J. REGENSTEIN.

ENVELOP MAKING MACHINE.

APPLICATION FILED JULY 22, 1914.

1,298,093.

Patented Mar. 25, 1919.

2 SHEETS—SHEET 1.

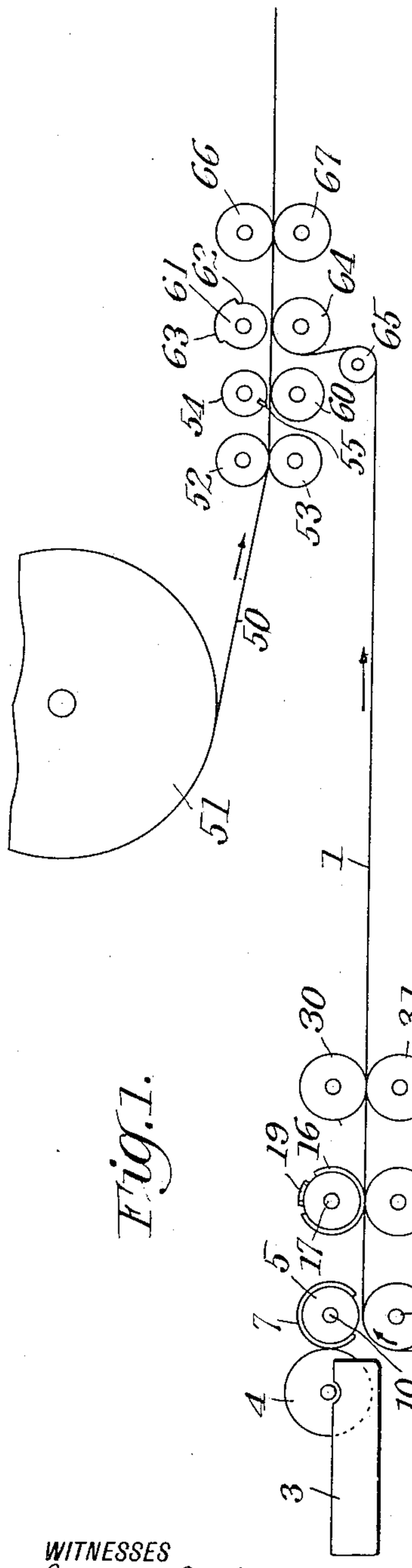


Fig. 1.

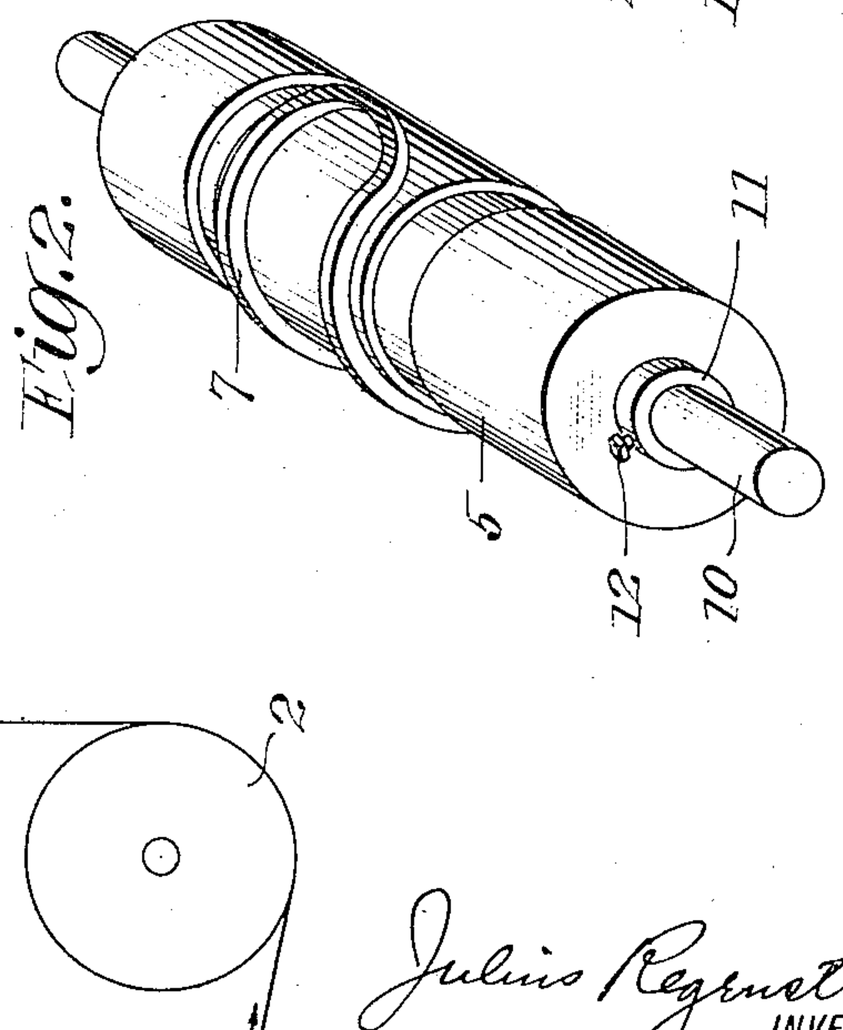


Fig. 2.




Fig. 3.

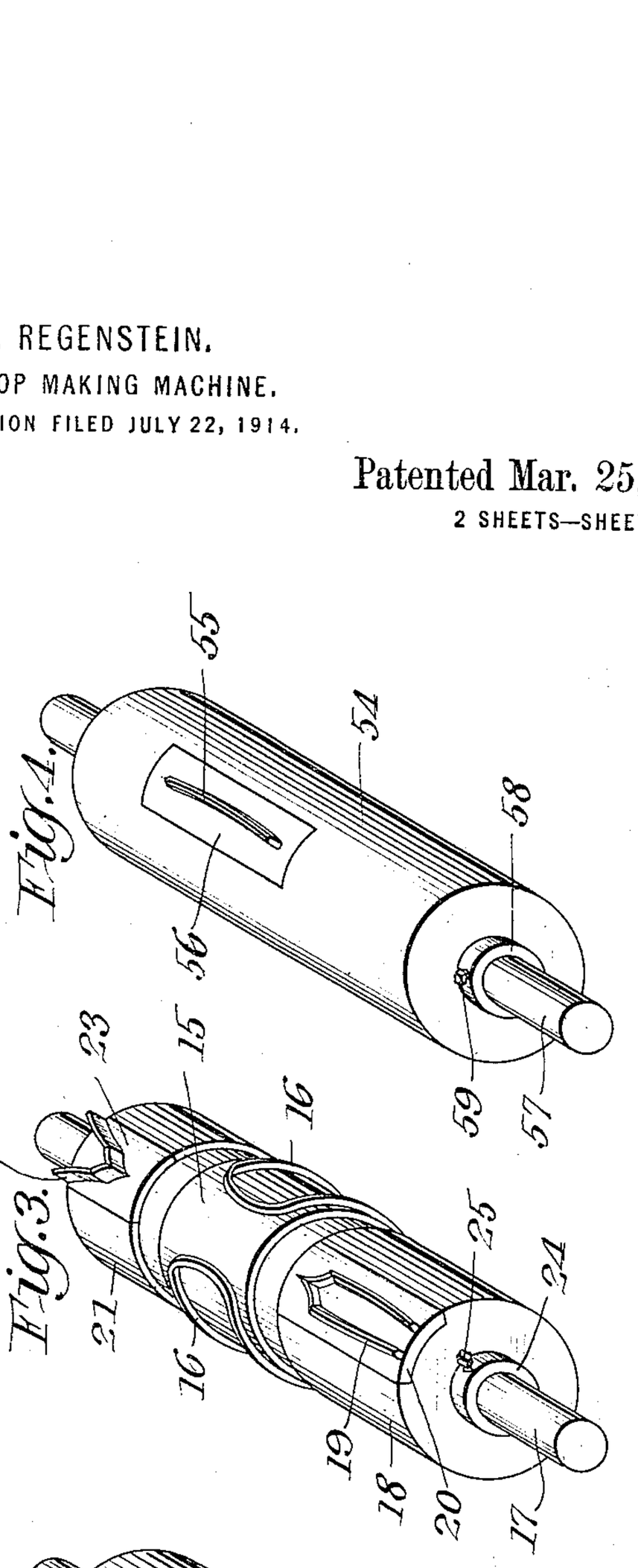


Fig. 4.

WITNESSES

Louisa Locher

John Corcoran.

Julius Regenstein
INVENTOR

BY John D. Morgan

ATTORNEY

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2 SHEETS—SHEET 2.

Fig. 5.

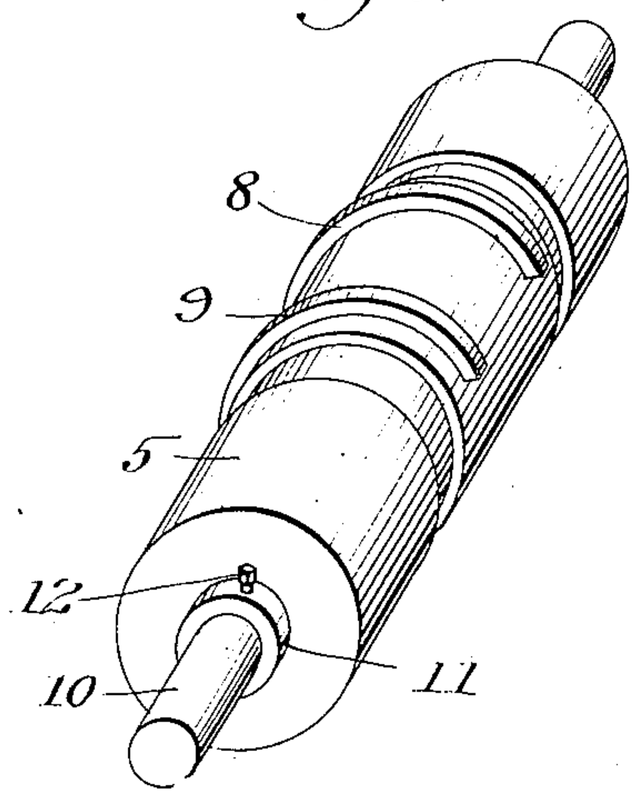



Fig. 8.

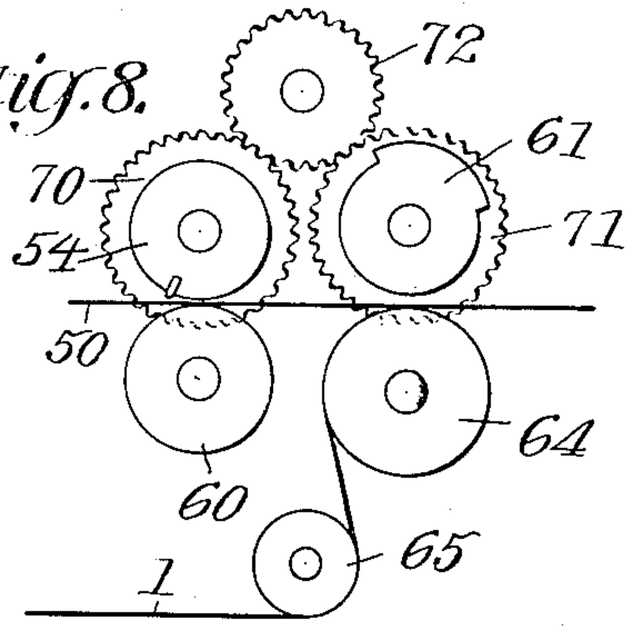



Fig. 6.

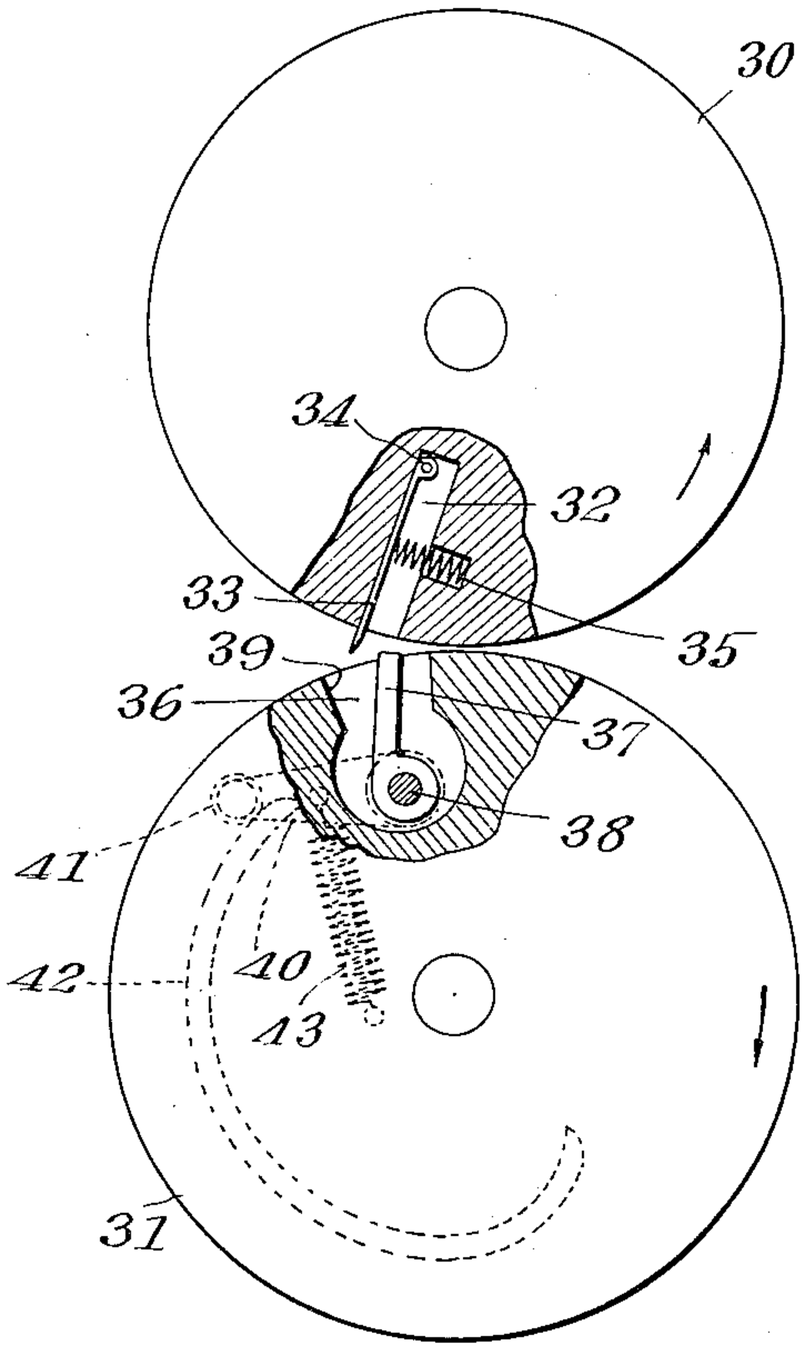
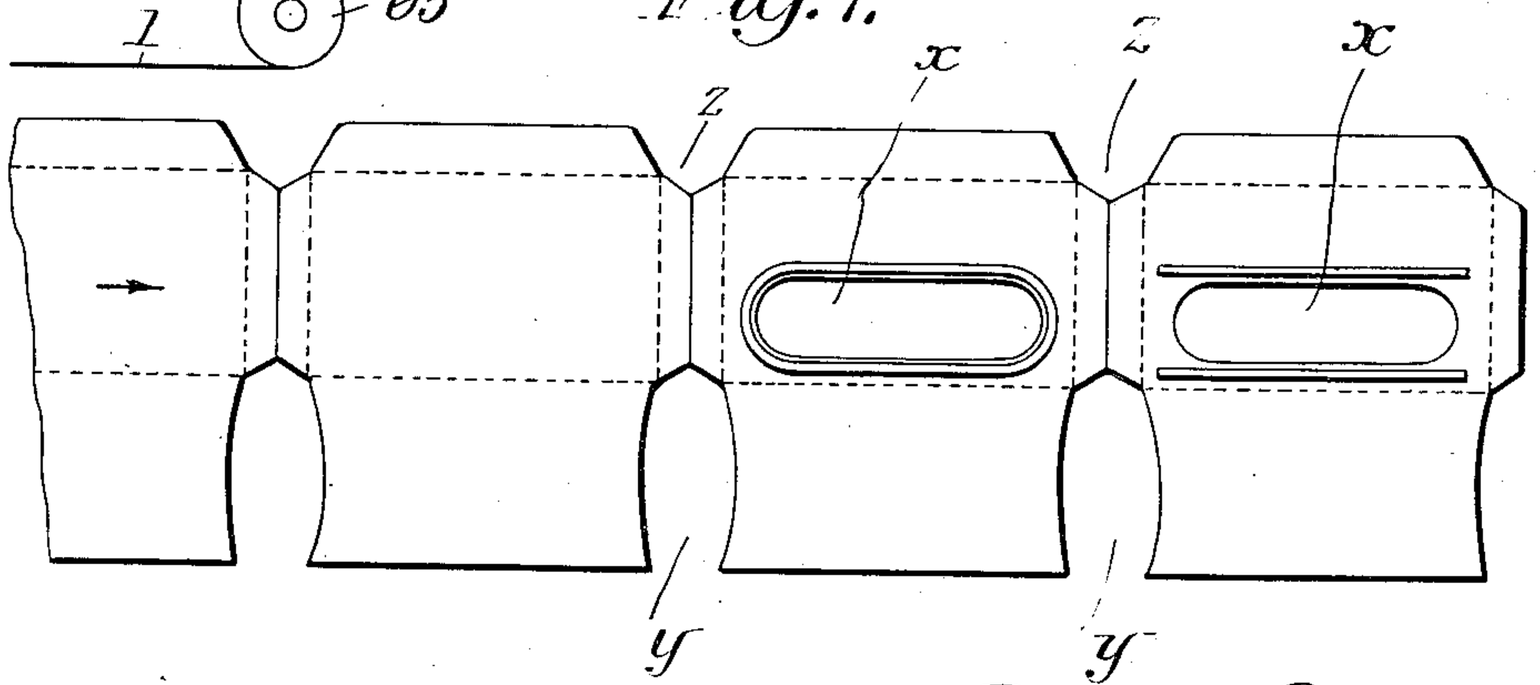



Fig. 7.




WITNESSES

Louisa Lohr

John Corcoran

INVENTOR

Julius Regenstein

BY

John D. Morgan

ATTORNEY

# UNITED STATES PATENT OFFICE.

JULIUS REGENSTEIN, OF CHICAGO, ILLINOIS.

## ENVELOP-MAKING MACHINE.

1,298,093. Specification of Letters Patent. Patented Mar. 25, 1919.

Original application filed April 13, 1914, Serial No. 831,490. Divided and this application filed July 22, 1914. Serial No. 852,378.

*To all whom it may concern:*

Be it known that I, JULIUS REGENSTEIN, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented Improvements in Envelop-Making Machines, of which the following is a specification.

The invention relates to machines for making envelops, and more especially to machines for making "window" envelops, that is envelops having a transparent portion through which the address on an inclosed paper may be read.

Objects of the invention are to provide a novel machine for rapidly and economically making window envelops; to provide for making such envelops from the web on the run; to provide for applying the transparent window strip or filling to the window opening in the envelop while on the run through the machine; to provide a novel machine performing the successive operations by means of rotary mechanisms; to provide a rotary window cutting device operating upon the web on the run; to provide for cutting window longitudinally on the web as it runs through the machine; to provide novel mechanisms for effecting the various functions enumerated. These and other objects of the invention will in part be obvious, and in part will appear hereinafter.

The invention consists in the novel parts, constructions, arrangements combinations and improvements herein shown and described.

The accompanying drawings, referred to herein and forming a part hereof, illustrate one embodiment of the invention, and together with the description serve to illustrate the principles thereof.

Of the drawings:

Figure 1 is a diagrammatic view of a machine constructed in accordance with the principles of the invention.

Fig. 2 is a perspective view of the paste applying roller;

Fig. 3 is a perspective view of the window and notch cutting roller;

Fig. 4 is a perspective view of the cylinder for cutting the window strips from the web;

Fig. 5 is a perspective view of another form of the paste applying roller;

Fig. 6 is a detail elevation, on an enlarged scale, with parts broken away, of the window chip removing cylinders;

Fig. 7 is a plan of the web at various stages of completion; and

Fig. 8 is a detail of the drive for the window attaching rolls.

Referring by way of example to the accompanying drawings, and to the embodiment of the invention illustrated therein, the web 1 is fed in from a suitable source of supply around a cylinder 2, and from there to the gum or other adhesive-applying mechanism, which may be styled for convenience, the gumming mechanism. In accordance with one feature of the invention, the web is gummed for the attachment of the transparent or translucent window strip prior to the cutting out of the "window" or opening in the face of the envelop through which the address on the inclosed paper is visible. By applying the gum to the web before the window is cut, the raising and curling of the cut edges about the window, as occurs when the window is first cut, is avoided.

As embodied, rotary gumming devices are provided acting upon the web soon after it passes the cylinder 2, said devices comprising an adhesive containing trough 3, in which rotates in a suitable manner and by suitable rotating mechanism (not shown) an adhesive conducting roller 4. A roller 5 receives the gum or other adhesive from the roller 4, and applies it in proper disposition or form upon the web so that the edges of the window strip when pressed into position will be adherent to the envelop about the edges of the window opening. A roller 6 coöperates with the gum applying roller 5, the web 1 running about and being supported by the roller or cylinder 6.

The gum applying roller 5 has upon its surface a raised face or welt 7, having a face which contacts with or presses against the web as it runs over the roller 6 and serves to apply the gum to the web in a form or disposition corresponding to the form of the member 7. The member 7 as embodied is shaped so as to apply the paste about a window of the usual or rectangular shape with rounded corners, that is, a window of the form shown in Fig. 7. The long sides of the gum applying member 7 are arranged circumferentially about the

cylinder 5, so as to apply the gum or paste longitudinally along a web running between the rollers 5 and 6 in Fig. 1. In Fig. 5, the roller 5 is shown with gum applying members or faces 8 and 9 arranged circumferentially about the cylinder 5, but leaving the ends of the window unpasted. The cylinder 5 may be made adjustable upon its axis 10, both longitudinally on the axis or angularly thereabout, by suitable means such as a collar or boss 11, and a clamping screw 12.

The invention provides for cutting out the window from the running web, and provides also rotary cutting means for this purpose. In the embodied form thereof, a die carrying cylinder 15 is provided, having a raised cutter 16 adapted as shown to cut a window *x* of rectangular shape with the rounded corners, such as is shown in Fig. 7. The cutter 16 is arranged with its length extending circumferentially about the cylinder 15, as shown in Fig. 3. The cylinder 15 is mounted upon a shaft 17, and shaft 17 also carries cylinders for cutting out the notches, that is, forming the exterior edges or outlines of the envelop. As embodied, a cylinder 18 is mounted upon the shaft 17, and is provided with a cutter 19 for cutting out one of the notches, marked *y* in Fig. 7. The cutter 19, if desired may be mounted upon a block 20 in the cylinder 18. A corresponding device is provided for cutting out the opposite notch, indicated by *z* in Fig. 7, comprising a cylinder 21, having a suitably shaped cutter 22, likewise mounted if desired upon a removable block 23. The cylinders 15, 18 and 21, if desired, may be made adjustable both angularly and longitudinally upon the shaft 17, and for this purpose are provided with bosses or collars 24 and clamping screws 25, such as are shown for the cylinder 18 in Fig. 3. A cylinder 26 works against the cutters 16, 19 and 22, and supports the web in passing therebetween.

Means are provided by the invention for removing the "chips" from the web, and conveying them away. The embodied form thereof comprises cylinders 30 and 31 cooperating together upon the cut or scarified web passing therebetween (Fig. 1). The embodied form thereof is shown in detail in Fig. 6, in which figure the cylinder 30 is shown recessed at 32. In said recess is a blade 33, pivotally mounted at 34, and spring pressed by a spring 35 against the wall of the recess 32, but being movable against the action of the spring 35. In the cylinder 31 is formed a recess 36, within which recess is a rocking clamping member or bar 37, which bar is carried upon a rock shaft 38, said shaft being mounted in the cylinder 31. The clamping finger 37 works against a face 39 of the recess 36. Fixed to the shaft 38 is an arm 40 having a cam roller 41. Coöperating with said roller 41 is a cam 42, conveniently mounted on the machine frame and a suitable spring 43 maintains the arm 40 and cam 42 in operative relation.

The manner of operation of the mechanism just described is substantially as follows:—

The blade 33 in its rotation engages the front end of the scarified but not completely detached chip, and separating the forward end of the chip, bends it downwardly against the face 39. The clamping finger 37 may be regarded as being in the open position as shown in Fig. 6. The cam roll 41 riding off from the cam 42 permits the clamping finger 37 to close upon the edge of the chip and to hold it firmly against the surface 39. As the cylinders 30 and 31 rotate, the chip now held by the finger 37 is completely severed from the web, the chip passing about the cylinder 31. The blade 33, as the cylinder rotates, moves against its spring 35, and passes out of engagement with the web, and rotates around to meet the next chip to be removed. The chip above referred to as being carried about the cylinder 31 is carried downwardly, referred to Figs. 1 and 6, until the cam roller 41 again engages the cam 42, when the finger 37 is opened and the completely severed chip drops from the cylinder 31, or is removed by a suitable stripping device (not shown).

Suitable means are provided for applying the transparent or translucent window strip to the main envelop web. In accordance with certain features of the invention means are provided whereby the window strip is fed from a web roll or other supply source at a slower speed to compensate for the difference in the required length of the window strip and of the corresponding envelop blank, and also means operating upon the cut window strip for speeding it up for attachment to the envelop blank in the running web. Thus there is no waste in the window strip, the variation in speed avoiding the cutting of waste portion of the window strip web. As embodied, rotary means are provided for this purpose. The window strip 50 is unwound from a roll 51 running between feed rollers 52 and 53. The embodied form of cutting means for the window strip 50 comprises a cylinder 54 having a cutter 55, which cutter is carried upon a detachable block 56, said block being mounted in the cylinder 54. The cylinder 54 may be adjustably mounted upon a shaft 57, if desired, by suitable means such as bosses 58 provided with clamping screws 59. A suitable cylinder 60 coöperates with the cutter 55, the window web passing therebetween. Preferably the cutter 55 works against the hardened surface of cyl-

inder 60, and the cut window strip is not completely severed, but is left so that the chip may be pulled or drawn away. Such a cut may be conveniently termed a scarification.

The embodied form of means for attaching the window strip to the blanked out and gummed envelop web and for speeding up the window strip to the speed of the envelop web, comprises an intermittent pinching or pressing cylinder 61, said cylinder having a cutaway portion 62, and an enlarged pressing or pinching surface 63. Coöperating with the cylinder 61 is a cylinder 64 over which runs the blanked out envelop web, the web being guided or directed thereto over roller 65, which roller may have its surface cut away to avoid contact with the paste on the web. By reason of the envelop web being gummed to receive the window strip before the window is cut, a clean, flat, uncurled edge is preserved around the window, and by running in the window strip dry it also is maintained clean and flat, and goes on cleanly and neatly.

The embodied form of means for speeding up and separating the partly cut portion at the end of the window strip web comprises gears 70 and 71, mounted to drive cylinders 54 and 61 respectively, and being connected by an intermediate 72. If the gears 70 and 71 are the same size, and cylinder 61 is larger than cylinder 54, cylinder 61 will speed up the window strip as desired. The difference in the running of the two webs also avoids any waste ends of the window strip, and the effecting of these operations on the running web saves time and increases the capacity of the machine.

The manner of operation of the mechanism just described and illustrated is as follows:—

The strip 50 is preferably scarified or partially severed by the knife 55, as already explained, and the lead end of the web 50 beyond the scarification or cut runs forward into the bite of the cylinders 61 and 64, which cylinders are running at the speed of the envelop web. The webs are so timed that the lead end of the window strip 50 will be pressed against the gum at the lead end of the corresponding window in the envelop blank, and as the cylinders 61 and 64 rotate, the partly separated end of the window strip will be completely severed from the strip, and will pass on adherent upon the envelop blank. A pair of ironing rolls 66 and 67 press the envelop blank and window strip smoothly together and serve to dry the gum. The blanked out envelop web, with the window strip attached in position thereupon then passes forward for the further completing operations thereupon until the separate and complete envelops are produced, and the mechanism for such further operations may be of any desired form and is not shown herein.

From all the foregoing it will be understood that a machine has been provided realizing the objects of invention and the advantages herein set forth, together with other objects and advantages.

It will also be understood that changes may be made from the illustrated and described form within the scope of the accompanying claims, without departing from the principles of the invention and without sacrificing its chief advantages.

This application is a division of my application Serial No. 831,490 filed April 13, 1914.

I claim—

1. An envelop making machine including in combination means for running a flat or unfolded web, means for applying paste circumjacent to the location of a window, means for cutting a window in the flat or unfolded running web within the applied paste, and means located beyond said cutting means at a later point for removing the window chip.

2. An envelop making machine including in combination means for running a flat or unfolded web, means for applying paste circumjacent to the location of a window, and means for cutting a window in the flat or unfolded running web within the applied paste and rotary means located beyond said cutting means at a later point for removing the window chip.

3. An envelop making machine including in combination means for running a flat or unfolded web, rotary means for applying paste circumjacent to the location of a window, rotary means for cutting a window in the flat or unfolded running web within the applied paste, and rotary means located beyond said cutting means at a later point for removing the window chip.

4. An envelop making machine including in combination a plurality of rollers coöperating with a running web, a pair of intermediate rollers applying paste in conformation for a window opening to the imperforate traveling web, a pair of rollers operating on the pasted web to cut a window opening within the applied paste upon the web, and window chip removing means operating on the web beyond the window cutting rollers.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JULIUS REGENSTEIN.

Witnesses:
L. C. Conklin,
E. G. Rice.