ENVELOPE FILLING MACHINE

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ABSTRACT

An envelope filling machine comprising an insertion device including a unit for positioning the letter contents before the insertion procedure, the positioning unit being designed as an insertion pocket closed at one end.

5 Claims, 8 Drawing Figures
ENVELOPE FILLING MACHINE

BACKGROUND OF THE INVENTION

The present invention relates to a new and improved construction of envelope filling machine of the type comprising an insertion device including a unit for positioning the letter contents before the insertion procedure.

Insertion devices of this general type are known in many forms, yet all have the drawback that they involve comparatively complex constructions, which in themselves render any compact arrangement impossible.

SUMMARY OF THE INVENTION

A primary object underlying the present invention is to provide an envelope filling machine which permits of extremely compact structure and is therefore suitable for incorporation for example in the framework of a working desk of normal size, without restricting the space necessary for other work.

According to the invention there is provided an envelope filling machine comprising an insertion device including a unit for positioning the letter contents before the insertion procedure, the positioning unit being designed as an insertion pocket closed at one end.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be better understood and objects other than those set forth above, will become apparent when consideration is given to the following detailed description thereof. Such description makes reference to the annexed drawings wherein:

FIG. 1 is a plan view in partial section;
FIG. 2 is a sectional view along line II—II of FIG. 1;
FIG. 3 is a sectional view of the insertion pocket in a first working position;
FIGS. 4 and 5 show the same component in two further working positions;
FIGS. 6 and 7 show details relating to the insertion procedure; and
FIG. 8 is a view in the direction of arrow VIII in FIG. 1.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

It is understood that the drawings show only those parts of an envelope filling machine which relate to the insertion device, as it can be presumed that parts arranged in such machines ahead and behind the insertion device, are known in this art.

Between two side walls 1 and 2 of the framework of an envelope filling machine, which is not shown in its entirety in the drawings, there is mounted a drive shaft 3. On one shaft end 4, projecting past side wall 1, there is mounted a chain or sprocket wheel 5 serving to drive further parts which are not of specific interest here. The other shaft end 6, projecting past side wall 2, carries a cam disc 7, which is provided with three catches 8 (FIG. 8). This cam disc 7 forms part of a free-wheel system which is in suitable drive connection with a continuously rotating motor (not shown). With these catches 8 there cooperates a stop 9 which, by means of a single-arm lever 12, actuated by an electromagnet 10, under the influence of a spring 11, can be moved in and out of the path of such catches 8. When, accordingly, the lever 12 is pivoted for a short time by a pulse transmitted to electromagnet 10, the cam disc 7 rotates, and with it drive shaft 3, by a division corresponding to the angular distance between two adjacent catches 8, while drive shaft 3 is again stopped in the new position. At the free end of lever 12 a pusher or push arm 15 with its pusher springs 16 is connected via a rod 13 articulated at 14 to a crank, the function of these parts being dealt with in detail later.

A U-shaped actuating arm 18 is connected to drive shaft 3 by means of its two legs 17. A pocket or carrier plate 19 is attached with its bent-over attachment end 20 on the inner side of the actuating arm 18. The pocket plate 19 has bent-up side edges 19a, and, at its forward edge, two opener points 21 arranged laterally to the center line, projecting forwards, and directed obliquely upwards, as best seen by referring to FIGS. 1 and 2. In its center line, the pocket plate 19 has two longitudinal slots 22 and 23. Through the rear slot 23 there pass two rivets 24, by means of which an ejector 25 secured on plate 19 is connected to drive arm 26, whereas a bolt 27 of ejector 25 extends through the other slot 22. The ejector 25 is arranged symmetrically to the center line of plate 19 and has, on its forward edge 28, which is formed as an ejector rim, a likewise symmetrical, triangular incision or recess 29, while its rear edge is bent upward to form a dog 30. The width of the ejector 25 is such that there is room for it between the side parts, provided with the opener points 21, of pocket or carrier plate 19. Above plate 19 there is arranged a retaining member 34 having three arms 31 to 33, one arm 32 lying on the center line of plate 19 and of ejector 25, while the two others 31 and 33 are arranged laterally with respect to the ejector 25 and in the region of side parts provided with the opener points or noses 21, of plate 19. The three arms 31 to 33, with bent-over ends 31a to 33a at their forward edge and with double angle arms 31 to 33 at the rear edge, are attached to the upper side of a continuous rectangular-section rod 35, which is rotatably mounted in two lateral blocks 36, connected to actuating arm 18. Consequently, the insert pocket formed by plate 19 and retaining member 34 on the one hand is pivoted by rotation of arm 18, and on the other hand by means of rotation of rod 35 in a manner which will be described more fully later, it is possible to pivot retaining member 34 relative to pocket or carrier plate 19, and thus open the insert pocket 19, 34.

Further, the arms 31 and 33 each have a lug 38 which is bent downwards, passes through openings 37 in plate 19, and serves as a stop for the folded sheet of paper to be pushed into an envelope.

The drive arm 26 attached to pusher 25 is attached at its free end to rod 39, which is in turn mounted in a U-shaped strip 41 connected by a carrier 40 to the actuating arm 18, and subject to the action of a spring 42, the latter of which tends to hold rod 39 in the position shown in FIG. 2, in which the pusher 25 adopts its retracted position. When, accordingly, the free end of rod 39 (see FIG. 5) is pushed forward, this movement is transmitted to the ejector 25, while, as soon as the relevant force ceases, spring 42 brings ejector 25 back into the starting position as shown.

In order to initiate this movement, there is attached to the outer side of the rectangular-section rod 35, a plate 43 with an outwardly directed rib 44, through whose free end passes a bolt 47, surrounded by a spring 45 and sitting on an angle piece 46 rigidly connected.
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to the actuating arm 18. Spring 45 is supported against the angle piece 46 and the plate 43. If, as can be seen from FIG. 3, the rib 44 passes into the region of a stop roller 48, the rectangular rod 35 pivots, and with it the retaining member 34, relative to arm 18, whereas otherwise the retaining member 34 is held in the closed position shown in FIG. 2 by the spring 45.

An envelope feed device 49 lying opposite the open edge of inlet pocket 19/34 can be seen from an inspection of FIG. 2. This device 49 has a feed plate 50 centrally mounted and lying opposite the middle arm 32 of retaining member 34, and further has two turning or deflecting rollers 51 arranged laterally of this plate 50, for each upper feed belt 52. Beneath these rollers 51 there are corresponding rollers 53 for a lower feed belt 54, opposite which the feed plate 50 rises slightly towards its end rim (see FIG. 2). On the outer side of each of the turning or deflecting rollers 51 there is provided, attached to the underside of an associated block 55, a respective down-pressure plate formed as a retainer plate 56 which is inclined forward and downward, the spacing between these plates 56 approximately corresponding to the inner width of the envelope 57. Finally, the pusher arm 15 with its pusher spring 16 are arranged between each roller 51 and the feed plate 50.

In the following functional description a more detailed description of the individual control procedures will not be given, as any known mechanical or electrical control means may be used.

In FIG. 3, the feed rollers 58 are indicated, by means of which the ready folded envelope contents are passed to the open insert pocket 19/34 from a supply point, not shown, for the envelope to be filled.

At this point the retaining member 34 or the rib 44 projecting from plate 43 is under the influence of the stop roller 48, which effects opening of the pocket, i.e. pivoting of retaining member 34 relative to plate 18, while the ejector 25 is held in its retracted position by the spring 42. In this mutual position of the individual parts the folded letter contents 59, fed by the rollers 58, pass into the open pocket 19, 34, where they meet the stops 38. From the supply point as in FIG. 3, the drive shaft 31, with it the arm 18 and the pocket 19, 34 are pivoted counterclockwise into the insertion position shown in FIG. 2. Rib 44 is disengaged from stop roller 43, so that pocket 19, 34 under the influence of spring 45, is closed by pivoting of retaining member 34, so that the letter contents 59 are held at the back by stops 38, at the side by the upwardly bent lateral edges 19a of plate 19, and at the front by the opener noses or points 21 and the downwardly bent edges 31a to 33a of the arms 31 to 33 inside the insertion pocket 19, 34.

The envelope 57 is now passed by rollers 51 and 53 or feed belts 52 and 54 towards the pocket 19, 34 with the open closure flap 60 directed upward. The inclination of the feed plate 50 causes the flap 60, because of the inclined edge 32a of the middle arm 32 to pass on to the upper side of the retaining member 34. During the further advance of the envelope 57 the side edges of the envelope pass into the region of the inclined opener points 21, which cause the lower leaf or sheet 61 of envelope 57 to be passed underneath the lower side of pocket 19, 34. In other words, on the one hand the envelope 57 is passed upwards in the middle, and the side edges of the lower sheet 61 are passed downwards, so that, during the further advance of envelope 57, the latter is overlapped over the closed pocket 19, 34. As soon as the envelope 57 has left the region of rollers 51 and 53 the magnet 10 is actuated for a short time, imparting via the rod 13 and crank and pusher arm 15, pivotal movement to the pusher springs 16, thanks to which they grasp the envelope at its base and push it fully onto the closed pocket 19, 34 (see FIG. 6). After these procedures are completed the closed pocket 19, 34 is entirely inside the envelope 57.

The control means (not shown) now cause a further rotation of the shaft, until the emptying position shown in FIGS. 4 and 5 is reached, in which the closed pocket (FIG. 4) is directed obliquely downward and towards two conveyor rollers 62. In this position a single-armed ejector lever 63 (FIG. 5) is pivoted, its outer end contacts that of arm 39, so that the latter is moved forward against the action of spring 42, carrying with it ejector 25, which, with simultaneous resilient pivoting of retaining member 34, emerges forwards out of pocket 19, 34. At this point the ejector edge 28 of ejector 25 contacts the base of envelope 57, which is thus ejected from pocket 19, 34 while the letter contents 59 remain against the dog 30 and in this way, together with the envelope 57, can be fed to the roller 62, until the latter grasps the envelope on the one hand and the letter contents on the other hand, withdrawing the envelope from the pocket 19, 34, and the letter contents from the pocket, so that the letter contents are now located within the envelope. The open and filled envelope is now passed in known manner to a gumming and folding device, and is then passed, ready for posting, to an outlet point.

Particularly because of the fact that during the filling procedure, the letter contents are not subject to any transverse movement, but execute a pure rotary movement until the emptying position is reached, the supply point being located above and the emptying point being below, a particularly compact vertical structure is made possible, so that an envelope filling machine provided with the device described for example can be simply incorporated in the framework of a writing desk.

While there is shown and described present preferred embodiments of the invention, it is to be distinctly understood that the invention is not limited thereto, but may be otherwise variously embodied and practiced within the scope of the following claims.

Accordingly, what is claimed is:

1. An envelope filling machine including an insertion device, a pocket for taking-up inserts, means for pivotally said pocket from an insertion position for the inserts into a position for the infeed of an envelope, means for opening the pocket in the insertion position and closing the pocket in the infeed position, the improvement comprising said pocket only being open at one side, shaft means for enabling pivoting of the pocket from the insertion position through the infeed position into a delivery position for delivering the insert with the envelope, and means for displacing the envelope into the pocket in the infeed position and for ejecting the envelope together with the insert in the delivery position.

2. An envelope filling machine as defined in claim 1, wherein the insertion pocket has a carrier plate, and a retaining member mounted to be pivotal relative to the carrier plate.

3. An envelope filling machine as defined in claim 2, wherein an ejector is arranged on the carrier plate, said
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5 ejector being provided with a forward ejector rim and a rear dog.

4. An envelope filling machine comprising an insertion device including a unit for positioning the letter contents before the insertion procedure, the positioning unit being designed as an insertion pocket closed at one end, an envelope feed device, a carrier plate having two laterally mounted opener points, opposite each of which there is arranged a retainer means of the envelope feed device and between which a feed plate is attached.

5. An envelope filling machine as defined in claim 4, comprising pusher spring means arranged between the retainer means and laterally of the feed plate.

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