

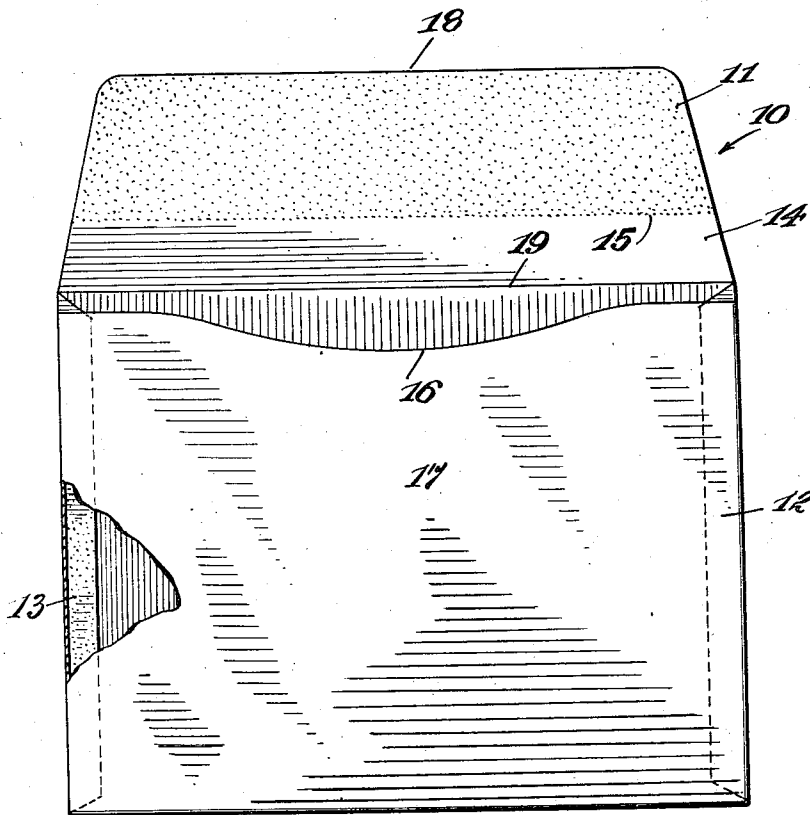
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# ENVELOPE SEALING CLOSURES AND METHOD OF MAKING THEM

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## UNITED STATES PATENT OFFICE

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ENVELOPE SEALING CLOSURE AND METHOD  
OF MAKING IT

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2 Claims. (Cl. 229—80)

This invention relates to envelope sealing closures and methods of making them and is herein illustrated as embodied in paper envelopes which may also be made of Cellophane or cellulose acetate or glassine.

Many difficulties have been encountered in satisfactorily sealing paper and especially viscose and cellulose acetate envelopes. Usually a liquid-softened adhesive was used which was normally non-sticky but became adhesive when moistened with a liquid solvent which might be water, and, if skillfully manipulated was capable of sealing the envelope cleanly and effectively—that is if the bag was thereafter kept dry.

Liquid-softened adhesives are, however, open to many objections. They are unsatisfactory for mechanical sealing. Even the best of the devices for automatically sealing envelopes occasionally put on too much water or other solvent, or not enough. If they put on too much they soil the fingers or the envelope and leave a mess, and very often fail to seal the envelope properly, even though the envelope appears to be properly sealed. If they put on too little solvent, the envelope is not sealed. Moreover, envelopes that get wet often open by accidental softening of the water-softened adhesive, and they may open during damp weather.

Heat sealed adhesives have not been used because of the difficulty in applying them, and also because many of them are expensive, and some of them require a heat high enough to scorch paper. Most of them could not be commercially applied to paper by printing processes with the result that they could not be applied in ordinary envelope-forming machines. Some of them only could be applied when in solution in some volatile inflammable solvent, thus introducing a hazard in the envelope manufacture. Moreover, heat-softened adhesives often failed to work properly, perhaps because most of them required a heat great enough to approach the scorching point of paper when they were softened, with the result that the paper was injured or the contents of the envelope or package was scorched, and the user was likely to be burned. Some heat sealing adhesives such as plain paraffin give a bond which is too weak for practical use on envelopes.

According to the present invention these and other difficulties are overcome and an envelope sealing closure is provided which is cheap, the envelope is easily manufactured, the seal is secure and yet made effective at a temperature which may be safe for the average worker to handle.

To attain these and other ends the heat sealing

adhesive is described as adapted to be applied to the paper, or other material of which the envelope is made, while the paper web is moving lengthwise. Some seams of the envelope are described as sealed by other adhesives otherwise applied. The foregoing procedure makes possible the application of the heat-softened adhesive described below—one which can be most economically applied by means of a roll and doctor bar.

According to the present invention, mere pressure with a small hot implement gives a tight moisture proof seal. All the mess and slowness of moistening gummed flaps is avoided. Machine-sealing of envelopes is made more dependable, and the sealing machines are greatly simplified. The whole operation is more sanitary, and the preferred adhesive has no odor or taste and is non-curling and non-toxic.

Other features and advantages will hereinafter appear.

The accompanying drawing shows one form of envelope of the present invention.

In the form shown the envelope 10 was made from a continuous web of paper having its length lengthwise of the web, and in the form illustrated the sealing stripe of adhesive 11 of the envelope was put on in a continuous strip running longitudinally of the paper web. This web was run lengthwise between a hot roll and a doctor bar which applied a heat-softened adhesive material made as follows: Wax, such as paraffine wax having a melting point of 130 to 132° F., was melted and 6% to 30% of a hydro-carbon gum such as thin sheets of pale crepe rubber R. C. M. A. not more than 0.04 inch thick was quickly immersed, in individual sheets, at 200° F., soaked for fifteen minutes and agitated for two hours in a Warner-Pfleiderer class III type BB mixer. An age resistant, such as ½% of hydroquinone could be added.

The roll and doctor bar were so controlled that the paper web from which the envelope was made carried the wide strip 11 of the adhesive along several longitudinal strips on the web. The envelope was then completed by die-cutting the blank so as to bring the proper strips on the edge, gluing and folding to form the seams 12 and 13, the seams 12 and 13 being formed by another adhesive.

The stripe of heat-softened adhesive 11 only covers part of the flap 14 so that when the flap is folded down around the usual top fold 19 of the envelope, the lower edge 15 of the stripe 11 now becomes the upper edge, and is below the

usual cutaway edge 16 of the envelope when sealed down, thus avoiding any possibility of sealing the heat-sealed adhesive on to the contents of the envelope. The adhesive 11 usually is so adjusted in composition as to soften below 200° F. but above summer temperatures. One softening at about 160° F. is useful even in semi-tropical climates.

The envelope can be sealed by hot pressing the flap 14 down on the body 17 of the envelope, either by a tool which might be electrically heated or by a mechanically operated device. Even some incandescent electric lamps may be used as a heating and closing "iron."

For fine envelopes the edge 18 of the flap formed by the edge of the web, may be too rough for fastidious users, and so the outer edge 18 of the flap is often cut to any desired form or size, by a die as an incident to the manufacture of the envelope.

Having thus described one embodiment of the invention, what is claimed is:

1. An envelope having a body including a flap held by a water-soluble adhesive, and closure flap carrying a continuous strip of an adhesive sealable under heat and pressure to the body of the envelope, said last named adhesive consisting of a large proportion of paraffine wax and less than one third as much rubber and adapted to soften to become adhesive below 200° F. so as to adhere to the body of the envelope to seal it.

2. An envelope having a body including a flap held by a water-soluble adhesive, and a nearly rectangular closure flap carrying along its long straight edge a continuous strip of an adhesive sealable under heat and pressure to the body of the envelope, said last named adhesive containing a large proportion of paraffine wax and less than one-third as much rubber and adapted to soften to become adhesive below 200° F. so as to adhere to the body of the envelope to seal it.

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