Nov. 13, 1945. E. L. STEIN 2,388,770

SEALING METHOD

Filed Oct. 25, 1944

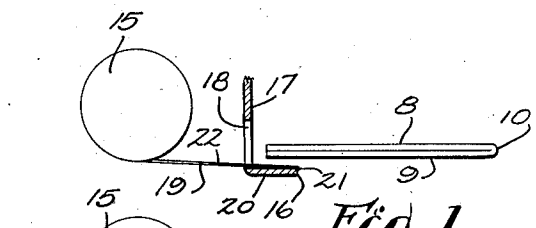


Fig. 1.

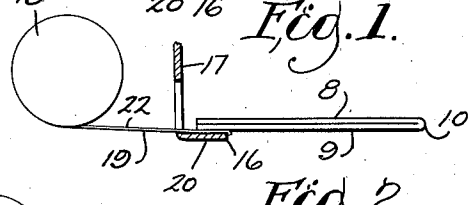


Fig. 2.

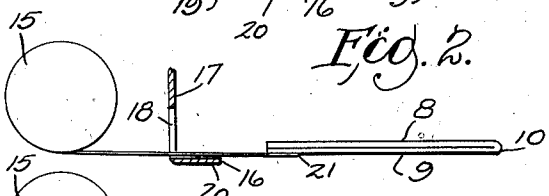


Fig. 3

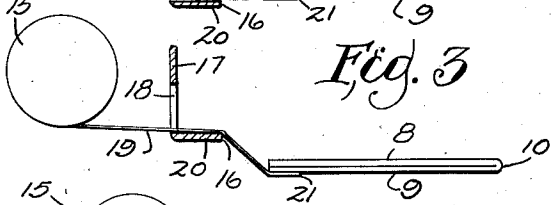


Fig. 4.

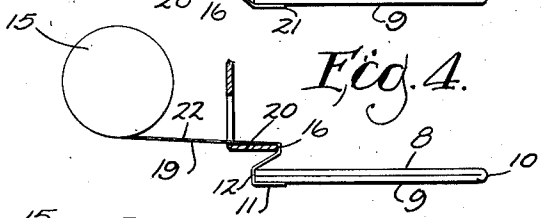


Fig. 5.

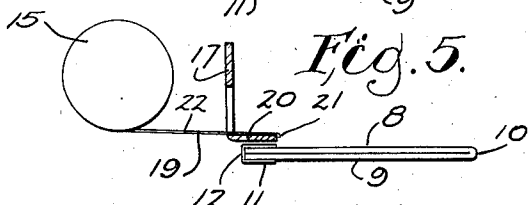


Fig. 6.

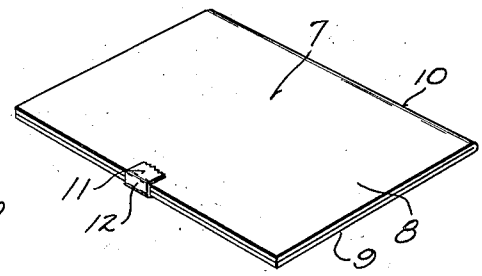


Fig. 7.

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SEALING METHOD

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Application October 25, 1944, Serial No. 560,332

4 Claims. (Cl. 216—62)

This invention relates to improvements in sealing methods.

The invention pertains particularly to the closing of mailing pieces, or small cartons, or the like, by means of a small piece of gummed tape applied across the joint to be closed and sealed. The tape commonly used for this purpose is commercially known as "Scotch tape" and usually comprises a ribbon of cellulose acetate with a permanently tacky surface. However, the invention may also be practiced with gummed tape having a normally dry surface temporarily rendered tacky by the application of water or other solvent.

It is the primary object of the invention greatly to simplify and reduce the cost of sealing, particularly when the sealing operation is practiced on a large scale. I seek to accomplish this objective by eliminating the handling of small pieces of tape and by using the work itself as a means of drawing the tape from its supply roll.

Other objects will be apparent to those skilled in the art upon analysis of the following disclosure of the invention.

In the drawing:

Figs. 1, 2, 3, 4, 5 and 6 are diagrammatic views in section sequentially illustrating the respective positions of the work, the tape, and a pressure applying foot in successive steps of my improved process.

Fig. 7 is a view in perspective showing a completed work piece.

By way of exemplifying the work, I have shown a mailing piece comprising a folder 7 having component parts 8 and 9 united on a fold line 10 and joined at their otherwise free margins by a piece of tape 11 having a portion 12 crossing such margins and other portions adherent to the respective faces of the component parts 8 and 9 of the folder. No claim is made to the product as above described which is entirely conventional.

In the past it has generally been the practice of operators sealing such mailing pieces to withdraw by hand lengths of tape from a supply roll, such as that shown at 15, tearing off a piece of such tape on the edge 16 of a guide 17 and, thereupon, folding the tape by hand over the edge of the mailing piece as illustrated.

As distinguished from this manual operation and from all mechanical tape applying operations, my improved method involves the use of the work itself, and relative movement between the work and the supply roll, to unroll the web from the supply roll and effect its application about the free margins of the leaves 8 and 9 which require sealing.

The guide 17 has a slot at 18 through which extends the web 19 of tape. There is at 20 a flange or plate portion of guide 17 which I employ as a pressure foot, such plate providing at 16 the tear-off margin, usually serrated.

From the standpoint of my improved method, it is immaterial whether the work piece remains stationary and the tape roll and pressure foot are moved with respect to it, or whether the tape roll and pressure foot are stationary and the work piece is moved. It will, therefore, be understood that any reference to specific movements or directions of movement in the following description are merely by way of exemplification to bring out the relative movements involved.

With the torn end 21 of the tape web 19 caught on the tear-off edge 16, the pressure foot 20 is moved toward the work to engage the gummed surface 22 of the tape with the part 9 of the work, as shown in Figure 2. With the tape thus adhered to the work, there is relative movement of the work away from the tape supply roll 15 and pressure foot 20 to a distance, as shown in Fig. 3, such that the point at which the tape is to be severed will be registered over the tearing edge 16.

Now there is relative movement between the pressure foot 20 and the work in a direction which is downward, as viewed in Fig. 4, and thence inwardly as viewed in Fig. 5, with the result that the portion of the tape which is to be severed is folded about the tear-off edge 16 while the portion 12 of the tape is folded across the previously free margins of the component parts 8 and 9 of the work.

Continued inward movement of the pressure foot 20 and the work piece toward positions of overlapping, as viewed in Fig. 5, will result in severing the tape across the tear-off edge 16, and thence relative movement of the work toward the under surface of pressure foot 20 will seal the severed strip 11 of tape against the part 8 of the work, thus completing the operation.

In the positions in which the parts are illustrated, the undersurface of the work is first pressed toward the upper surface of the pressure foot 20 upon the intervening gummed tape. The relative movement of the work is then outwardly, downwardly, inwardly and upwardly, thus ultimately pressing its top surface against the under surface of the pressure foot upon the intervening tape. The relative movement between the

parts may be said to constitute a closed figure in which pressure is first applied in one direction and then in an opposite direction, the intervening relative movement resulting in folding the tape around the work.

Whether performed mechanically or by hand, this method of sealing is extremely fast and dependable. The gummed surfaces of the tape never touch any part of the apparatus but contact only the work, the work itself being used to anchor the gummed surfaces during the portion of the cycle in which gummed tape is withdrawn from its source, as represented by the supply roll 15.

I claim:

1. A method of sealing edge portions of a work piece having first and second faces by delivering a web of tape having a tacky surface across a pressure foot having first and second faces and by applying a length of such tape about the work piece margin and adhering it to opposite faces of the work piece, said method consisting in pressing a first face of the work piece toward a first face of the pressure foot on which the tacky surface of a web of tape is exposed, whereby to adhere the end of said web to said first work piece face, effecting relative movement between the work piece and the pressure foot in a direction to draw an additional length of web over the first face of the foot and thence in a direction to fold said web over an edge of the foot and an edge of the work piece, and thence in a direction to sever said web on the edge of the work piece and to press the severed end of the web section thus severed between a second face of the work piece and a second face of the foot.

2. A method of relative manipulation of a work piece respecting a pressure foot across which gummed tape is delivered, such method involving engaging one face of the work piece with an upwardly exposed gummed surface of the tape supported on one face of the pressure foot and thereupon relatively moving the work piece and pressure foot in a substantially closed figure involving separating of the work piece and pressure foot in a direction to draw out an additional length of tape, subsequently folding the additional length of tape across the pressure foot and the work piece, and subsequently relatively moving the pressure foot and work piece in directions to sever the withdrawn length of tape across the pressure foot and to press the severed end of the withdrawn length between mutually opposite faces of the pressure foot and work piece to complete the sealing of the work piece.

3. A method of sealing a mailing piece by relative manipulation of such mailing piece and a pressure foot across which adhesive tape is fed, which method consists in relative movement of the mailing piece and pressure foot toward each other, thence laterally in the direction of tape feed, thence continuing in the original direction past each other, thence laterally toward the original line of relative movement, and thence toward each other in a direction opposite to the original direction of movement, the original relative movement between the mailing piece and pressure foot engaging the mailing piece with the adhesive surface of tape on the pressure foot, the lateral movement being adapted to effect feed of the tape across the pressure foot, and the subsequent relative movement being adapted to sever a piece of such tape and complete the folding thereof about the mailing piece in adhesive sealing connection thereto.

4. A method of tape-sealing a work piece by relative manipulation of the work piece and a supply foot across which tape having one adhesive face and a non-adhesive face is fed; which method comprises exposing said adhesive face of an end of the tape on such foot, relatively pressing the work piece toward such adhesive face and foot to adhere the tape end to the work piece; relatively withdrawing the work piece beyond the end of the foot in a direction to feed additional tape thereover until a length of tape is free between the foot and work piece; relatively manipulating the work piece and foot in a direction to engage about the end of the foot said free length of tape; and continuing relative manipulation of the work piece and foot in a direction to engage the adhesive face of such length of tape with the work piece about a margin thereof and to tension and sever such length across the end of the foot.

ELMER L. STEIN.