine 2 and rest against a plate 3 and bars 3'. The blanks are successively removed from the stack by a mechanism comprising a suction picker 4, a pair of deflectors 5, a feed cylinder 6, a co-operative feed roller 6', and oscillatory auxiliary rollers 7. The suction picker moves to the right and into engagement with the exposed marginal surface of the bottom blank, and then moves to the left away from the stack, drawing with it the edge of the bottom blank. While said edge is so held by the picker, the deflectors 5 are moved forward into the space between the stack and the partially separated blank, to move the separated edge of the blank into proximity to the feed cylinder 6. After the deflectors have entered the space between the stack and the margin of the bottom blank, the suction picker 4 is withdrawn longitudinally of the plane of the blank to permit the blank to clear it. The dagger points of the deflectors 5 press the margin of the blank close to but not into gripped relation with feed cylinder 6. The auxiliary rollers 7, which run constantly in engagement with the feed cylinder 6, are moved bodily counter-clockwise about the axis of the feed cylinder 6 and into position where they grip the leading margin of the blank and deliver it into the bight of feed cylinder 6 and co-operative feed roller 6'. By the co-operative action of feed cylinder 6 and feed roller 6', the blank is fed onto a table 8, along which it is advanced by a conveyor 16, comprising two chains 9 which run over end sprockets 10, 11, and which travel on skids 47. These conveyor chains are provided with projecting pins 13, which enter recesses defined by side flaps and the seal flap of the blank, and thus align the blank and insure that it shall be advanced by the conveyor.

The conveyor 16 advances the blank to a rotary cutting die 26, which, in co-operation with a bed cylinder 27, cuts a window aperture in the blank 1. A stripper 28 removes from the bed cylinder 27 the piece of paper which has been cut from the blank to form the aforesaid aperture.

The conveyor then advances the blank to a segmental gumming die 29, the periphery of which segment is periodically charged with gum by a gum-transfer roller 30, in peripheral contact with a gum pick-up roller 31, rotating in a body of adhesive fluid contained in a gum pot 32. Co-operative with segmental gumming die 29 to apply gum to the margins of the window aperture is a bed cylinder 33. In order to preclude the possibility of gum being applied to the side of the blank opposite that to which a patch is to be adhered, means are provided for removing from the periphery of bed cylinder 33 any gum which may be transferred thereto by reason of inadvertent contact of the gumming die 29 with said cylinder at times when no blank is interposed. These means comprise a pot 34 containing a body of water in which the lower portion of bed cylinder 33 continually rotates. Mounted in this pot is a scraper 35, contacting with the periphery of said bed cylinder and operating to scrape gum therefrom; and a second scraper 36, also contacting with said periphery, and operating to remove water therefrom.

A web 37 of transparent patch material is drawn from a reel 38 by feed rollers 39, and over idler feed roller 41. The web is fed across a table 42, provided with a cutter block 43. A cutter 44 co-operates with said cutter block to sever a patch from the web 37. The severed patch is applied by a suction roller 40, co-operating with a bed cylinder 45, to the gummed margins of the window aperture, the blank having meanwhile been advanced by conveyor 16 to the proper position for permitting such application. Alternatively, the gum may be applied in any well-known manner to the margins of the transparent patch, rather than to the margins of the window aperture.

Conveyor 16 then delivers the blanks away from the patch applier. As shown, the blanks may be delivered to a stack 46, from which they may be removed and fed through envelope-gumming and folding machines of any desired type.

It is to be understood that the several devices are so inter-geared or otherwise operatively connected and timed that they function in correct sequence.

The invention contemplates that the conveying mechanism thereof may be employed either to feed ordinary imperforate envelope blanks to aperture-cutting, aperture margin-gumming and patch-applying devices, as illustrated in the drawing; or to feed blanks in which window apertures have been formed by other instrumentalities to aperture margin-gumming and patch-applying devices—in the latter case the aperture-cutting mechanism being omitted from the structure.

It is understood that the embodiments of the invention herein shown and described are merely illustrative, and that, without departing from its principle, the invention may be embodied in other forms and structures.

I claim:

1. In apparatus of the character described, the combination of means for cutting a window in an envelope blank, comprising a rotary cutting die and a cooperating bed cylinder means for gumming a marginal area surrounding the window of an envelope comprising a rotary gummer and a cooperative bed cylinder, means for applying a window closure to said gummed area comprising a rotary patch applier and a cooperative bed cylinder, and a pair of parallel endless, flexible, unitary conveyor members for positively advancing successive envelope blanks continuously in timed relationship and in harmony with the action of said instrumentalities.

2. In apparatus of the character described, a device for cutting a window aperture in envelope blanks, a device for gumming the margins of said aperture, means for feeding a web of transparent material, means for severing patches from said web, a device for applying said patches to said gummed margins, each device comprising a rotary operating member and a cooperating bed cylinder, and an endless, flexible conveyor independent of said devices for positively and uninterruptedly advancing said blanks through said aperture-cutting, gumming and patch-applying devices.

3. A machine for converting imperforate envelope blanks into window-envelope blanks comprising a die for cutting window apertures in the blanks, a gummer for applying adhesive to the margins of said apertures, a suction roller for applying a window closure of transparent material to said gummed margins, bed cylinders cooperating respectively with the die, the gummer and the suction roller, and a unitary conveyor for positively and uninterruptedly advancing such blanks through the named instrumentalities for operating thereon.

4. A machine for converting imperforate envelope blanks into window-envelope blanks, comprising dies for cutting a window aperture therein, a segmental gummer and a cooperative bed cylinder for applying adhesive to the margins of said aperture, patch-applying rollers, said bed cylinder being provided with means for removing gum from the periphery thereof, and a unitary conveyor for positively and uninterruptedly advancing such blanks through the named instrumentalities, by a substantially right line movement.

5. In a machine for forming window-envelope blanks, a magazine for supporting a stack of imperforate blanks, a suction picker for separating a margin of the bottom blank from the stack, a deflector for guiding the margin of said bottom blank, an oscillating roller for bringing the margin of said blank into engagement with a feed cylinder, a roller co-operative with said feed cylinder for delivering said blank to a table, window aperture cutting devices, gumming devices, and patch-applying devices, and a unitary conveyor comprising a pair of chains provided with spaced pins for engaging and aligning said blank and for advancing it along said table and through said window aperture cutting devices, gumming devices, and patch-applying devices.

6. In apparatus of the character described, the combination of aperture cutting, gumming and patch-applying devices, each comprising a rotary operating member and a cooperating bed cylinder, means for successively removing envelope blanks from a stack, means for delivering said blanks to a table, and a unitary conveyor independent of said devices for advancing said blanks positively and for delivering said blanks to said aperture-cutting, gumming and patch-applying devices by a continuous movement.

7. In apparatus of the character described, the combination of rotary aperture cutting, gumming and patch applying devices, each comprising a rotary operating member and a cooperating bed cylinder, means for successively removing envelope blanks from a stack, means for delivering said blanks to a table, and a unitary conveyor independent of said devices comprising two chains for advancing said blanks through said aperture-cutting, gumming and patch-applying devices, by a continuous movement.

8. In a blank patching machine, in combination, a rotary gummer for applying gum to the margins of a window opening in a blank, a rotary patch applier for applying a patch to the blank over the window opening, bed cylinders cooperating with the rotary gummer and with the rotary patch applier, respectively, and a pair of parallel pin conveyors operating in harmony with the gummer and the patch applier for carrying the blanks in definitely aligned and spaced relation to the gummer and thence to and beyond the patch applier.

9. In a blank patching machine, in combination, a rotary gummer for applying gum to the margins of a window opening in a blank, a rotary patch applier for applying a patch to the blank over the window opening, bed cylinders cooperating with the rotary gummer and with the rotary patch applier, respectively, and pin conveyors for pushing the blanks in definitely aligned and spaced relation to the gummer and thence to and beyond the patch applier.

10. In a blank patching machine, in combination, a rotary gummer for applying gum to the margins of a window opening in a blank, a rotary patch applier for applying a patch to the blank over the window opening, bed cylinders cooperating with the rotary gummer and with the rotary patch applier, respectively, and flexible endless conveyor means including pusher elements for thrusting the blanks in definitely aligned and spaced relation to the gummer and thence to and beyond the patch applier.

ABRAHAM NOVICK.