An envelope open window holder to facilitate the insertion of mailing pieces to be contained in an envelope having an open window for purposes of displaying the address, having an envelope table to support an envelope front side down and held in an open position by opener means to accept inserts, the table having a raised portion supporting the upper portion of the lip defining the window, and the table defining apertures providing substantially airtight communication from a vacuum means to the lower portion of the lip defining the envelope window such that the lower lip portion adheres to the envelope table at a level below the upper lip portion. A method for holding the lower lip portion at a level below the upper lip portion during the inserting operation by placing the envelope front side down on an envelope table, the envelope table having a raised portion supporting the upper lip portion, the envelope table also defining apertures under the lower lip portion which provides airtight communication with a vacuum means, opening the envelope by opener means to a position to accept inserts, and pulling the lower lip portion to the envelope table by providing suction through the apertures from a vacuum means.

3 Claims, 6 Drawing Figures
ENVELOPE WINDOW HOLDER FOR AN INSERTER AND METHOD

With today's increasing use of mass mailings there is a great need for improved mass mailing techniques. The increased use of mass mailing has focused attention on specific problems which impair the efficiency of mass mailing equipment.

One specific problem has impaired efficiency in machinery of the type requiring automatic stuffing of envelopes. This is the jamming of inserts and envelope which often occurs when insert pieces are stuffed into an open envelope. Such inserting operations are often performed by machinery of the general type described in the Williams U.S. Pat. No. 2,325,455, wherein the insertion operation occurs after several inserts and an open envelope have reached what is called the inserting station.

Jamming usually results when the insert pieces catch on some part of the opened envelope rather than passing unobstructed into the envelope to the bottom edge thereof.

Jams during the inserting operation can occur more frequently than normal when envelopes of the type having an open window for purposes of displaying the address are used. In such envelopes, of course, the address is printed on a card or piece of paper which then becomes one of the inserts, the insert next to the window. In such inserting operations, as shown generally by FIG. 1, when an open window envelope is being used the inserts will catch on the lower lip portion of the lip defining the open window, that is, the lip portion nearest the bottom edge of the envelope, rather than pass unobstructed to the bottom edge of the envelope inside the envelope.

The inserting itself, before completion, can cause movement in the envelope which will raise the lower lip portion into the path of the oncoming inserts to cause a jam. FIG. 2, a diagrammatic cross-sectional view of an envelope at an inserting station, shows lower lip portion 27 at a level above the level of the upper lip portion, thus in the path of oncoming inserts not shown.

If insert pieces catch on the lower lip portion during the mechanical inserting operation, the inserting operation cannot be successfully completed and the envelope often tears. More important, the whole operation must be shut down to untangle the jam and efficiency is affected drastically. Thus, the benefit of mass mailing machinery is lost.

One approach to this problem in the past has been the use of glassine window liners such that there is a closed window rather than an open window. The use of glassine liners has important disadvantages and does not provide a satisfactory solution. Perhaps the major disadvantage is the cost of the envelopes which is significantly higher than the cost of open-windowed envelopes. Another significant disadvantage is that the problem of jamming is not often substantially reduced by such glassine window liners because the glassine patches are not properly attached to the inside of the envelope. Thus, the inserts catch on the glassine liner edge rather than on the lower lip portion.

My invention overcomes the problem of inserting jams against the lower lip portion of an open-windowed envelope.

My invention provides an envelope open window holder which holds the lower lip portion at a level below the upper lip portion such that the lower lip portion will be held out of the path of the inserts during the inserting operation.

My invention achieves this by supporting the upper lip portion at a level slightly raised from the remainder of the envelope table supporting the envelope front side down, and by causing the lower lip portion, the portion normally responsible for jamming, to adhere to the envelope table at a level below the upper lip portion. The lower lip portion is caused to adhere to the envelope table by a pulling force of suction exerted from a vacuum source through apertures in the envelope table.

My invention also overcomes the problem created by the use of glassine window liners in that glassine liners can be eliminated entirely. Thus, my invention facilitates jam-free inserting and yet permits the use of the least expensive windowed envelopes, namely, open-windowed envelopes.

It is an object of my invention to eliminate the aforementioned problems in the envelope inserting operations of automatic equipment.

Another object of my invention is to provide an envelope open window holder for an inserter and method which overcome the problem of inserts jamming against the lower lip portion of an open-windowed envelope.

A further object of my invention is to provide an envelope open window holder and method which increase the efficiency of mass mailing by decreasing jams during the envelope inserting operation when windowed envelopes are being used.

Still another object of my invention is to provide an envelope open window holder and method which allow the use of the more inexpensive open-windowed envelope and yet eliminate the problems associated therewith in the envelope inserting operation.

These and other important objects will become apparent from the description and from the drawings showing preferred embodiments wherein:

FIG. 1 is a perspective view of an envelope inserting apparatus.

FIG. 2 is a diagrammatic cross-sectional view of an envelope at an inserting station showing the lower lip portion at a higher level than the upper lip portion.

FIG. 3 is a diagrammatic cross-sectional view of an envelope at an inserting station having an envelope open window holder of my invention.

FIG. 4 is a diagrammatic cross-sectional view of the envelope open window holder of my invention taken at section 4—4 as shown in FIG. 5.

FIG. 5 is a top plan view of the envelope open window holder of my invention.

FIG. 6 is a left side view of the envelope open window holder of my invention.

Referring specifically to FIG. 1, a perspective view of a typical envelope inserting station is shown. Stuffer arm 14 pushes inserts 12 toward envelope 11 which is in an open position to receive the inserts. Note that the flap of the envelope 11 is held within a slot in envelope table 15 to remove it as an obstruction to the inserting operation. Note that envelope 11 is front side down, the window being indicated by dotted lines.

The window in envelope 11 is defined by a lip of the envelope front side. The lip has a lower lip portion 27, namely, the portion nearest bottom edge 30. The lip also has an upper lip portion 28 nearest the flap at top edge 21.

FIG. 2 is a diagrammatic cross-sectional view of an envelope at an inserting station. Note that the lower lip portion is a level higher than the level of the upper lip portion. If this condition exists prior to or occurs during insertion, the insert pieces will catch on lower lip portion 27.

FIG. 3 is a diagrammatic cross-sectional view of an inserting station with the envelope open window holder of my invention. Note that the lower lip portion is at a level below the level of the upper lip portion so that the oncoming inserts will not catch thereon to cause a jam.

Referring generally to FIGS. 4, 5 and 6, an embodiment of my invention is shown having flap holder 19, envelope table 15, raised portion 21 of envelope table 15, apertures 16 defined by envelope table 15, manifold 17 defining chamber 24, gasket 20, air line 26, opener means 33, and gibs 22.

Referring specifically to FIG. 2, a diagrammatic cross-sectional view of an envelope with the apparatus of my invention is shown, having top edge 31, flap 18, front side 29, bottom edge 30, upper lip portion 28 and lower lip portion 27. Envelope 11 is placed front side down on envelope table 15 such that upper lip portion 28 rests on raised portion 21 of envelope table 15. As shown in the preferred embodiments, raised portion 21 of envelope table 15 may be a movable shim such as a thin piece of metal or other material. However, raised portion 21 may be integrated as a permanently attached part or simply as a high part of a contoured envelope table.
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Raised portion 21 may be in the same plane as the remainder of envelope table 15 with the exception of that part of envelope table 15 which is below lower lip portion 27. It is preferred to use a shim as shown in the figures because it may be readily moved to accommodate envelopes of various sizes having various-sized open windows in various places.

Envelope table 15 defines apertures 16 allowing air passage through envelope table 15. It is preferred to have many such apertures in a pattern such as that shown in FIG. 5. It is required that an aperture be exposed to the lower lip portion 27. Manifold 17 is affixed beneath envelope table 15 and with air line 26 provides a means to communicate a vacuum from a remote vacuum means not shown through the apertures having access to manifold chamber 24. This is shown best in FIGS. 5 and 6.

Manifold 17 is pressed in a substantially airtight fashion to table 15 beneath table 15. Gasket 20 provides a suitable seal. Manifold 17 preferably may be adjusted to various areas beneath envelope table 15 for the purpose of accommodating various sized envelopes and envelopes with windows of various shapes and locations. In the embodiment shown, this adjustability is provided by gibs 22 which are permanently affixed to envelope table 15 beneath envelope table 15 by fasteners 23 as shown in FIGS. 5 and 6. As shown best in FIG. 6, manifold 17 can slide to provide ventilation of any set of the apertures to which a lower lip portion of an open-windowed envelope might be exposed. Gibs 22, as shown in the preferred embodiment have a number of holes 32 therein as shown in FIGS. 5 and 6. Tighteners 25 may be placed through these holes and into notches on either end of manifold 17. These tighteners are used not only to achieve a good seal of manifold 17 to the envelope table but also to eliminate the possibility of slipping of the manifold which might result in vacuum being provided through the wrong apertures.

In the method of my invention, an envelope is placed face down on envelope table 15. The upper lip portion resting on raised portion 21. Manifold 17 has already been adjusted such that it can provide a suction from a vacuum means not shown through the apertures which are directly beneath lower lip portion 27. The envelope is opened by an opener means 33 shown in FIG. 4. Typical opener means are suction cups which, having grasped the back portion of the envelope, lift it slightly to provide room for the insertions. Flap holder 19, which removes flap 18 from the path of oncoming inserts, also is part of an opener means. The lower lip portion of the envelope front side is pulled to envelope table 15 by means of the suction exerted thereon through apertures 16 from the vacuum means not shown.

The remote vacuum means not shown, which communicates with lower lip portion 27 by means of air line 26 and manifold 17, may continuously provide suction at lower lip portion 27. However, it is highly preferred that the suction be released after the insertion operation to allow the filled envelope to be more easily removed from the envelope table. The suction is thereby reapplied after the next envelope is placed face down on envelope table 15. The suction effect may be made intermittent in a great variety of ways. The preferred method is by a solenoid controlled valve interrupting the communication between the vacuum means and the apertures. The solenoid controlled valve would, of course, be timed to cut off vacuum through the apertures during the period in which a filled envelope is removed from the envelope table and an unfilled envelope is added, and to allow vacuum through the apertures during the insertion operation.

The materials which may be used in making the various parts for this invention would be apparent to one familiar with the art and with this invention. Envelope table 15 would typically be made of metal. However, various other metals such as plastics or other synthetic compositions and even wood could be used. Manifold 17 similarly is preferably made of metal as are gibs 22 and raised portion 21. Air line 26 may be rubber, plastic, metal tubing or anything which would serve to provide airtight communication from a vacuum means to apertures 16.

Throughout the application reference has been made to the level of the raised portion of envelope table 15 and the comparative levels of upper lip portion 28 and lower lip portion 27. It is to be understood that it is the difference in the planar locations of upper lip portion 28 and lower lip portion 27 which is referred to, and no specific attitude or orientation of the whole inserting station is referred to. Thus, although it is common and preferred for the envelope table to be horizontal as any normal table, as in Williams U.S. Pat. No. 2,325,455, referred to above, it could be in a vertical position or in any other position as long as the requirements of this invention are met. The reference to "levels," as well as to such terms as "below," are to be understood as not limiting this invention to the preferred orientation.

I have found that this invention substantially improves the efficiency of an inserting operation with open-windowed envelopes. Further the apparatus of this invention may be used for other types of envelopes without impairing the operation. There is no necessity to change or adjust the inserting station if other types of envelopes, such as plain envelopes, are being used in a particular mailing operation.

While in the foregoing specification this invention has been described in relation to certain preferred embodiments thereof, and many details have been set forth for purpose of illustration, it will be apparent to those skilled in the art that the invention is susceptible to additional embodiments and that certain of the details described herein can be varied considerably without departing from the basic principles of the invention.

1. An envelope open window holder for an inserting machine, comprising an envelope table to support an envelope front side down and held in an open position by opener means to accept inserts, said envelope of the type having an open window, a top edge and a bottom edge, said window defined by a lip of said envelope front side, said lip having a lower lip portion, nearest said bottom edge, and an upper lip portion, nearest said top edge, said envelope table having a raised portion supporting said upper lip portion, said envelope table defining apertures providing substantially airtight communication from a vacuum means to said lower lip portion of said envelope to cause said lower lip portion to adhere to said envelope table, at a level below said upper lip portion.

2. The envelope open window holder of claim 1 wherein said raised portion of said envelope table is a movable shim.

3. A method for holding an envelope of the type having an open window in an envelope front side, a top edge and a bottom edge, in a position to facilitate a jam-free inserting operation, said window defined by a lip of said envelope front side, said lip having a lower lip portion, nearest said bottom edge, and an upper lip portion, nearest said top edge, comprising the steps of placing the envelope front side down on an envelope table, said envelope table having a raised portion supporting said upper lip portion, said envelope table defining apertures under said lower lip portion providing substantially airtight communication with a vacuum means, opening said envelope by opener means to a position to accept inserts, pulling said lower lip portion to said envelope table, at a level below said upper lip portion, by providing suction through said aperture communicating said vacuum means.

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