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F. R. BONSCI

3,410,053

MACHINE FOR THE AUTOMATIC INSERTION OF ENCLOSURES, SUCH
AS LETTERS, PRINTED MATTER AND THE LIKE

Filed June 8, 1966

2 Sheets-Sheet 1

Fig. 1

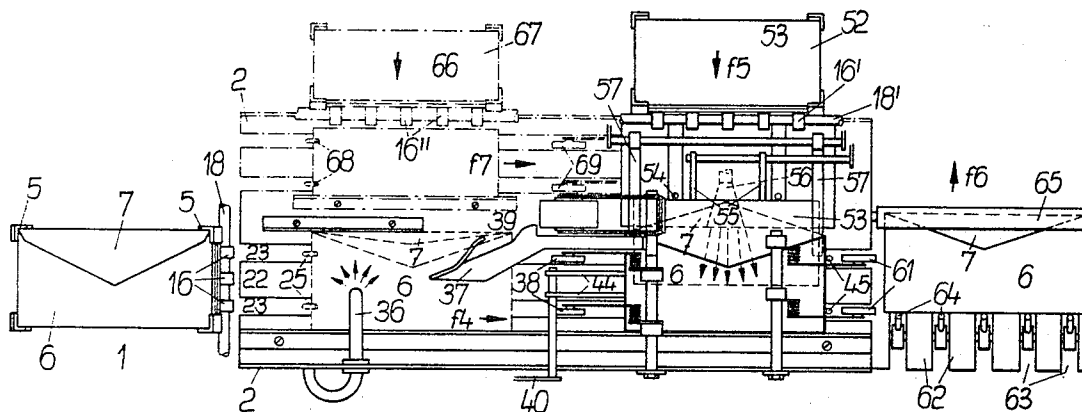
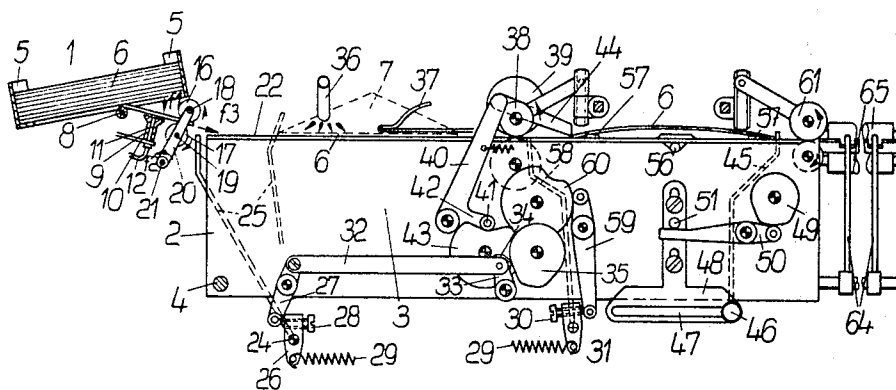


Fig. 2

Inventor

FRANCOIS RODOLPHE BONSCI.

by

Jacub Le. Rollin,

ATTORNEY

Nov. 12, 1968

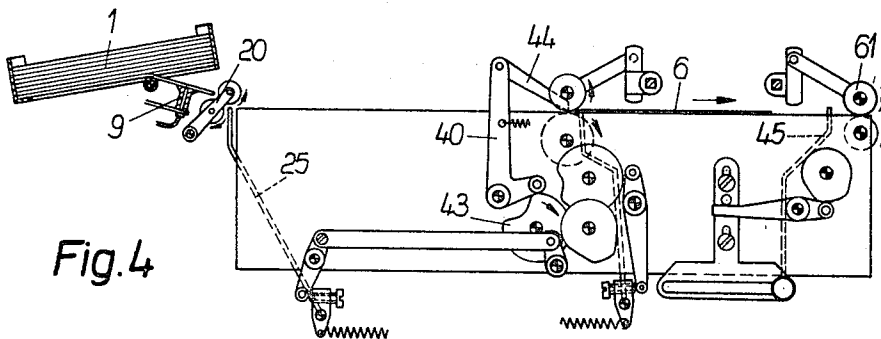
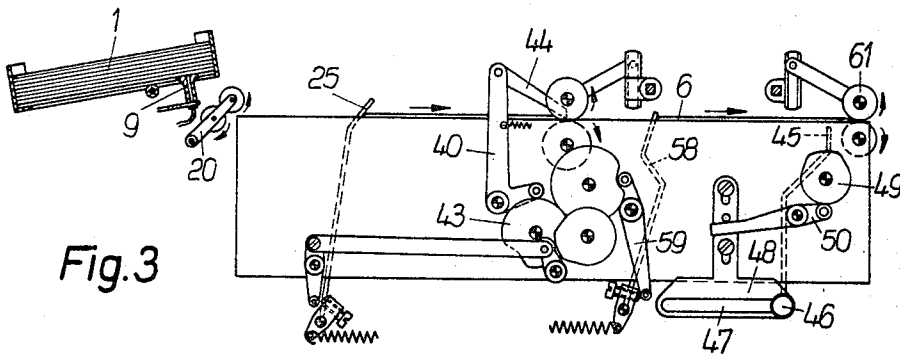
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Inventor

FRANCOIS RODOLPHE BONSCH

by

Jacab Le Kollin

ATTORNEY

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MACHINE FOR THE AUTOMATIC INSERTION OF ENCLOSURES, SUCH AS LETTERS, PRINTED MATTER AND THE LIKE

Francois Rodolphe Bonsch, Paris, France, assignor to Mathias Bauerle G.m.b.H., St. Georgen, Black Forest, Germany

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7 Claims. (Cl. 53—266)

The invention relates to a machine for the automatic insertion of enclosures, such as letters, printed matter or the like, in envelopes and for closing said envelopes. A German patent application No. B 78,280 VII/10d is directed to a simple and efficient machine of this type, which differs from previously known machines of this kind, and in which the envelopes and the enclosures are brought upon a table, where the closing flaps are joined with one another by pneumatic-mechanical means and are conveyed to a discharge point. As disclosed in the above application, the tables are mounted at different levels, so that the joining of the envelopes and of the enclosures, as well as the carrying away of the stuffed envelopes is complicated. It has been proposed to deliver the inserts to an insertion station along a conveyor path parallel to that of the envelopes. It became apparent that the inserts can be transported in a path which is perpendicular to that of the envelope conveyor, at least near the insertion station.

The invention is directed to such an embodiment. First of all, the movement of the envelopes and the inserts, as well as the entire operational cycles, take place at the same table level, where the envelopes are forwarded in a longitudinal direction, while the inserts are moved along in a direction perpendicular to said longitudinal direction.

This construction has the advantage of simplicity and efficiency, so that any obstacles may be easily recognized and overcome.

In a further development of the invention, the machine is connected at its beginning with an envelope magazine, with a conveyor table provided with slots, said table being provided with conveyor and holding elements, which are used for the periodical movement of the envelopes to a station for opening the closing flaps, to another station for insertion, yet another for closing the flaps and for moving the envelopes to an ejection table.

At the same time the work position for the closing of flaps, to which the envelopes are fed by swinging levers extending through slots in the table, is provided with a side nozzle and a reversing skid, several conveyor rollers, as well as wetting rollers for wetting the gummed edges of the closing flaps arranged in the slots. This construction assures, in a simple manner, the preparation of the envelopes for receiving enclosures at a subsequent work station. This latter station is provided with several push rods and slot rods connected to levers, for precisely positioning the envelopes, while the magazine for the inserts is secured transversely to the table at this station, with transverse means for insertion, closing and forwarding, in the form of a blow nozzle, a spoon-shaped envelope opener, ratchets and levers, are provided at the same station.

In a manner similar to the table for conveying the envelopes to the delivery table, the ejection table to which are delivered the stuffed and sealed envelopes by means of rollers, is provided with transverse slots and with a pair of delivery shafts which simultaneously press the closing flaps, and which deliver the ready, stuffed envelopes to a receiving basket.

The inventive construction of the machine offers a particularly simple possibility for inserting several enclosures in the envelopes. For this purpose there are provided, at the table, near the magazine for receiving the inserts, one or several magazines for receiving further inserts which may be delivered in longitudinal direction on top of the inserts removed from the first magazine and deposited on the table, by means of a swingable lever and conveyor rollers.

An embodiment example of the invention according to the drawings is described below.

In the drawings:

FIG. 1 is a side elevational view of the machine;

FIG. 2 is a top plan view thereof;

FIG. 3 a partial view, similar to that of FIG. 1, in another position and

FIG. 4 is a partial view, similar to FIG. 1 with the parts in still another position.

The machine shown in the drawings is mounted on a base (not shown) and comprises a frame 3 consisting of two parallel side walls 2. The side walls 2, rigidly secured to one another by transverse bolts 4, receive the various stations for the envelope operations.

At the left end of the frame, there is mounted a magazine 1, having a bottom opening for receiving envelopes 6, the magazine being provided with adjustable angular side walls 5. The envelopes 6, which are inserted in the magazine with the closing flaps arranged upwardly, are disposed with their central portions on a tube 8. A lever 10, swingable in and against the direction of arrow f_1 , is disposed under the tube, the free end of the lever being provided with one or more suction cups. The cups are provided with respective bores 11, communicating with a vacuum source (not shown) by means of hoses 12.

To the right of the device for stripping the envelopes, there is positioned a lever swingable about a shaft 21 in and against the direction of arrow f_2 , and which carries on bolts 18, 19, rollers 16, 17 in elastic contact with one another and rotatable in the direction of the arrows f_3 .

The stripping and conveying of the individual envelopes 6 takes place from the left to right. The envelopes are deposited on a table 22, connected to side walls 2 and provided with several longitudinal slots 23. Conveyor levers 25, swingable about a stationary axle 24, extend through the slots, for further forwarding the envelopes 6. The lower ends of these conveyor levers are actuated by a pair of double levers 26 and 27 which engage with one another by means of an adjusting screw 28.

A spiral spring 29 biases the lower swingable lever 26, the other end of the spring being attached to a lever 31 swingable about a fixed axle and provided with an adjusting screw 30. The upper double lever 27, which is likewise swingable about a fixed axle, is linked with a lever 33 by an elongated plate 32, the lever 33 being controlled by a cam disk 35 and roller 34. The envelope 6 forwarded to the table 22, is moved by the above described linkage in the direction of arrow f_4 , to an insertion station. On its way to that station, the envelope 6 passes a side blow nozzle 36, for lifting the closing flap 7, as well as a skid 37, which raises the closing flap 7 fully and tilts it about the table level. Finally there are provided, to the right, a pair of conveyor rollers 38, for further conveyance and adjacent to these, a wetting roller 39 for wetting the glued side of the flap 7. To make certain that the prepared envelopes 6 fit exactly in the position in which the inserts are placed, there is provided a swingable push lever 40 which is controlled by a cam 43 through a short arm 42, provided with a roller 41 and having pawls 44. In order to maintain the envelopes 6 in the position for filling, there are provided several hold-

ing rods 45, the lower ends of which are secured by means of a clamping screw 46 in a horizontal slot 47 on a rocker arm 48, and said ends are adjustable, depending on the length of the envelopes. The holding rods 45 are raised into the holding position shown in FIGS. 1 and 4 or lowered into the disengaged position, according to FIG. 4, by means of double lever 50, controlled by a cam disk 49, the free ends of the lever cooperating with a bolt 51 of the rocker arm 48.

Opposite the station where the envelopes are briefly stopped by the holding rods 45, there is introduced laterally, through a frame in the side walls 2, a magazine 52, for the inserts. This is similar to the initially described magazine 1 and is also provided with a similar receiving device, only bolts 18' and the upper rolls 16' thereof being shown. The rolls 16' forward the inserts 53 in the direction of the arrow f_5 to the open envelope 6. For the complete insertion of the inserts, there are provided conveyor levers 54, which are designed and actuated in the same manner as carrying levers 25 and paws 44. To facilitate the insertion of the inserts, there are provided a blow nozzle 56 for transverse blowing and a spoon-shaped letter opener 57, which are displaceable transversely by means of cams and levers.

After the subsequent insertion of the inserts, the envelope opener is retracted. To move the filled and subsequently sealed envelopes a small distance, there are provided levers 58, which are secured to lever 31 which is connected, by means of spring 29 with lever 26. The adjusting screw 30 of this lever cooperates with a lower end of a double lever 59, the upper end of said lever being controlled by a cam 60.

In order to finally discharge and seal the envelope, a pair of shafts 61, rotatable in the direction of the arrow are provided on the right, said shafts moving the envelopes 6 to an ejection table. This table is provided with slots 63, in a manner similar to table 22, and swingable levers 64 extend through these in the direction of arrow f_6 , the levers 64 being operable by appropriate means (not shown). A constantly driven pressure roll 65 is mounted at the rear end of the table, the envelopes 6, with their moistened flaps 7 being run through under pressure of said roll, and falling subsequently into a receiving container.

Should more than one enclosure be inserted in the envelopes, the machine shown in FIG. 2, may be developed as indicated by the dotted lines in that figure. An additional magazine 67, for receiving additional inserts 66, is mounted under a lateral extension of table 22, on the side wall 2; the magazine is constructed in a manner similar to the insertion magazine 52. The inserts 66 are forwarded to the table transversely from said magazine by the rolls 16'', by the conveyor levers 68, which are constructed like the conveyor levers 25, and by the transport rollers 69 which are similar to rollers 38, in the direction of arrow f_1 , moved onto the first enclosures 53 and inserted together with these in the envelopes 6.

I claim:

1. Machine for the automatic insertion of enclosures, such as letters, printed matter and the like in envelopes of the gummed flap type comprising, in combination, a frame, a longitudinally extending conveyor table mount-

ed on said frame, an envelope magazine disposed adjacent one end of said table, first means for conveying periodically, in longitudinal direction, individual envelopes from said magazine to a first envelope opening station on said table, means for opening the closing flaps of the envelopes at said first station, said means being disposed perpendicularly to said table, second means for advancing in longitudinal direction the envelopes with their flaps open to a second station, a magazine for inserts disposed adjacent said second station, at said second station means disposed perpendicularly to said table for inserting the inserts in the envelopes, and means for closing the envelope flaps upon insertion, wetting means for the flaps arranged between said first and second stations, third means for advancing in longitudinal direction the envelopes to a third ejection station, means disposed perpendicularly to said table for applying pressure to the flaps at said third station and means disposed perpendicularly to said table for discharging the envelopes from said third station, all said means being disposed at the same level.

2. Machine according to claim 1, wherein said table is provided with longitudinally extending parallel spaced slots and means for holding the envelopes at each of said stations at predetermined intervals, said first, second and third means cooperating with said slots and being operable with said holding means in timed relationship.

3. Machine according to claim 2, wherein said means for opening the closing flaps of the envelopes comprises a swingable lever for positioning the envelopes, a blow nozzle disposed perpendicular to said table, a skid for turning open the flaps.

4. Machine according to claim 3, wherein said wetting means comprises a plurality of rollers for moistening the flaps, said rollers extending through said slots in said table.

5. Machine according to claim 4, wherein said inserting means comprises a plurality of pawls, a plurality of holding rods and a spoon-shaped opener.

6. Machine according to claim 5, wherein the other end of said table at said third station is provided with a plurality of transversely disposed slots, a plurality of swingable levers cooperating with said slots for displacing the envelopes transversely of said table and a pair of rollers for simultaneously pressing said flaps and forwarding the envelopes to an envelope stacking station.

7. Machine according to claim 6, further provided with a plurality of magazines at said second station, for a plurality of varying inserts, said means for inserting the inserts being adapted to advance each of said varying inserts onto said table at said second station.

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TRAVIS S. MCGEHEE, *Primary Examiner.*

E. F. DESMOND, *Assistant Examiner.*