

Feb. 24, 1953

E. McVEY

2,629,214

INSERTING AND SEALING MACHINE

Filed June 23, 1950

2 SHEETS--SHEET 1

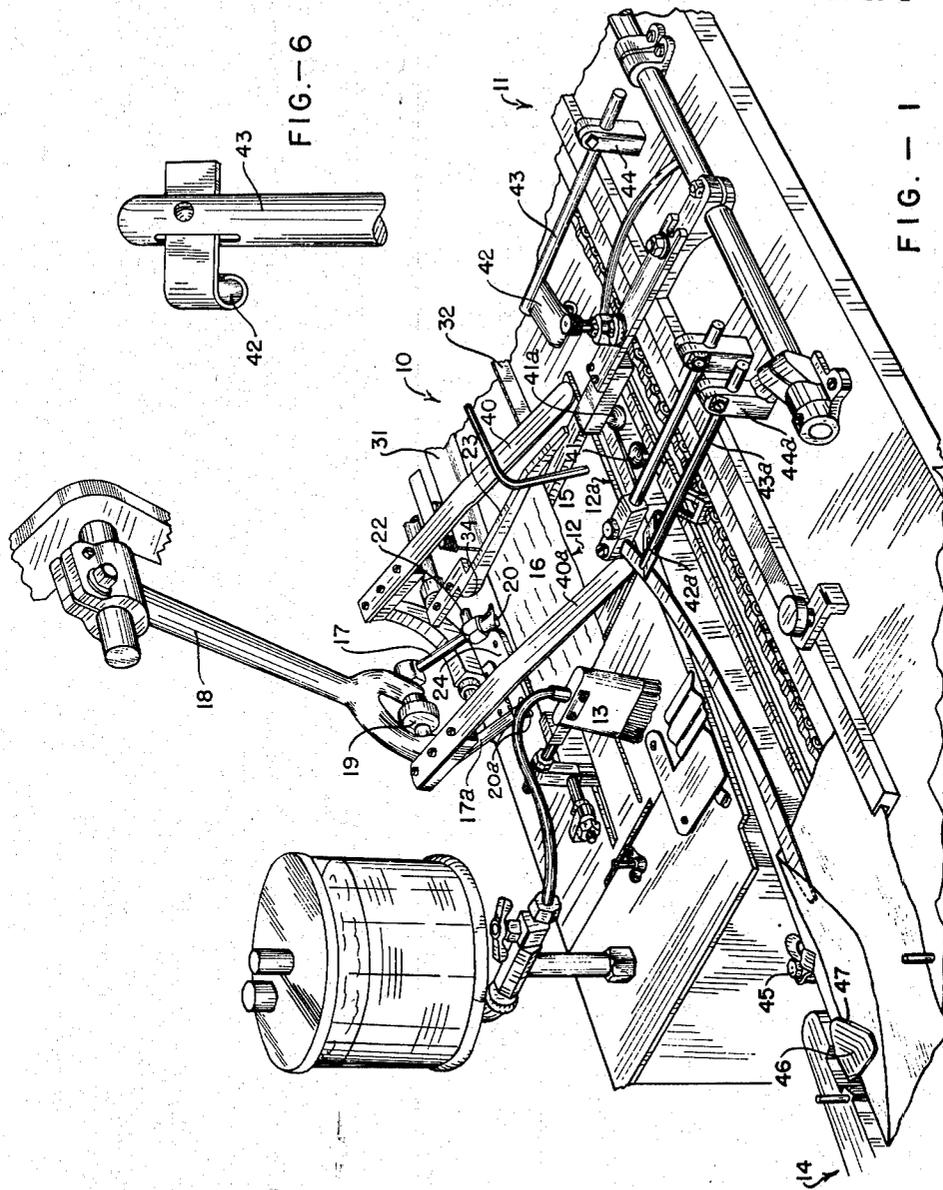


FIG.-6

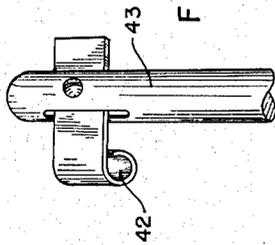


FIG. - 1

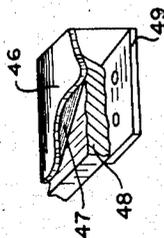


FIG.-7

INVENTOR.

Ernest M. Vey

BY

*Roy A. Hackley*  
ATTORNEY

Feb. 24, 1953

E. McVEY

2,629,214

INSERTING AND SEALING MACHINE

Filed June 23, 1950

2 SHEETS—SHEET 2

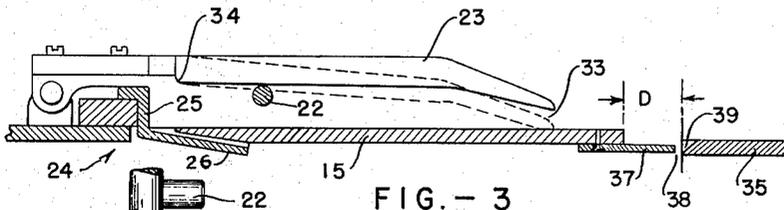


FIG. - 3

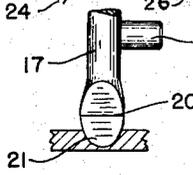


FIG. - 4

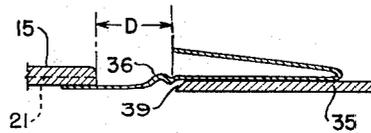


FIG. - 3a

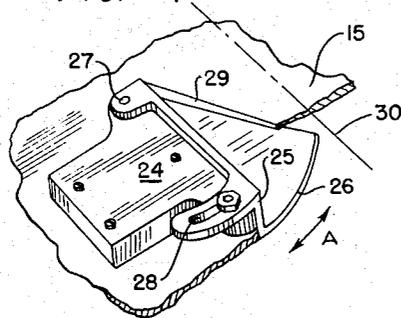


FIG. - 5

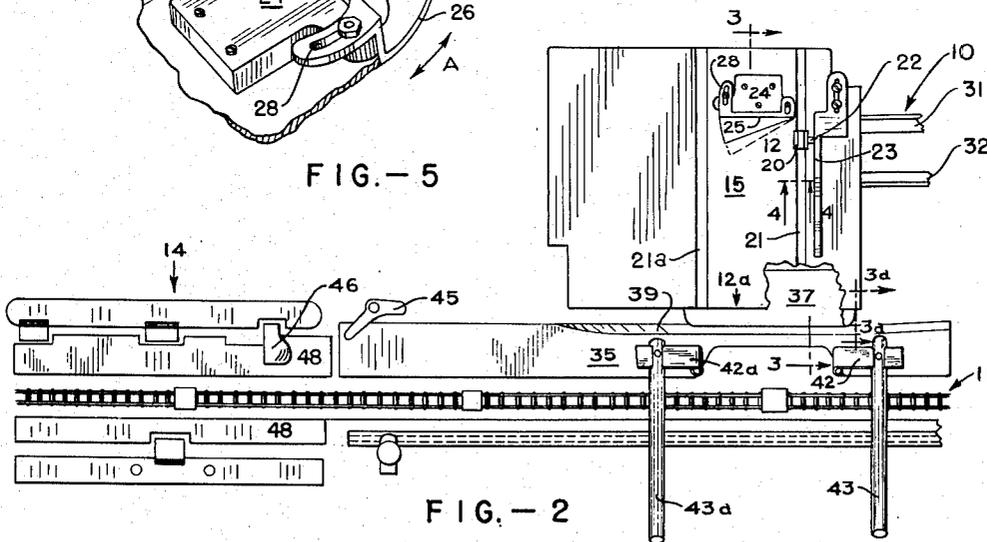


FIG. - 2

INVENTOR.

Ernest Mc Vey

BY *Ray A. Schley*

ATTORNEY

# UNITED STATES PATENT OFFICE

2,629,214

## INSERTING AND SEALING MACHINE

Ernest McVey, Denver, Colo.

Application June 23, 1950, Serial No. 169,953

4 Claims. (Cl. 53—136)

(Granted under Title 35, U. S. Code (1952),  
sec. 266)

1

This invention relates to improvements in envelope handling machines of the type in which successive inserts are projected into successive envelopes and the envelopes are sealed and stacked ready for mailing.

The machine herein disclosed embodies conventional mechanism of the type shown in the patent to Williams, No. 2,325,455, granted July 27, 1943, and a machine identified as Model No. 10A, manufactured by the Inserting and Mailing Machine Company of Phillipsburg, New Jersey, except for certain details hereinafter set forth.

One of the objects of the invention is to provide a machine of the foregoing type which will insert thin, flimsy, and easily wrinkleable inserts into envelopes.

Another object is to provide improved envelope flap closing mechanism to improve sealing of the flaps.

Another object is to control the amount of opening of the envelope during movement of an insert therein.

Another object is to accurately guide the inserts to an insert receiving station on an insert carrying platen.

A further object is to eliminate wrinkling or improper insertion of the insert as it passes over the envelope flap fold.

Still further objects, advantages, and salient features will become more apparent from a consideration of the description to follow, the appended claims, and the accompanying drawing, in which:

Figure 1 is a fragmentary perspective of the top of the machine;

Figure 2 is a fragmentary top plan of the machine of Figure 1, certain of the parts shown in Figure 1 being omitted to simplify the disclosure, and a portion being broken away;

Figure 3 is an enlarged section taken on line 3—3, Figure 2;

Figure 3a is an enlarged fragmentary section, similar to Figure 3, showing certain conventional construction taken on line 3a—3a, Figure 2;

Figure 4 is an enlarged section taken on line 4—4, Figure 3; and

Figures 5, 6 and 7 are enlarged perspectives of various novel details of the machine.

Referring in detail to the drawing, the machine comprises, in general, the conventional features of an insert transporting mechanism 10, envelope transporting mechanism 11, insert receiving station 12, inserting station 12a, flap moistening device 13, and an envelope deposit station 14. The general operation of the machine is also con-

2

ventional, inserts and envelopes being automatically fed in spaced parallel relation from an insert box and envelope box (not shown) to the insert receiving station and inserting station, respectively, after which the insert is moved from the insert receiving station into an opened envelope disposed at the inserting station. The stuffed envelope is then transported past the moistening device, the envelope flap is closed, and thereafter the stuffed envelope is deposited on the bottom of a stack of envelopes at the deposit or stacking station, all as more fully disclosed in the patent above identified.

The insert receiving station comprises a platen 15 onto which an insert 16 is projected by the insert transporting mechanism. A pair of insert pusher fingers 17, 17a are pivotally connected to the lower end of oscillating arm 18 and spring urged downwardly by a suitable spring device 19 so that their free notched ends 20, 20a (see Figure 4) slide transversely across the insert platen, in grooves 21, 21a, respectively. These fingers are interconnected for conjoint pivotal movement on arm 18 and finger 17 is provided with a pin or roller member 22 which rides beneath pusher finger return guide 23 on the insertion stroke and on top of it on its return stroke, the pusher fingers being lifted above the platen on the return stroke. During the return stroke another insert is being projected onto the platen and in the prior art, this insert is not always projected onto the platen with the longitudinal axis of the insert disposed parallel with a longitudinal axis of the platen with the result that one of the pusher fingers, after member 22 rides off the rear end of the return guide, will drop on top of the canted or misaligned insert, instead of behind its rear edge, and when the pusher fingers again move on their inserting stroke only one of them will be in engagement with the rear edge of the insert. When this occurs the insert cannot be conveyed into the envelope. To obviate this difficulty a guide is secured to the platen between the pusher fingers, this guide being adjustable, as best shown in Figure 5. The guide comprises a block 24 fixedly secured to the platen and a vertically disposed guide plate 25 connected to a plate 26, the left end of the latter (Figure 5) being disposed beneath platen 15 and the right end being substantially flush with the top surface of platen 15. The guide is pivotally connected to block 24 by a pivot pin 27 and a slot connection 28 which permits adjustment of guide plate 25 in aperture 29 in the platen in the direction of arrow A. In the position shown in Figure 5, the guide is disposed

3

at its rearward limit of adjustment wherein plate 25 is substantially parallel with a longitudinal axis 30 of the insert transporting mechanism and platen 15. From this position it may be adjusted forwardly as desired so that the rear edge of an insert moving onto the platen will engage the guide and be properly aligned on the platen so that both of the pusher fingers will always engage the rear edge of the insert during their inserting stroke.

The guide just described also permits improvement in the performance of the machine in another manner. In the conventional insert transporting mechanism the inserts are pulled from the insert supply box through a micrometer stop by a gripper finger which twists the inserts slightly. After the inserts are pulled through the micrometer stop they are released and fall by gravity between the insert guides 31, 32. By providing guide 25 the distance between guides 31, 32 is less critical and can be widened, thus effecting a larger space into which the inserts may fall since guide 25, even with a large space between guides 31, 32, will effect movement of an insert onto the platen with the longitudinal axis of the insert properly aligned so that both pusher fingers will invariably engage the rear edge of the insert.

As previously mentioned, member 22 passes beneath pusher finger return guide 23. In the conventional machine, this member does not engage the pusher finger return guide until the pusher fingers are near the end of their inserting stroke. In the meantime, the insert being conveyed across the platen must slide under the end 33 (see Figure 3) of the return guide. This causes no difficulty if the insert is relatively thick and rigid. If the insert is flimsy, however, it will often crumple due to the engagement of end 33 therewith. To obviate this difficulty, the return guide is constructed so that it will be raised as shown in full lines in Figure 3 when member 22 passes under rear edge 34 of the return guide. The pusher fingers are in engagement with the rear edge of the insert at this time but the front edge of the insert is spaced from end 33. As the pusher fingers move the insert across the platen the return guide remains raised as shown in full lines and the insert passes freely beneath end 33, with the result that any crumpling of the insert is obviated. After member 22 passes beyond end 33, it engages the top of the return guide on its return stroke in conventional manner, the return guide now being in the dotted line position of Figure 3.

Referring to Figure 3a, the conventional platen 15 is spaced from one edge of the envelope guide platen 35 by a distance D. As the envelopes move longitudinally along platen 35 the flaps thereof pass beneath platen 15 as shown. This exposes the flap fold 36 which sometimes offers resistance to proper stuffing of the insert since the front edge of the insert will sometimes engage this fold and cause crumpling of the insert. To obviate the foregoing difficulty a thin plate 37 is secured to the lower face of the platen and substantially closes this gap at the inserting station as shown in Figure 3, the right edge 38 of plate 37 being disposed substantially along the fold 36. The edge of platen 35 is also provided with a beveled edge 39, the free edge of plate 37 being disposed closely adjacent to this beveled edge.

When the envelope stops at the inserting station fingers 40, 40a move into the envelope adjacent the end folds thereof. Suction devices, one

4

of which is shown at 41, engage the front or lower panel of the envelope and hold it down on platen 35. A suction device 41a engages the rear (top) panel of the envelope, and raises the rear panel away from the front (lower) panel, thus providing an opening in the envelope to receive the insert. With this construction there is sometimes a pinching action between the end folds which prevents proper movement of the insert into the partially opened envelope. To obviate this difficulty, a pair of abutment members 42, 42a, forming limit stops, are disposed adjacent and above the end folds of the envelope and limit the amount of opening of the rear panel of the envelope away from the front panel. These stops are secured to arms 43, 43a which are rotatably adjustable about their longitudinal axes by suitable brackets 44, 44a so that the distance of the limit stops above the end folds of the envelope may be varied to limit the amount of separation of the rear panel of the envelope from the front panel thereof. As will be apparent, the limit stops may also be adjusted in a direction across the width of the envelope as well as thereabove. These stops engage the rear panel of the envelope at points slightly inwardly of the respective end folds thereof and between the longitudinal edges of the envelope.

In the conventional machine a stationary envelope flap closing shoe 45 is provided which turns down the flap after it has been moistened and before it is conveyed into the depositing or stacking station 14. This shoe effectively closes the flaps of envelopes of a relatively long length, and properly guides them into the deposit station, but when shorter envelopes are handled some of the flaps will open and improperly drag under the envelopes of the stacking magazine at the deposit or stacking station which effects improper sealing thereof. This difficulty is obviated by providing a second flap closing shoe 46 in series and beyond shoe 45. As shown in Figure 7, this shoe has a curved front entry surface 47 which engages the flap and guides it down flat onto the rear panel of the envelope as the latter is fed into the stacking station. This shoe, in the embodiment shown, is secured to the vertical reciprocating bed 48 of the stacking magazine by a leg 49 secured to the lower surface of the bed.

The five novel features previously described are all essential to the proper sequential operations of the machine under certain conditions. For example, if the shorter envelopes, just described, are stuffed with thin flimsy inserts all five features are preferably employed. If the shorter envelopes are stuffed with thick, rigid inserts, however, the lifting of the pusher finger return guide on the inserting stroke of the pusher fingers is not so essential and this feature may be omitted, in some cases. If the envelope is of longer length and the insert is of thin and flimsy material the second flap closing shoe may be omitted in some cases. If, however, the envelope is of longer length and the inserts are of heavy rigid material, the second flap closing shoe and the feature of lifting the pusher finger return guide may both be omitted in some cases. It will be apparent, therefore, that if the machine be provided with all five of the features it will more effectively handle envelopes and inserts of all types and regardless of the particular combinations of envelopes and inserts, three of the features will preferably be employed, these being the guide disposed between the pusher fingers,

5

the platen portion engaging the envelope closely adjacent the flap fold, and the limit stops for the ends of the envelope. It is apparent, also, that the various novel features disclosed sequentially perform functions in the handling of the inserts and envelopes to produce a unitary end result of more effectively stacking all of the material handled without malfunctioning of the machine at its various stations.

The various specific features shown in the drawing and incorporated at the various stations of the machine are exemplary, only, and it is to be understood that various modifications may be employed without departing from the spirit of the invention. The guide adjacent the insert station may take various forms so long as it engages the rear edge of the insert and guides same to an aligned position on the platen rather than a canted position as sometimes occurs in the absence of the guide. The return guide may be lifted in any desired manner rather than by a pusher finger although the latter construction is advantageous because of its simplicity and requires little structural change to the conventional machine. The plate secured to the platen edge adjacent the inserting station is preferably a short extension plate if a conventional machine, already in service, is to be modified. On the other machines, however, the extension may be integrally formed with the platen to extend its edge more closely to the envelope flap fold. The limit stops may also be secured to the machine in any manner desired and may take any particular shape so long as they serve the function of limiting opening of the ends of the panels of the envelope. Similarly, the flap closing and guiding means may be modified as desired. Various combinations of the novel features may be employed and many modifications of the specific form of each are within the purview of the invention, and it is not intended to limit the invention to the precise details disclosed except as defined by the scope of the appended claims.

The invention described herein may be manufactured and used by or for the Government of the United States for governmental purposes without payment to me of any royalty thereon in accordance with the provisions of the act of April 30, 1928 (ch. 460. 45 Stat. L. 467).

Having described the invention, what is claimed as new is:

1. In an envelope handling machine of the type having an insert carrying platen, means for successively transporting inserts onto the platen to an insert receiving station thereon, means for transporting envelopes to an inserting station adjacent a longitudinal edge of the platen and for disposing a portion of the flap of an envelope below the platen with the envelope aligned with the insert, means for engaging the end folds on the inside of the envelope disposed at the inserting station, means for separating opposite panels of the envelope, a pair of spaced reciprocable insert pusher fingers adapted to engage the rear edge of an insert lying on the platen and to move it into the opened aligned envelope, a pivotally supported pusher finger return guide having a free end adapted to engage the platen at a point between the insert receiving station and the inserting station, and means for closing the flap at a station beyond the inserting station and prior to transportation of a stuffed envelope to a deposit station, the improvements in combination with said machine, comprising; a guide disposed adjacent the platen between the pusher

6

fingers and adjacent the insert receiving station adapted to engage the rear edge of the insert being transported to the insert receiving station and guide same to the insert receiving station with the longitudinal axis of the insert aligned with a longitudinal axis of the platen, means carried by one of the pusher fingers adapted to engage the return guide and lift the free end thereof above the platen during substantially the entire movement of the insert from the insert receiving station to the inserting station, means on the platen adjacent the inserting station adapted to engage the envelope flap closely adjacent the flap fold to permit an insert to pass over the fold without obstruction, means adapted to engage the rear panel of the envelope adjacent opposite end folds thereof to limit separation of the ends of the envelope panels, and means disposed between the means for closing the flap, and the deposit station, for preventing a flap from opening and for guiding an envelope beneath the lowermost envelope at the deposit station with said flap disposed flat and symmetrical on the rear panel.

2. In an envelope handling machine of the type having an insert carrying platen, means for successively transporting inserts onto the platen to an insert receiving station thereon, means for transporting envelopes to an inserting station adjacent a longitudinal edge of the platen and for disposing a portion of the flap of an envelope below the platen with the envelope aligned with the insert, means for engaging the end folds on the inside of the envelope disposed at the inserting station, means for separating opposite panels of the envelope, a pair of spaced reciprocable insert pusher fingers adapted to engage the rear edge of an insert lying on the platen and to move it into the opened aligned envelope, a pivotally supported pusher finger return guide having a free end adapted to engage the platen at a point between the insert receiving station and the inserting station, and means for closing the flap at a station beyond the inserting station and prior to transportation of a stuffed envelope to a deposit station, the improvements in combination with said machine, comprising; a guide disposed adjacent the platen between the pusher fingers and adjacent the insert receiving station adapted to engage the rear edge of the insert being transported to the insert receiving station and guide same to the insert receiving station with the longitudinal axis of the insert aligned with a longitudinal axis of the platen, means carried by one of the pusher fingers adapted to engage the return guide and lift the free end thereof above the platen during substantially the entire movement of the insert from the insert receiving station to the inserting station, means on the platen adjacent the inserting station adapted to engage the envelope flap closely adjacent the flap fold to permit an insert to pass over the fold without obstruction, and means adapted to engage the rear panel of the envelope adjacent opposite end folds thereof to limit separation of the ends of the envelope panels.

3. In an envelope handling machine of the type having an insert carrying platen, means for successively transporting inserts onto the platen to an insert receiving station thereon, means for transporting envelopes to an inserting station adjacent a longitudinal edge of the platen and for disposing a portion of the flap of an envelope

7

below the platen with the envelope aligned with the insert, means for engaging the end folds on the inside of the envelope disposed at the inserting station, means for separating opposite panels of the envelope, a pair of spaced reciprocable insert pusher fingers adapted to engage the rear edge of an insert lying on the platen and to move it into the opened aligned envelope, a pivotally supported pusher finger return guide having a free end adapted to engage the platen at a point between the insert receiving station and the inserting station, and means for closing the flap at a station beyond the inserting station and prior to transportation of a stuffed envelope to a deposit station, the improvement in combination with said machine, comprising; means for lifting the free end of the return guide above the platen during substantially the entire move-

8

ment of the insert from the insert receiving station to the inserting station.

4. Apparatus in accordance with claim 3 wherein the return guide is lifted by means engaging same carried by one of the pusher fingers.

ERNEST McVEY.

#### REFERENCES CITED

The following references are of record in the file of this patent:

#### UNITED STATES PATENTS

Number	Name	Date
1,878,590	McCarthy -----	Sept. 20, 1932
1,916,847	McCarthy -----	July 4, 1933
1,960,959	Sague -----	May 29, 1934
2,325,455	Williams -----	July 27, 1943