May 16, 1939. R. L. GRAY 2,158,233

ENVELOPE

Original Filed June 14, 1933

Fig. 1

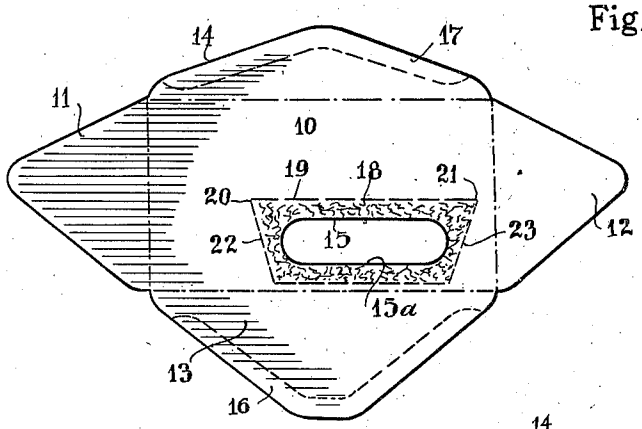


Fig. 2

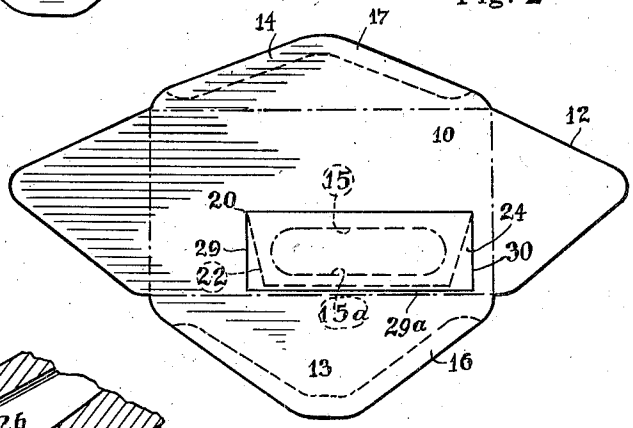


Fig. 3

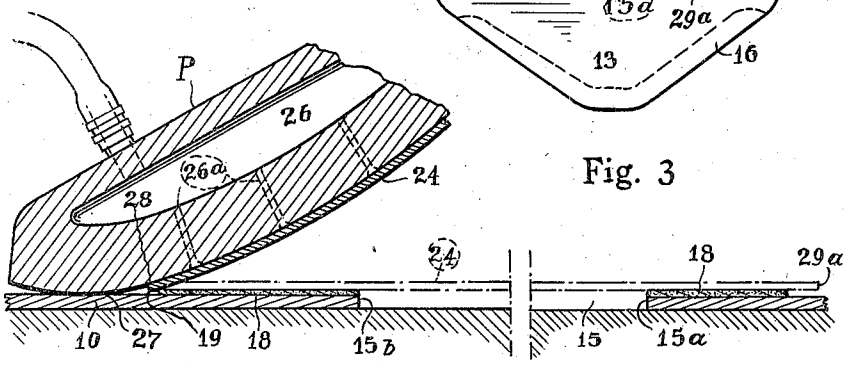
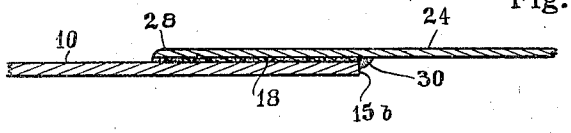


Fig. 4



WITNESSES:
Adalbert Hauser

INVENTOR.
ROBERT L. GRAY
BY J. F. Bessecches
his ATTORNEYS.

Patented May 16, 1939

2,158,233

UNITED STATES PATENT OFFICE

2,158,233

ENVELOPE

Robert L. Gray, Brooklyn, N. Y.

Original application June 14, 1933, Serial No. 675,689. Divided and this application December 11, 1937, Serial No. 179,251

8 Claims. (Cl. 229—71)

This invention relates to methods of making envelopes, and more particularly to a method for adhesively uniting a patch, comprising substantially transparent material over a cutout in an envelope blank to form window envelopes, or similar containers.

In the production of window envelopes of the two-piece type, which comprises an envelope blank of paper and the separately formed patch of substantially transparent material, existing methods for uniting the patch to the envelope blank comprises essentially, the application of a fluid adhesive between the patch and the envelope blank surrounding the cutout, the contacting of the patch to the envelope blank being followed by envelope forming operations in which folding over of back flaps and side flaps into envelope forming position substantially completes the envelope forming operations.

Existing methods as known to me which utilize previously formed envelope blanks having a window cutout formed therein, unite the patch to cover the cutout by steps comprising essentially the application of a small or limited quantity of wet adhesive to the envelope blank surrounding the cutout, and then overlying a patch of substantially transparent material to contact the same with the adhesive. By this method, the completion of the envelope follows immediately after the patch-applying steps. The application of moist adhesive is accomplished by an applicator or outlining die which limits the moist adhesive in spaced relationship from the periphery of the cutout and from the periphery of the patch. This method of application is not only one of convenience, but also one of necessity, in view of the fact that if greater quantities of adhesive are used, any attempt to align the patch with the outline of the adhesive that is applied, results in the extrusion of the adhesive beyond the periphery of the patch. Such excess material would result in adhesively uniting the side or back flaps to the front of the envelope. This limitation as to the distribution of the adhesive between the patch and the envelope blank results in an envelope in which loose edges are provided on the interior of the envelope which interfere with the insertion of material therein when the envelope is completely formed, and which is further objectionable in that there are formed loose peripheral edges around the cutout which are likely to snag other materials or envelopes sorted or handled at the same time. Any attempt to register the application of the film of adhesive with the edge of the patch have been unsuccessful, as the subsequent pressure for uniting the patch to the blank carrying the adhesive distributes the adhesive in an uncontrolled manner. While the use of a free-flowing adhesive is desirable in that the minimum amount of contact is necessary to locate the patch, the free-flowing characteristics of the adhesive have resulted in having the trade accept window envelopes of the two-piece type with this deficiency, at a sacrifice of efficiency in the use of the envelope, and notwithstanding the advantages involved in the production of a two-piece envelope from a separately formed blank and patch which permits any quality of paper to be used for the envelope blank and a more efficient and more highly transparent patch for the window part or patch thereof.

It is therefore a object of my invention to provide a method for adhesively uniting a patch comprising substantially transparent material, to a separately formed paper envelope blank by controlling the application of the adhesive necessary for uniting the patch to the envelope blank, to unite a peripheral edge of the patch to the blank without any loose edges which may interfere with the insertion of material into the completely formed envelope.

It is further contemplated as an object of my invention to provide a method for adhesively uniting a patch to an envelope blank, utilizing free-flowing adhesive material and to effect a union between the patch and the envelope blank by means of a free-flowing adhesive, operating under conditions registering a peripheral edge of the patch to the application of the film of adhesive material, whereby loose edges of the patch in the direction of the filling side of the envelope are avoided, and without the extrusion of extraneous adhesive which would otherwise prevent the rapid succession of operations following said patch-uniting operation and constituting the envelope forming steps which include folding over said patch so united, the envelope forming flaps.

It is a further object of my invention to provide a method for uniting a separately formed envelope blank including a cutout, utilizing a free-flowing adhesive, and unite a peripheral edge of the patch to the face of the envelope blank, or the peripheral edges of the cutout to the face of the patch, without any loose edges, by controlling the application of pressure to the peripheral edge which is united to the contacting face of the overlying web of material so as to cause the adhesive to flow away from the periphery edge at the time that pressure is applied for contact-

ing the adhesive interposed between the separate layers of paper and transparency.

To attain these objects and such further objects as may appear herein or be hereinafter pointed out, reference will now be made to the accompanying drawing forming a part hereof, in which—

Figure 1 is a plan view of an envelope blank at the initial step of the method;

Figure 2 is a similar view with a patch applied;

Figure 3 is an enlarged fragmentary, sectional view diagrammatically illustrating the pressing operation of the patch to the envelope blank;

Figure 4 is an enlarged sectional view of the joint resulting therefrom.

Making reference to the drawing, I provide an envelope blank 10, comprising side flaps 11 and 12 and back flap 13 and the usual sealing flap 14. This blank is provided with a cutout 15. A blank of this character is of the type usually employed in making window envelopes of paper, and in this condition is ready for the existing machinery for applying the patch to form a window envelope.

The preferred operation following the provision of the blank as thus far described, is the application of a film of adhesive 16 and 17 applied to the back flap and sealing flap, respectively. This film of adhesive is the one usually employed in the construction of envelopes and may be applied by applicators which limit the adhesive to an area around the peripheral portions of the flaps, in the customary manner. At this stage, I also apply adjacent the cutout 15, an application of a coating of adhesive 18. The applicator for this purpose outlines a substantially straight edge 19 adjacent the filling side of the envelope, which is adjacent the sealing flap 14.

Where, in the subsequent application of the patch as contemplated by me for forming a window envelope, the transparency is a patch of substantially rectangular shape, the film of adhesive 18 is made by the application which deposits a substantial trapezoidal outline, the extreme corners whereof, 20 and 21, are substantially the length of the patch to be applied. The lateral sides 22 and 23 taper sharply downwardly towards the bottom of the envelope. With the blank treated as thus described, and while the adhesive film 18 is still moist, a plunger or plate P carrying a patch 24 is brought into position so that the edge 28 thereof is brought into registry with the edge 19 of the film of adhesive 18. The patch is preferably of a length corresponding to the distance between the points 20 and 21, though it may be slightly longer than this dimension. The plunger or plate is brought into proximity to the blank 10 by a reciprocating action, and as in existing apparatus, serves to carry the patch by suction. As the plunger or plate reaches the supporting base carrying the blank 10, the suction is released from the chamber 26 and transferred in one form of the construction of the apparatus used to the supporting base for the blank 10 operating adjacent the cutout 15. Substantially simultaneously with this action, the plate or plunger first contacts the edge 28 of the patch 24 with the edge 19 of the film of adhesive 18, and at the point 27 on the blank 10. The plate or plunger P continues in its downward movement by a slight rolling action (or a slight canting action being employed for a flat face plunger), displacing the moist adhesive 18 from the point 19 towards the cutout 15. The rolling or canting action just described and the fact that the area between the point 27 and the edge of the patch 28 is substantially entrapped, will prevent displacement or extrusion of the adhesive in a direction beyond the edge 28 of the patch. As the rolling and pressing action continues, the adhesive 18 interposed between the patch 24 and the blank will spread in the direction of the rolling action. The outlines of the adhesive at the lateral sides 22 and 23 will flow to some extent, beneath the patch 24 adjacent the lateral sides 29 and 30, respectively.

However, the angular relationship of the lateral edges 22 and 23 of the adhesive are so chosen that any flow of the adhesive which occurs will remain within the boundary outlined by the patch 24 adjacent the lateral edges 29 and 30, and will not be extruded beyond the same.

The same rolling action presses the adhesive away from the lower edge 15*a* of the cutout, and the width of the patch 24 is positioned so that its lower edge 29*a* will more than cover any adhesive extruded in the direction of this edge. The edge 29*a* may hang loose and since it is positioned away from the filling side of the envelope, it will in no way interfere with the insertion of any material in a completely formed envelope. However, extending beyond any position which may be assumed by the adhesive film, it will not interfere with the subsequent envelope-forming operations.

By the pressing operation as just described, some of the adhesive may be extruded beyond the forward edge 15*b* of the cutout formed in the blank 10 to produce a fillet 30 at this point. However, this will not interfere with the handling of the envelope, as beneath the cutout 15 the supporting table is formed with sufficient clearance to avoid any adhesive contact of the adhesive formed by the fillet 30 with the supporting table for carrying out this operation. To further assure against any interference, by reason of this extruded material, the supporting table adjacent the cutout 15 may be provided with means for rapidly, completely or superficially dehydrating the small fillet of adhesive which is thus extruded, and for this purpose, heating means may be positioned adjacent this point. The attachment of the patch as thus described permits the use of a free-flowing adhesive with the obvious advantages that very slight contact is necessary and thereby permitting a high order of speed of operation. The control of the flow of the adhesive all within the periphery of the patch permits the envelope-forming operations to follow immediately thereafter, so that the side flaps 11 and 12 and the back flap 13 may be folded over into envelope-forming position, while the adhesive uniting the patch is still moist, without danger of connecting the back of the envelope thus formed from the flaps 11, 12 and 13, to the front face of the envelope blank which carries the patch. It will thus be observed that I have provided a method for uniting the patch to the envelope blank, in which the adhesive adjacent the periphery edge of the patch nearest to the filling side of the envelope and the patch may be brought into registry with each other, without fear of extruding the adhesive beyond the edge of the patch, by reason of the rolling action in pressing the edge of the patch into position, and I consider it within the scope of my invention to adhesively unite two materials in face contact wherein the periphery or edge of one material contacts the face of another by the rolling and pressing operation heretofore described, wherein the interposed film of free-flowing adhesive is caused to flow away from the edge of the materials united.

While I prefer by my process to register a periphery of the patch adjacent the filling side of the envelope with an application of normally moist adhesive applied to the envelope or container blank, to adhere the patch to the envelope or container blank without loose edges interfering with the filling of the envelope or container adjacent the filling side, a moist condition of adhesive may be similarly used on the patch of transparent or translucent sheeting; and while either of such practices may be adopted as the preferred practice, it is contemplated by me to also or alternatively seal the periphery of the cutout in the envelope blank and container to the overlapping patch to avoid loose edges at the periphery of the cutout. Under such procelure, where it is found for mailing or handling purposes, that the sealing of the peripheral edges of the cutout to the patch is a desirable feature, the above entitled procedure may include uniting the paper or container surface adjacent a peripheral edge of the cutout to the surface of the overlapping patch. Under such condition of operation, the adhesive in the moist condition is applied to the surface of the paper forming the envelope blank or container adjacent the periphery of the cutout or that portion of the paper or container blank outlining the cutout. Upon overlying the patch or sheet of transparency, such as "Cellophane" or glassine paper or substantially simultaneously therewith the pressure for uniting the patch begins adjacent the cutout peripheries and the distributing pressure continues away from the peripheries of the cutout in the continuous application of the pressure. Such action serves to partially flow the moist adhesive away from the cutout to the overlap between the patch and fabric of the envelope, blank or container. The amount of adhesive used is to confine the adhesive within the confines of the patch.

My invention, in its broader aspects, therefore has as one of its objectives, the adhesion of a peripheral edge of fabric of the character set forth, to an overlapping sheeting by the use of an adhesive film in a moist condition, which includes pressing the two sheets in position with the interposed adhesive in a moist condition, the pressure being progressively applied from a point beginning at the periphery and then for a certain distance away from the periphery to distribute the adhesive away from the periphery rather than extrude the adhesive in moist condition beyond the periphery, which may objectionably accumulate the adhesive.

While I have described my invention in its preferred embodiment, as applied to a separately formed patch and envelope blank containing a cutout in which each of these sheets is separately formed, I consider my invention to have a wider application, all coming within the scope of the appended claims.

This application is a division of my application Serial No. 675,689, filed June 14, 1933, now Patent No. 2,101,847, granted December 14, 1937.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent is—

1. A window envelope comprising a separately formed envelope blank and separately formed patch overlying a cutout, said patch being adhesively united to the envelope blank by a film of adhesive from an edge of the patch adjacent the filling side of the envelope, the film uniting the patch progressively decreasing in area towards the cutout portion.

2. A window envelope comprising a separately formed envelope blank including a cutout and a separately formed patch, said patch being adhesively united to the envelope blank along the rectilinear line adjacent the filling side of the envelope without any loose edges, the adhesive film uniting the patch to the envelope blank extending from a peripheral edge of the patch adjacent the filling side of the envelope in decreasing amounts within the confines of the patch in a direction towards the cutout.

3. A window envelope comprising a separately formed envelope blank including a cutout, a substantially transparent patch overlying said cutout and forming an overlapping portion, said overlapping portion adjacent the filling side of the envelope being united to the envelope blank from a peripheral edge without any loose edges the adhesive film being insufficient to completely unite other overlapping portions of the patch.

4. A window envelope comprising a separately formed envelope blank including a cutout, a substantially rectangular patch overlying said cutout, the peripheral edge of said patch adjacent the filling side of the envelope being adhesively united to the envelope blank without any loose edges by an adhesive film, the film being interposed between said patch and envelope blank in diminishing quantities extending within the confines of the patch from the peripheral edge towards the bottom of the envelope.

5. A container of the window envelope type comprising a separately formed container blank including a cutout, a substantially transparent patch overlying said cutout, said patch being adhesively united to the container blank by a film of a water soluble adhesive from a peripheral portion of the patch adjacent the filling side of the container, the film uniting the patch leaving lateral peripheral portions of the patch free.

6. A windowed container of the envelope type comprising a separately formed blank having a cutout and a separately formed patch overlying the cutout, said patch being adhesively united to the blank to overlap the cutout by a film of a gum adhesive, uniting the patch from a peripheral edge thereof adjacent the filling side of the container substantially throughout a rectilinear line without any loose edges, the adhesion between the patch and the blank at lateral peripheral edges of the patch being confined to leave said lateral peripheral edges of the patch unsealed.

7. A windowed container of the envelope type having a filling side comprising a separately formed blank having a cutout and a separately formed patch of substantially transparent material overlapping the cutout, said patch being adhesively united to the blank within the area defined by the overlapping portion by a film of gum adhesive uniting the patch to and from a substantial portion of the peripheral edge of the patch adjacent the filling side of the container without any loose edges adjacent the filling side of the container which may interfere with the filling of said container, the adhesion between the patch and the blank adjacent lateral peripheral edges of the patch being confined short of said peripheral edges, leaving said lateral peripheral portions of the patch free and unsealed and into which unsealed portions excess adhesive may collect.

8. A container of the window envelope type comprising a separately formed container blank including a cutout, a substantially transparent

patch overlying said cutout; said patch being adhesively united to the container blank by a film of adhesive which is the residuum of an adhesive in a volatile vehicle; said film being interposed between the patch and the container body and lying from a peripheral portion of the patch adjacent the filling side of the envelope and encompassed by the area covered by said patch, uniting the patch to leave lateral peripheral portions of the patch free, the film of adhesive being insufficient to extrude beyond the edges of the patch at the lateral peripheral portions of the patch.

ROBT. L. GRAY.