April 23, 1940. R. L. GRAY 2,198,246

WINDOWED ARTICLE AND METHOD OF MAKING THE SAME

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Fig. 1.

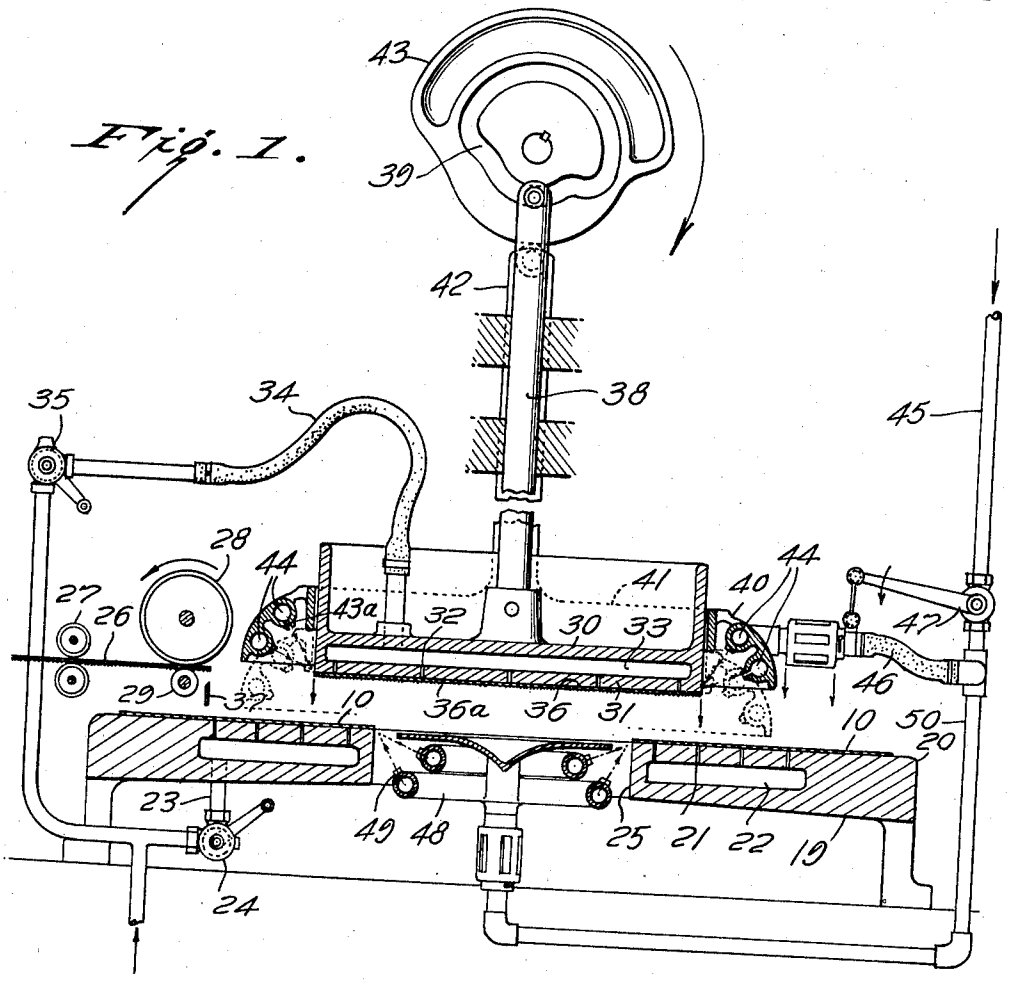
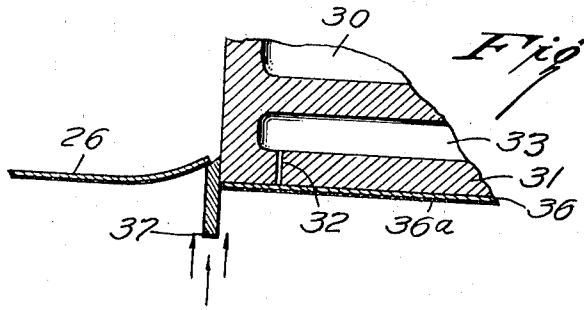


Fig. 2.



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WINDOWED ARTICLE AND METHOD OF MAKING THE SAME

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Fig. 3.

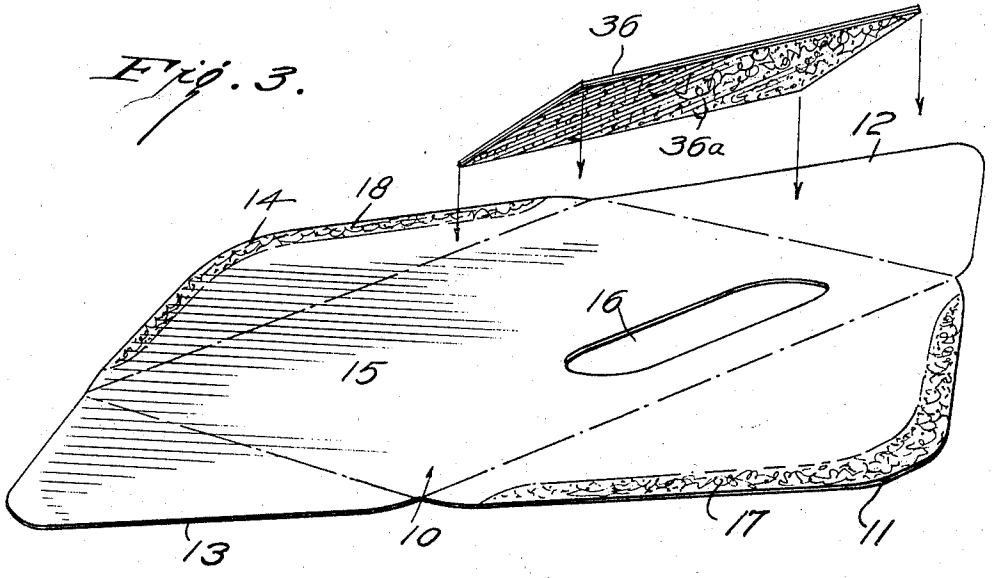


Fig. 4.

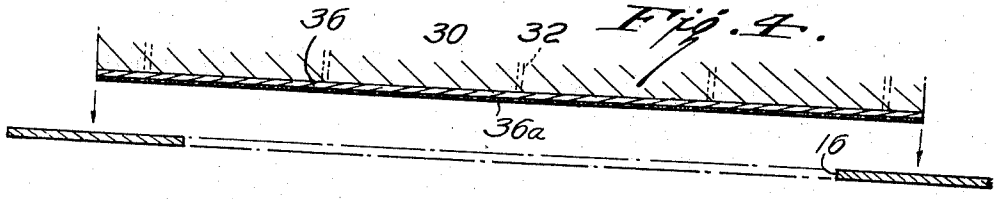


Fig. 5.

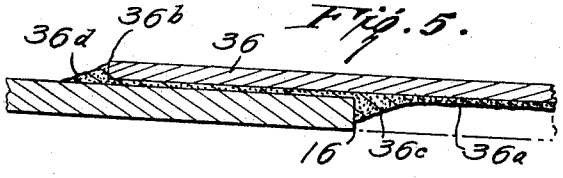


Fig. 13.

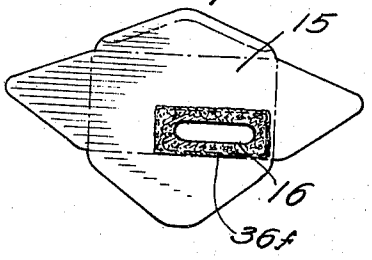


Fig. 11.

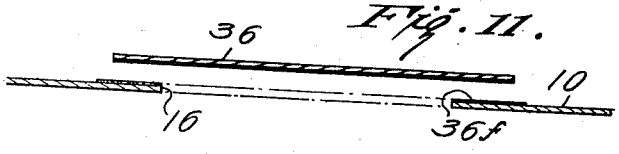
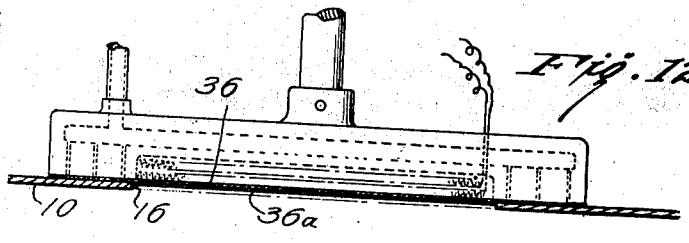


Fig. 12.



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WINDOWED ARTICLE AND METHOD OF MAKING THE SAME

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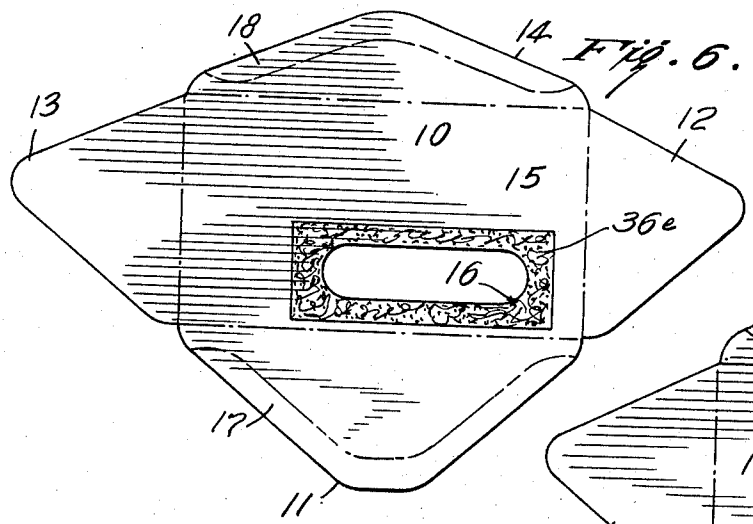


Fig. 6.

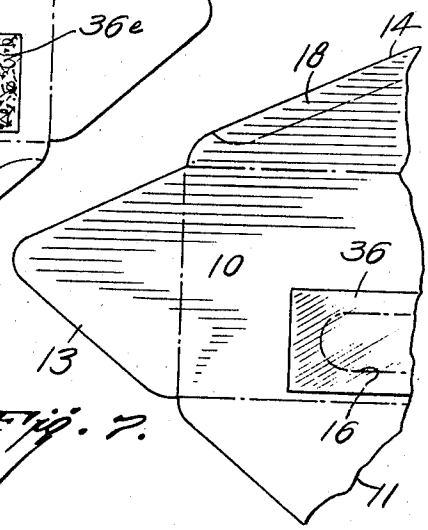
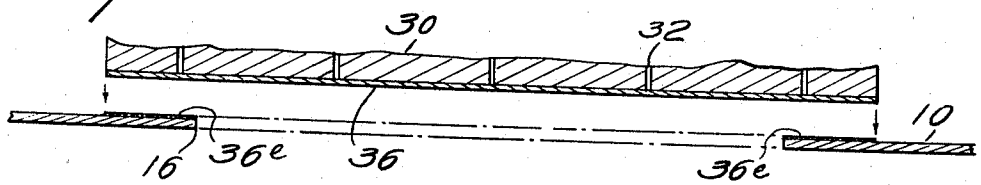


Fig. 7.

Fig. 8.



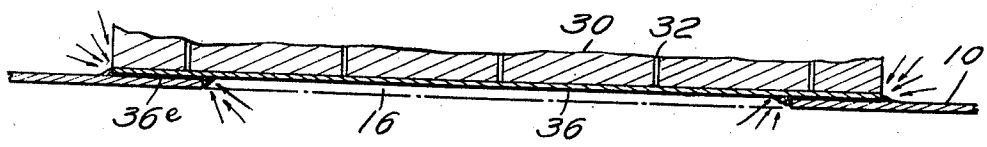


Fig. 9.

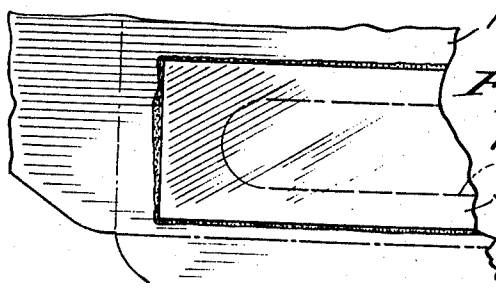


Fig. 10.

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WINDOWED ARTICLE AND METHOD OF MAKING THE SAME

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Fig. 14.

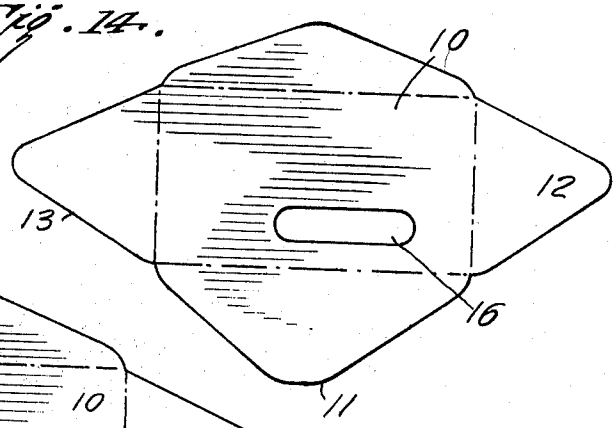


Fig. 15.

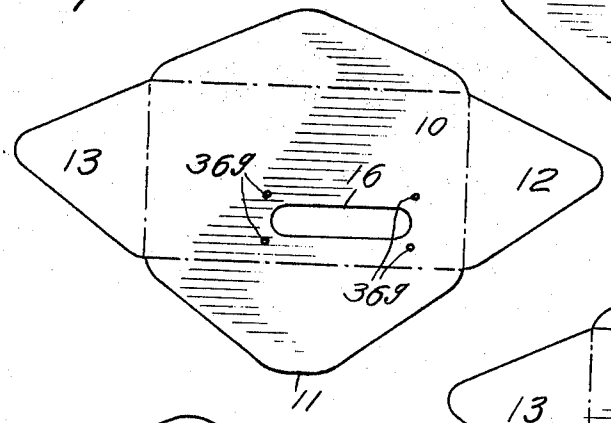
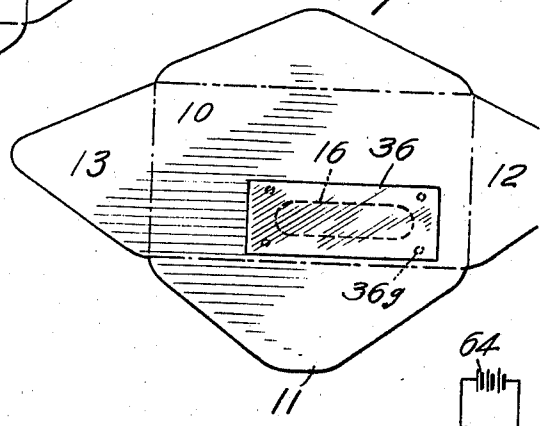


Fig. 16.



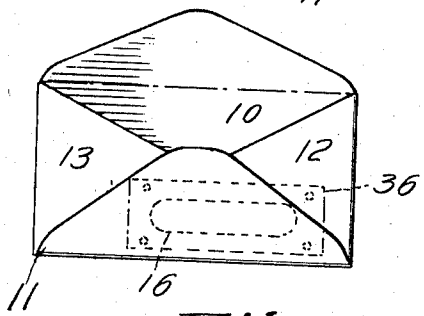


Fig. 17.

Fig. 18.

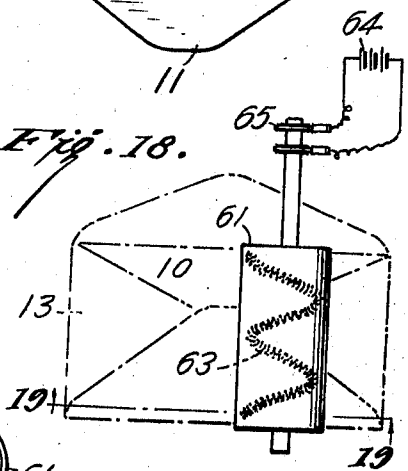
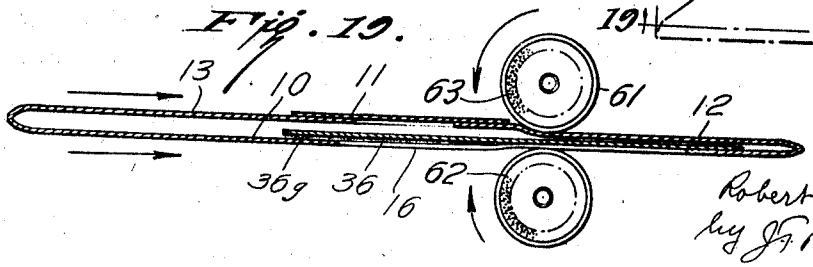


Fig. 19.



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Patented Apr. 23, 1940 2,198,246

UNITED STATES PATENT OFFICE

2,198,246

WINDOWED ARTICLE AND METHOD OF MAKING THE SAME

Robert L. Gray, Brooklyn, N. Y.

Original application June 14, 1933, Serial No. 675,688. Divided and this application December 11, 1937, Serial No. 179,252

19 Claims. (Cl. 93—61)

This application is a division of my application Serial No. 675,688, filed June 14, 1933, now matured into Patent Number 2,129,686, patented September 13, 1938.

This invention relates to a method for forming window envelopes and resulting products.

My invention is directed to the production of window envelopes of the so-called two piece type, in which the envelope body comprises a blank made of substantially opaque paper of any character, in which a cut-out is formed on the face and a separately applied patch serves as a transparent closure for this cutout, through which an addressee's name may be visible. The two piece type envelope may be generally referred to as preferable to a one piece envelope in which transparency or translucency is obtained at a window portion. This translucency is obtained at any predetermined portion of the envelope by oiling or impregnating segregated portions of the envelope. This operation requires the choice of a particular type of paper to receive the impregnating material which renders the paper translucent. Such paper usually is of thin and absorbent character, and of a texture sufficiently fine to make the paper amenable to a saturating process. The requirement to use a paper having these absorbent characteristics not only limits the choice of the paper but further requires that the non-translucent portions be further treated to make the same more opaque.

In methods heretofore known to me for affixing a patch to an envelope blank in making a two-piece type of window envelope, the apparatus most efficient for this purpose utilizes a paper blank in which envelope forming flaps and sealing flaps are predeterminedly formed defined thereon. The patch uniting operations usually include applying wet adhesive to the body of the envelope blank surrounding the cutout, followed by an operation which contacts the patch to the envelope blank. Simultaneously with, or following this operation, the envelope forming flaps are folded into position over the portion forming the face of the envelope and that which carries the patch. The rapid succession of these steps, particularly that which involves the envelope forming step and the folding over of the envelope forming flaps requires that special care be exercised to avoid the presence of any adhesive used in uniting the patch to the envelope blank beyond the confines of the patch. Otherwise, in the envelope forming steps simultaneous with or immediately following the pressing of the patch in position, this excess adhesive will unite the front and the back of the envelope to each other. This requirement, as well as the inability to limit the adhesive to within the confines of the patch and the confines of the cutout, has resulted in the adjustment of the apparatus for uniting the patch to the envelope blank by means which involve the application of wet adhesive to the minimum area defined by the section of the patch which overlaps the cutout of the envelope. This has resulted in providing loose edges on the interior of the envelope which interfere with the insertion of material therein and loose edges surrounding the cutout at the exterior of the envelope, which interfere in sorting or arranging the envelopes for mailing purposes, objectionable to the extent that a corner of one adjacent envelope may be snagged by these loose edges surrounding the cutout as well as providing a weakened union.

It is therefore an object of my invention to provide a method for making window envelopes of the so-called two piece type, which includes adhesively uniting a patch over a blank from which an envelope may be formed, utilizing adhesive extended over the contacting surfaces outlined by the portion at which the patch overlaps the cutout, to adhesively unite the peripheral portions of the patch which may interfere with filling of the envelope and/or the surface portions of the patch adjacent the peripheral edges of the cutout or adhesively uniting the parts at least co-extensive with a peripheral edge of the patch at that edge which may interfere with the insertion of material in the completely formed envelope and/or co-extensive with the cutout defining the window, utilizing normally moist adhesive, and altering the character of the adhesive so that the envelope forming operations may immediately follow the patch uniting operations.

It is a further object of my invention to provide a method for forming a two piece type of window envelope in which a patch comprising substantially a transparency, is united to an envelope blank including a cutout by interposing a free flowing adhesive between the patch and the envelope and during the uniting of the patch to the envelope blank, distributing the adhesive so that it is co-extensive with an edge of the patch which may interfere with the insertion of material in the finally formed envelope and/or the cutout defining the window to avoid any loose edges at this point, and to render said adhesive so used inactive at any excess portion before completing the envelope forming operations com-

prising folding envelope forming flaps over the face of the envelope carrying the adhesively united patch.

Still further objects of my invention reside in the provision of a method of forming a two piece type of window envelope which includes separately forming a patch formed of substantially transparent material and uniting the same to a separately formed envelope blank, including a cutout, by interposing between the patch and the envelope blank a free flowing adhesive, the adhesive being supplied in a film in excess of the peripheral edges of the patch and/or the cutout, followed by alteration of the adhesive to render the same inactive, and then followed by steps for the completion of the envelope forming operations to speedily and economically complete the production of a two piece type envelope while producing an article which includes a peripheral edge thereof united to the envelope blank free from interference in inserting material into the completely formed envelope and/or in which the peripheral edges of the cutout are securely united to the patch, to avoid any objectionable loose edges at the exterior of the envelope.

Still further objects of my invention reside in the provision of a method for forming window envelopes comprising a separately formed, substantially transparent patch material and a separately formed envelope blank in which the patch is intimately united to the envelope blank over the cutout, and one or more peripheral edges of the patch are united to the blank and/or the peripheral edges of the cutout are united to the patch to form smooth and continuous edges, avoiding any interference in the use of the envelope in filling the same, or exteriorly thereof in handling the envelope.

Other objects of my invention reside in the provision of apparatus for the uniting of a separately formed patch to an envelope blank including a cutout whereby a free flowing adhesive may be used to effect a union and the adhesive interposed between the patch and the envelope blank, with such excess as will avoid loose edges on the interior or exterior thereof.

It is further contemplated as an object of my invention to provide apparatus adapted to be used as part of an envelope forming machine, and which includes means for applying a separately formed patch of a substantially transparent material to an envelope blank including a cutout, the mechanism providing means for the utilization of a free flowing adhesive and the distribution of the adhesive in relationship to the overlap which the patch makes over the cutout, to avoid any loose edges adjacent a peripheral edge of the patch and/or the peripheral edges of the cutout, the mechanism further including coordination of the means for performing the operations for uniting the patch to the envelope blank so that the envelope forming operations may be substantially simultaneously coordinated therewith, or follow in rapid succession thereafter.

Other objects of my invention reside in the provision of apparatus which may act as an accessory to envelope forming mechanism whereby window envelopes may be efficiently and economically produced, in which a patch comprising a transparency is united to an envelope blank without any objectionable loose edges interiorly or exteriorly thereof.

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

Figure 1 is a fragmentary, longitudinal, sectional diagrammatic view of my apparatus;

Figure 2 is a fragmentary, sectional view showing the patch severing mechanism;

Figure 3 is an enlarged perspective view of an envelope blank and patch illustrating my method;

Figures 4 and 5 are enlarged fragmentary views illustrating the method at different stages;

Figures 6 and 7, respectively, are a plan view and a fragmentary plan view of an envelope blank forming another embodiment of my invention;

Figures 8 and 9 are fragmentary sectional views illustrating the successive stages of another embodiment of my invention;

Figure 10 is a fragmentary plan view of a window envelope as made by the embodiment illustrated in Figures 6, 7, 8 and 9.

Figures 11 and 12 are fragmentary sectional views illustrating another embodiment of my invention;

Figure 13 is a plan view of an envelope blank before union of the patch thereto in accordance with the method illustrated in Figures 11 and 12.

Figures 14, 15, 16 and 17 are diagrammatic views illustrating another embodiment of my invention, showing the progressive steps thereof;

Figure 18 is a diagrammatic plan view of apparatus for completing the patch uniting process;

Figure 19 is a section taken on the line 19—19 of Figure 18.

For a clearer understanding of my invention, in my preferred practice in the production of window envelopes, it is contemplated by me to utilize the features constituting the novel method and apparatus as part of envelope making machinery known on the market as either a two-station or three station machine. This machinery is referred to merely for purposes of simplifying the consideration of this invention and it is not intended as a limitation upon the applicability thereof.

In envelope making machines of the character referred to as the three station machine, the following series of steps is performed:—a stack of envelope blanks 10, of the character illustrated in Figure 3, constituting a back flap 11, side flaps 12 and 13 and a sealing flap 14, formed at the face 15, with a cutout 16, is fed to a position where the back flap 11 and sealing flap 14 have applied thereto thin applications of adhesive 17 and 18, respectively. At this stage also, the existing methods include applying to sections surrounding the cutout 16, a thin film of adhesive. From this first station as described, the envelope blank is picked up and travels to the second station. At this second station, there is provided means for feeding a thin sheet of glassine paper or similar transparency. This sheet is fed to a suction plunger of predetermined configuration, depending upon the size of the patch to be applied. The plunger temporarily holds the patch and in its downward movement, presses against the envelope blank which has been moved immediately thereunder. As the plunger brings the patch in contact with the envelope blank immediately over the window cutout, the suction holding the patch to the plunger is released and the patch thereby transferred to the envelope blank. Following this operation, the blank now carrying the patch moves to a third station, wherein the envelope forming operations are performed and consist of folding the side flaps 12 and 13 and the

back flap 11 over the front face 15. Additionally, also, the sealing flap 14 is folded to lie closely over the envelope, the restriction being to avoid contact of the fresh adhesive 18 forming the seal with the remainder of the envelope.

In the two stage machine, the application of the adhesive to the back flap and sealing flap and adjacent the cutout is performed substantially the same as in the three stage machine. In the two stage machine, operations performed at stations numbered two and three in the machine first described, are performed substantially at one location or station, and to this extent differs from the three stage machine. Thus, at one location or station, the patch applying plunger continues in its movement and cooperates with other mechanism for folding the side flaps, back flap and sealing flap, substantially completing the envelope forming operations.

I will now describe such portion of my new apparatus which includes my new assembly and which is particularly applicable to the three-station machine for making window envelopes.

In Figure 1, the assembly illustrated is that which is disposed adjacent the second stage of the three-station machine, the variation being merely that in the first stage, the application of the adhesive surrounding the cutout may be omitted. In the apparatus illustrated in Figure 1, the blank 10 is brought in position upon a table 19, the face of which, 20, is provided with orifices 21 connected with a common chamber 22. This chamber is in turn connected with a pipe line 23 leading through a main suction chamber (not shown) and controlled by a valve 24. As the blank 10 is deposited upon the table 19, coordinated mechanism controls the valve 24 so as to connect the suction line and thereby hold the blank 10 in position. The table 19 is provided with a central opening 25 and the positioning of the blank by the mechanism provided therefor is arranged to align the cutout 16 over the opening 25. Immediately overlying the table 19, there is provided means for feeding a strip of glassine paper 26, of similar transparency, such as Cellophane (regenerated cellulose sheets), nitrocellulose, acetyl cellulose or combined films thereof. Guide rolls 27 feed the strip through oppositely disposed rolls 28 and 29, adjacent which point a solution of adhesive is applied to the underface of the strip 26 for the full area thereof. The strip so treated is then fed to the plunger 30, the face whereof, 31, is provided with suction orifices 32 connected with the chamber 33, operated by the suction line 34, and controlled by the valve 35. The valve 35 is so timed that upon leaving of the strip 26 from the rolls 28 and 29 respectively, the plunger will pick up a section or patch 36. In the downward movement of the plunger, the latter cooperates with a knife 37 more clearly shown in Figure 2, to sever the patch 36 from the remainder of the strip, whereupon the remainder of the strip and knife 37 retract out of the position to permit the plunger to continue its downward movement, carrying with it the patch 36 and the application or coating of the adhesive 36a.

The plunger 30 is connected to the shaft 38 and is operated for reciprocation by the cam 39, which in turn is rotated by suitable driving means (not shown).

Surrounding the plunger 30 there is provided a heater housing 40 connected by a saddle 41 to a tubular shaft 42 concentric with the shaft 38, previously referred to. The shaft 42 is reciprocally operated by the cam 43. The cams 39 and 43 respectively, are so adjusted as to independently reciprocate the plunger 30 and the heater housing 40 and move the same over the table 19. However, they are timed so that the plunger "leads" the heater housing 40 in reaching the maximum downward displacement.

The plunger 30 carrying the patch 36 reaches the maximum displacement downwardly to intimately contact the patch upon the envelope blank 10. As care has been exercised to apply the adhesive 36a to the full peripheral edges of the patch, the pressure exerted by the plunger will displace some of the adhesive 36a interiorly of the cutout 16, beyond the peripheral edges 36b, to form fillets 36c and 36d, respectively, as will be more clearly apparent from an inspection of Figure 5. At this moment, the heater housing 40 is downwardly displaced adjacent the lowermost position of the plunger 30. This heater housing comprises a plurality of openings 43a connected with ducts 44 leading to a gas-line 45 and through the flexible tubing 46. The gas-line is controlled by the valve 47 to obtain the minimum amount of gas sufficient to provide a pilot light at the openings 43a in the uppermost position of the heater housing 40. As the heater housing descends to the position shown in dotted lines in Figure 1, the valve 47 is opened to the maximum position to increase the flame. The openings 43a are so adjusted to direct the flame towards the fillet 36d to instantly heat the same and dehydrate it at least partially to render the same adhesively inactive at their surfaces. The action is timed to be almost instantaneous and the amount of heat so projected upon the fillet 36d is insufficient to in any way scorch or modify the paper. Within the opening 25 of the table 19 I may also provide heaters 48 having openings 49. The relative positioning of the openings 49 are such as to direct heat in the form of jets of flame, or similarly effective means towards the edge of the cutout 16 to reach the fillet 36c which may have been formed. The supply of gas to the heater 48 is controlled by the line 50 also controlled by the valve 47 previously referred to, and is such that when the plunger 30 is in the upper position, a pilot light is maintained at the orifice 49. However, immediately following the application of pressure by the plunger 30, and at the point where the adhesive 36a is extruded into the cutout 16, the flame through the orifice 49 is increased for a short period to also effect the dehydrating action upon the fillet 36c. It will be understood that though I have described and illustrated the use of gas heat for accomplishing the dehydrating action, other means may be utilized such as radiant heat, a blast of air which may also be heated, or similar or other equivalent dehydrating means. The series of steps just described serve to unite the patch 36 to the blank 10 at substantially the entire contacting area of the patch and blank, uniting the peripheral edges of the patch, as well as uniting the patch to the peripheral edges of the cutout. The extruded adhesive 36c and 36d serves to provide a continuous surface both to the interior and exterior of the envelope formed in the subsequent operations. Upon union of the patch and the envelope blank as just described and by the dehydrating action to which the adhesive has been subjected, the blank carrying the patch may then pass to the third stage of the envelope forming process. Here, the side flaps are first folded down over the face 15 of the envelope and

the back flap 11 contacted therewith to hold the same in position by the uniting action of the film of adhesive 17. This substantially comprises the main stages of the envelope forming operations and may immediately follow the patch applying operation just described. The contacting of any portions of the side flaps and back flaps over the patch on the interior of the envelope may, as a result of the dehydrating step previously described, be accomplished without uniting the front face and the rear face of the envelope to each other.

In such phases of my process as just described, wherein the patch 36 is given a continuous coating 36a of adhesive material which may be exposed through the cutout 16 of the envelope blank 10, this will also be subjected to a certain amount of dehydrating action by reason of the position of the heater 48, as previously described. For further assuring the presentation of a surface which does not become tacky when handled, it is preferred by me to include in the adhesive used, ingredients which have an insolubilizing action upon the glue, where this is used as the adhesive. Thus, in the preparation of the adhesive used by the applicator roll 29, quantities of formaldehyde, potassium chromate or similar ingredients which insolubilize glue or render the same less tacky to the touch may be added to the glue solutions used.

In the embodiment just described, the adhesive necessary for uniting the patch to the envelope blank is interposed between the patch and the adhesive blank by applying the same to the transparent patch.

In another embodiment of my invention as specifically illustrated in Figures 6 to 10, the operations may be changed so as to first apply the adhesive to the envelope blank and leaves the transparent patch untreated. Referring to Figures 6 to 10, it will be observed that in these embodiments of my invention, the blank 10 may be treated at the first stage so as to apply to the back flap 11, the film of adhesive 17, and to the sealing flap 14, the film of adhesive 18. At this application, applicator rolls may be provided to apply to the face 15 immediately surrounding the cutout 16, a film of adhesive 36e. The outline of this film of adhesive is calculated to be in excess to be substantially the same or greater than the area of the patch.

While it is preferred to attempt to obtain registry of the outline 36e with that of the patch 36, the operation otherwise is substantially the same as that previously described in the embodiment illustrated in Figures 4 and 5. The patch 36 is pressed into engagement with the envelope blank 10 carrying in this embodiment, the film of adhesive 36e. The pressure of uniting the patch to the blank 10 will serve to extrude a portion of the free adhesive beyond the periphery of the patch and to within the cutout 16 of the envelope blank forming fillets within the periphery of the patch and adjacent the edge of the cutout 16. Surface or complete dehydration of these fillets or any other excess adhesive, may be accomplished by suitable dehydrating means as in accordance with the apparatus previously referred to and described in connection with Figure 1.

It will be understood that in illustrating this construction and the showing of the fillets, these are greatly exaggerated for purposes of more clearly illustrating the invention, but in actual size, they are very minute and will in no way interfere with the appearance or flexibility of the product. It will also be understood that while the gum material used in any of the preceding embodiments, whether this gum is applied to the surface of the transparent patch or to the surface of the envelope blank, is of the character which is active in the presence of moisture, upon dehydration it will exhibit properties inactive to the touch or the natural moisture of the fingers in handling the same. This I may accomplish by proper alteration of the constituents of the gum. I may augment this inactive property in the finally dehydrated stage by including in the moistening fluid an insolubilizing agent, such as aldehyde products, formaldehyde, acids, such as chromic acid or potassium chromate compounds.

While I have described in connection with the embodiments illustrated in Figures 1–5, the use of a strip of transparency to which, just prior to union of the patch to the envelope blank there may be applied a coating of adhesive material for the complete area of the transparency, the applicator for this purpose may be one which limits the application of the adhesive to the area substantially adjacent the periphery of the patch, excluding any application of adhesive to the patch which eventually overlies the cutout. While I may start with a transparent strip which has no coating, the same being fed to the apparatus from a continuous roll and severed at the time of application, I may use a strip of transparency supplied as a continuous sheet in a roll, which has a normally dry coating of adhesive material which is heat plastic or may be activated to adhesiveness by the use of a solvent. Such material as I may use is referred to in my prior filed application, Serial No. 565,038, now Patent No. 2,072,875, granted March 9, 1937. Thus, the transparency may be glassine paper of a high state of translucency, approaching transparency, having a gum coating or a coating of nitrocellulose or a transparent film of regenerated cellulose, such as Cellophane, having a coating of gums or resins and waxes in combination with nitrocellulose, or a film of material inherently heat plastic, such as nitrocellulose or cellulose acetate, properly plasticized by the inclusion of a plasticizer, and this film or coating preferably being on one face only of the transparency. Where using such patch forming stock of the character described, I prefer to combine the method heretofore described with that used in my aforementioned co-pending application.

In this embodiment of my invention, the transparency carrying the normally dry adhesive coating is positioned over the envelope blank, which blank has first been treated with a solvent for the adhesive coating, and the union of the patch to the envelope blank over the cutout is effected by heat and pressure in the presence of the solvent for the adhesive coating. To assure the presence of sufficient solvent material, the application of the solvent is preferably in the form of a paste or gelatinous mass, the gelatinous mass being of fugitive character. The ingredient which gives the solvent the pasty characteristic is present in such minute quantities as to add substantially no objectionable properties to the interior of the envelope when it has dried.

For a clearer understanding of this embodiment of my invention, reference will now be made to Figures 11–13. In this embodiment, there is provided a sheet of transparent or translucent material, such as glassine paper, carrying normally dry transparent adhesive or waterproofing coat-

ing of the character referred to in my prior application and hereinabove briefly mentioned and preferably said coating being on one side only of said transparent or translucent sheet. The apparatus which may be used may include the heated plunger in accordance with my aforementioned application. An envelope blank 10 is moved into position upon the apparatus to a point where an applicator provides a coating 36f of a paste comprising a solvent. This paste coating is applied over the surface 15 of the envelope blank surrounding the cutout 16, for an area substantially greater than that covered by the patch 36 carrying the normally dry adhesive coating. At this stage of the operation, the patch is pressed into contacting position with the envelope blank while heat is applied. With an extremely active solvent forming the coating 36f, pressure alone may be used, though the combination of heat and pressure is preferred. Otherwise, in all respects, this procedure is similar to the procedure outlined in my co-pending application aforementioned.

The application of heat and pressure serves not only to activate the adhesive coating to plasticity but the paste coating 36f further activates the same, and with greater speed of reaction. The presence of the heat disseminates the adhesive into the paper and merges the contacting edges into an extremely intimate bond or weld. This variation permits of higher speeds of operation in applying the patch and the time element necessary for pressing the patch into position may be reduced to the minimum.

The effect of the heat will also serve to diffuse the solvent constituent in the paste, leaving a residuum too minute in quantity to be observable or objectionable.

Where I use a sheet of transparency having a glue or gum adhesive coating of normally dry character, the paste coating 36f is made from a paste obtained by whipping small quantities of soap and water, and using the thick lather so produced. Where the transparency carries an adhesive or waterproof coating which is soluble in organic solvents, the solvent medium may be acetone, ethyl acetate, amyl acetate, mixed-solvents of high boiling and low boiling characteristics, depending upon the nature and character of the waterproofing coating. Where nitro-cellulose is used as the waterproofing coating or as an ingredient of the waterproofing coating of the transparency, such as glassine paper, coated on one side with a nitro-cellulose base material, the solvent may be ethyl or amyl acetate or the cellosolve solvents, such as ethylene glycol mono-ethyl ether, ethylene glycol mono-methyl ether mono-acetate (methyl cellosolve acetate) or ethylene glycol mono-methyl ether (methyl cellosolve). The ethylene glycol acetates may also be used. The solvents may be formed into a paste or lather with difficultly soluble gelatinized nitro-cellulose or soaps, or such materials comprising minute quantities of gel or body imparting materials so that the activator may be applied as a smear. Such preparations are similar to a gel, plastic or semi-solid fuels, of which Sterno is an example.

One essential characteristic of the waterproofing coating activating paste in the nature of solidified fuels is that it has an organic solvent as its principal constituents, which solvent rapidly activates to adhesiveness the waterproofing coating. A certain degree of tackiness of temporary character sufficient to assist in transferring the patch from the plunger carrying it and also to retard the volatilization of the solvent, is another desirable characteristic. A wetting action of the paste or solvent of the paper and a merging of the waterproofing adhesive on the transparency with the paper under the heat of the plunger to reduce the time of the uniting operation as well as the intimacy of the bond is also another essential characteristic.

While I prefer to apply the coating 36f in the form of a paste in that greater quantities of this material may be added and the film thereof persist for a sufficient period of time to activate the normally dry adhesive coating of the transparency, when this comes in contact therewith, it will be understood that the coating 36f may be the solvent itself, but this is not as desirable.

In choosing the solvent or the solvent paste which is to be applied as the coating 36f, attention is to be given to the nature of the paper forming the envelope 10 and the sizing carried thereby so as not to alter the same by reason of its use, and an intimate knowledge of the nature of the paper used, to take these factors into account, is desirable.

At this point, it may be noted that the procedure described immediately above may include, as part of the activating solvent, a film forming material, such as nitro-cellulose and a plasticizer or cellulose acetate and a plasticizer, and is applied in suitable solvents which are also activating materials for the normally dry adhesive coatings, covering the transparency. These film forming materials are not active adhesives for the paper itself except under the action of heat, which serves to disperse the film forming material into the pores of the paper. When the pressure is applied to the patch by the plunger in the presence of heat, the action is to activate the adhesive coating on the patch and merge the patch and the paper, and to cause the film forming material carried by the film 36f to dry beyond the peripheries of the patch. The resultant film, whether dry or wet, as a result of this action will not serve to unite the envelope forming flaps to the body of the envelope by succeeding steps which comprise the envelope forming operations.

I may, at the same time that the film 36f is applied, also include with the solvent and film forming material, a pigmenting material, and at the time that this film is applied to the envelope blank, coat substantialy the entire area of the envelope and envelope forming flaps on the portion constituting the interior of the envelope. Where such operations are employed, the film forming material and pigmenting material may outline some ornamentation, thereby serving to opacify the envelope blank paper, permitting the use of a thinner grade of paper.

Under such mode of operation, the applicator for the film 36f, where it is distributed over the entire area of the envelope or the envelope forming flaps, may constitute a printing roller which outlines some form of pleasing ornamentation.

I may also, by this mode of operation, utilize paper for the envelope blank which carries an ornamentation of some desirable character and which may be applied to the paper before the envelope blanks are stamped therefrom. The film forming material carrying the pigmenting material not only serves to ornament the paper and opacify the same, but also is of a character which is activatable to adhesiveness by heat.

Under such conditions of operation, in applying the patch by a heated plunger accompanied

by pressure, the heat serves to activate the film carried by the patch and the film of ornamentation carried by the paper or either one of them, to unite the patch to the envelope blank. It will also be observed that under such conditions of operation, the heat activatable film on the patch may be omitted, provided the film forming material serving as an opacifier for the paper, carries sufficient plasticizer. Under these conditions of operation, the heated plunger carrying the transparent patch will unite the patch by reason of the adhesiveness of the film upon the envelope blank, that on the patch or that due to the film on either of these materials, where the coating is applied only to one of these elements, under which latter conditions, it is preferred to use a solvent or paste solvent activator.

In a still further embodiment of my invention, I may combine the existing methods heretofore described with that of my companion application aforementioned, to the extent that the patch used for the transparency and covering the cutout of the envelope blank, is a material described in my co-pending application Serial No. 565,038, now Patent No. 2,072,875, comprising a transparency which carries an adhesive coating of normally dry characteristics, which may be activated to adhesiveness by fusion under heat. Such material may be utilized with existing methods to the extent that this patch is located with wet adhesive over the cutout, merely using the minimum amount of adhesive necessary for so locating the patch. The envelope blank and the patch carried thereby then pass through the envelope finishing operations in which the side flaps and back flap are sealed in position, to complete the envelope forming operations. The envelope thus formed, exclusive of the sealing flap, is then subjected to heat and pressure on the exterior faces of the envelope, to activate the adhesive film on the patch within the envelope and unite the same to the envelope blank.

In Figures 14 to 19, the embodiment just described is illustrated. The envelope blank 10, having a cutout 16, passes to the first stage of the machine, at which point a spotting of wet adhesive 36*g* is applied, as shown in Figure 15. Following this operation, there is superimposed a patch 36, carrying on the surface directed to the envelope blank, a film or normally dry adhesive material which may be activated to adhesiveness by heat. This patch is applied while the spotting of the adhesive 36*g* is still moist. The blank then passes through the envelope forming operations wherein the back flap 11 and side flaps 12 and 13 are folded in position to complete the formation of the envelope, as illustrated in Figure 17. The envelope as thus prepared is then submitted to heat and pressure on the back and front face, preferably by passing the same through rollers 61 and 62, having at their interior heating elements 63, connected to some electrical source 64 by commutators 65. The rollers serve to intimately press the patch into position, sufficient heat being utilized to fuse the adhesive coating carried thereby. Heat and pressure appliances of the character described and illustrated in my prior filed application, aforementioned, may be used instead of the rollers.

By this embodiment, existing apparatus may be utilized and greater speed of production obtained in that the patch locating process occupies the minimum period of time and further, does not require any specific coordination between the wet application of the adhesive to the cutout and to the patch used, as the function of the wet adhesive is primarily to locate the patch and not to serve as a means for uniting the patch to the envelope blank.

This method is further desirable, so far as welding the patch in position is concerned, in that the heat and pressure that is used may be more readily accommodated to a larger variety of heat fusible adhesives carried by the patch, thereby avoiding the exercise of undue care and attention in the choice of the fusible adhesive film which may be used for the transparency.

It will be observed that by the method and apparatus described, window envelopes of the two-piece type can be made economically, with a high order of speed of production, to result in a product in which the patch covering the window cutout is intimately connected to the body of the blank, without the formation of loose edges either interiorly or exteriorly thereof. It will also be observed that though it is preferred by me, by the processes heretofore described, to unite substantially the entire patch to the envelope blank, to accomplish the desirable properties heretofore mentioned, it is sufficient for my purposes to unite the patch to the edges of the cutout, without any loose edges, and/or to unite a peripheral edge of the patch on such portions directed towards the filling side of the envelope so that no loose edges are provided which may interfere with the insertion of material into the envelope, and that other edges remote from the filling side of the envelope may, therefore, be left free. This latter mode of operation permits one machine to take care of various sizes of envelopes and various sizes of patches, and the relative positioning of the cutout in respect to the patch applying mechanism.

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 including a cutout and a separately formed patch comprising a substantially transparent sheeting, said patch overlying the cutout and being united to the envelope blank at a peripheral portion adjacent the filling side of the envelope and peripheral portions of the cutout including excess adhesive forming fillets at the peripheral portions aforementioned.

2. A window envelope comprising a separately formed paper blank including a cutout and a separately formed patch comprising a substantially transparent sheeting, the patch overlying the cutout to one side of the envelope blank, and adhesively united thereto by substantially continuous adhesive for the full outline of the patch adjacent the area overlapping the cutout, the peripheral portions of the patch being united to the envelope blank and the peripheral portions of the cutout being united to the patch and including adhesive fillets at the peripheral portions aforementioned.

3. A window envelope comprising a paper blank including a cutout and a substantially transparent sheeting united over said cutout by an overlapping joint, the peripheral portions of the cutout and the peripheral portions of the patch being adhesively united to the adjacent respective surfaces, the adhesive extending beyond said peripheral portions, forming a substantially continuous surface at said peripheral portions.

4. A window envelope or like container comprising a separately formed envelope or container blank including a cutout and a patch of

substantially transparent sheeting overlapping said cutout and sealed to the envelope or container blank by spottings of adhesive in the overlapping area, and a film of adhesive peripherally sealing the patch adjacent the filling side of the envelope.

5. A window envelope or like container comprising a separately formed envelope or container blank including a cutout and a patch of substantially transparent sheeting overlapping said cutout and sealed to the envelope or container blank by spottings of adhesive in the overlapping area, and a film of adhesive peripherally sealing the patch adjacent the filling side of the envelope and the periphery of the cutout.

6. A window envelope or like container comprising a separately formed envelope or container blank including a cutout and a patch of substantially transparent sheeting overlapping said cutout and sealed to the envelope or container blank by spottings of adhesive in the overlapping area, and a film of adhesive carried by the patch over a continuous area thereof peripherally sealing the patch at the cutout.

7. A window envelope or like container comprising a separately formed envelope or container blank including a cutout and a patch of substantially transparent sheeting overlapping said cutout and sealed to the envelope or container blank by spottings of adhesive in the overlapping area, and a film of adhesive carried by the patch over a continuous area thereof, said continuous film of adhesive carried by said patch being in a fused condition to unite the patch and the envelope or container blank.

8. A window envelope or like container comprising a separately formed envelope or container blank including a cutout and a patch of substantially transparent sheeting overlapping said cutout and sealed to the envelope or container blank by spottings of adhesive, and a film of adhesive carried by the patch over a continuous area thereof, said continuous film of adhesive carried by said patch being in a fused condition to unite the patch and the envelope or container blank at peripheral edges of the blank adjacent the filling side of the envelope, extended along said peripheral edge to avoid loose edges interfering with the filling of the envelope or container.

9. A window envelope or like container comprising a separately formed envelope or container blank including a cutout and a patch of substantially transparent sheeting overlapping said cutout and sealed to the envelope or container blank by spottings of adhesive, and a film of adhesive carried by the patch over a continuous area thereof, said continuous film of adhesive carried by said patch being in a fused condition to unite the patch and the envelope or container blank at peripheral edges of the blank adjacent the filling side of the envelope, extended along said peripheral edge to avoid loose edges interfering with the filling of the envelope or container, and including other portions of the blank and patch sealed to each other adjacent the peripheral edges of the cutout.

10. An envelope or container in accordance with claim 8 wherein the film of adhesive carried by the patch is thermoplastic.

11. An envelope or container in accordance with claim 9 wherein the film of adhesive interposed between the patch and the blank is thermoplastic.

12. A windowed envelope or like container comprising a separately formed envelope or container blank including a cutout and a separately formed, substantially transparent patch overlapping said cutout, said patch being held in position by a spotting of adhesive interposed between the patch and the envelope or container blank and a continuous film of adhesive located between said spotting of adhesive and one of the elements comprising the envelope body or blank and patch, said film uniting the patch and the envelope or container blank along a substantial portion of the periphery of the patch adjacent the filling side of the envelope or container, to avoid loose edges interfering with the filling of the envelope or container.

13. The method of forming a windowed container or envelope from a container or envelope forming blank including a cutout and a separately formed, substantially transparent patch, the steps which include preliminarily providing one of the elements comprising the blank or patch with a continuous film of a normally dry adhesive material extended over an area sufficient to completely seal said patch to the envelope or container body, locating the patch in position overlapping the cutout by a spotting of adhesive and then thereafter fusing the patch to the envelope or container body adjacent a peripheral edge of the patch extended sufficiently to unite the peripheral edge of the patch to avoid loose edges interfering with the filling of the container or envelope.

14. The method of forming a windowed container or envelope from a container or envelope forming blank including a cutout and a separately formed, substantially transparent patch, the steps which include preliminarily providing one of the elements comprising the blank or patch with a continuous film of a normally dry adhesive material extended over an area sufficient to completely seal said patch to the envelope or container body, locating the patch in position overlapping the cutout by a spotting of wet adhesive and then thereafter fusing the patch to the envelope or container body adjacent a peripheral edge of the patch extended sufficiently to unite the peripheral edge of the patch to avoid loose edges interfering with the filling of the container or envelope, said film of adhesive being carried by the patch.

15. The method of making a windowed container or envelope from a container or envelope blank including a cutout, and a substantially transparent patch overlapping and sealed over said cutout which comprises providing a container or envelope blank as one element, a patch of substantially transparent material as a second element, one of which elements carries a normally dry film of adhesive material, locating the patch on the blank with the film of adhesive material interposed between the elements by a spotting of wet adhesive and thereafter passing the composite through heating rolls to fuse said normally dry adhesive film and seal the patch to the container or envelope blank.

16. The method of making a windowed container or envelope from a container or envelope blank including a cutout and a substantially transparent patch overlapping and sealed over said cutout which comprises providing a container or envelope blank as one element, a patch of substantially transparent material as a second element, one of which elements carries a normally dry film of adhesive material, locating the patch on the blank with the film of adhesive material interposed between the elements by a

spotting of wet adhesive and thereafter passing the composite through heating rolls to fuse said normally dry adhesive film and seal the patch to the container or envelope blank adjacent a peripheral edge of the filling side of the container extended sufficiently to avoid loose edges interfering with the filling of the container or envelope.

17. A method in accordance with claim 16 in which the film of adhesive is carried by the patch.

18. A method in accordance with claim 16 wherein the film of adhesive is carried by the patch and the heat is applied for an area sufficient to seal the peripheral edges of the cutout to the patch without any loose edges at said peripheral portions of the cutout.

19. A window envelope blank or like container comprising a separately formed envelope or container blank including a cutout and a separately formed, substantially transparent patch overlapping said cutout, said patch being held in position by a spotting of adhesive interposed between the patch and the envelope or container blank, and a continuous film of heat fusible adhesive carried by one of the elements comprising the envelope body or blank and patch, the composite thereby providing a material which, upon activation of the heat fusible material, will serve to unite at least one set of peripheral edges of the cutout or patch.

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