DELIVERING AND STACKING MECHANISM

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The present invention relates to improvements in delivering and stacking mechanisms for envelope making machines and has for its object the provision of such a machine which will rapidly and accurately receive the envelopes from the folding mechanism of an envelope making machine, for example, and deliver them stacked to a table or other appropriate means for receiving them. Other and more specific objects to be attained and advantages of the invention will be apparent as the description proceeds, the features of novelty being specifically pointed out in the appended claims. For a complete understanding of the invention reference is now had to the following detailed description, taken with the annexed drawings, in which:

Figure 1 is a view partly in vertical section of an illustrative embodiment;

Figure 2 is a plan view of the machine on a somewhat larger scale than the preceding figure; and

Figure 3 is an end view partly in vertical section on a still larger scale of the mechanism receiving the stack of blanks.

Reference to Figure 1 of the accompanying drawings will indicate in a general way the operation of the improved mechanism. The more or less completed envelopes are received from the folding mechanism which is indicated in Figure 1, such mechanism serving to fold the top flap after which operation the folded envelope is fed out of the folding mechanism between a pair of oppositely disposed conveyor bands which permit it to be engaged by pushing elements on a traveling conveyor which move the successive blanks along a guide-way, shown, and within the reach of the stacking mechanism shown in detail, Figure 3, this mechanism serving to remove the envelopes from the conveyor and bring them into stacked condition as shown in said figure. Means are also provided for insuring the correct positioning of the envelopes as received and for maintaining the received envelopes in correct position while fresh envelopes are admitted to the stack.

Referring to the drawings by characters of reference, A denotes generally the end of the folding mechanism proper, the same comprising a jaw member 10 which together with a movable stop 11 and a cooperating stationary jaw member 12 accomplishes the folding of the top flap of the envelope blank B by introducing same into the bite of rollers 15 and 16. The blanks thus fed from the folding mechanism are received by suitable mechanism which in the embodiment shown comprises a pair of oppositely disposed belts 20 and 21. Belt 20 passes around pulleys 22, 23 and belt 21 passes around pulleys 24, 25 and also a large pulley 26 contained on a shaft 27. On shaft 27 are also mounted a pair of sprocket wheels 28, 29 around which pass respectively chains 30, 31 which latter also pass around sprockets, 32, 33 at the further reach thereof. Each chain 30 and 31 contains a plurality of engaging members 35, 35. It will be noted that the engaging members of each chain are in more or less exactly the same phase. The purpose of these members is to engage the ends of the blanks held between conveyor bands 20 and 21 in order to convey them to the stacking mechanism. Cooperating with such members are a plurality of guides 36, 37, 38, 39, Figure 2, which are supported on one end by means of a bar 40 around a portion of the periphery of which they extend as shown in Figure 1, while at the opposite ends they are supported on a shaft 42 by means of ears 43 which are secured to the shaft by set screws 44, the arrangement being such as to permit of adjustment of guides 36 to 39 with respect to the chains 30 and 31. From the foregoing it will be seen that the action of the members 35 is to engage the rear edge of the blank as seen in Figure 2 and push it along the guide-ways 36 to 39 to the stacking mechanism at the right of Figure 1. For accurate adjusting of the chains, each of them has a cooperating idler roll 46. Furthermore, in order not to damage the envelopes by their engaging action such members 35 are preferably constituted of a resilient material in the nature of a brush as is best shown in Figure 3. Moreover, it will be noted that by providing a suitable spacing of the guides 36, 37, 38 and 39 from the chains 30 and 31, the envelopes may be propelled along the guide-ways by the mere pushing action of the engaging members 35, and that pinching or other undesired deformation of the envelopes is avoided. As hereinbefore noted, the proper adjustment of the distances between the guides and the chains is provided for by the set screws 44.

Passing now to a description of the stacking mechanism, this consists of a table 50, Figure 3, and a cover portion 51 preferably of special construction and comprising a plurality of members 51 attached to a cross bar 52 extending the width of the table. As shown in Figures 1 and 3, this cross bar carrying the members 51 is adjustable in height by means of the standards 53 which pass thru to table 50 through sleeves 54 and are held in adjusted position by gear rack 55 cut therein and pinion 56 meshing therewith, which...
latter communicates with a hand wheel 57 through a shaft 58. Turning the wheel 57 thus moves both standards by the same amount. Preferably the members constituting the cover portion are provided with engaging plates 60 which are capable of moving upwardly a slight distance against members 51 due to the arrangement of the screws 61 which, while sustaining the plate 60 from a member 51, pass through such members and permit the plate to have a slight play upwardly from the position shown in Figure 3. At least one of the plates, preferably the middle one, is provided with an oblique extending deflecting portion 63 in order to insure that the envelopes are carried into the space between the plates 56 and 60 and to prevent the seal flaps of the envelopes from opening or buckling.

For the purpose of transferring the blanks to the table 50 and to free them from the pusher members 35, oscillating fingers or deflectors 65 are provided which in the embodiment shown are secured to a shaft 66 which is oscillated by means of a link 67 attached to operating mechanism, not shown. Accordingly, at the proper time, i.e., when the members carried by the conveyor chains are in the position shown by Figure 2, the deflecting members 65 are moved so as to carry the envelope borne by members 35 onto the table 50 with the edge of said envelope in contact with said table. In order not to disturb the envelopes already fed to said table a latch mechanism is provided both at the level of said table and above same, such lower latch mechanism consisting of a latch 69 pivoted at 68 and operated by means of a lever 70 pivoted at 71 and provided with a portion 72 serving as a weight to maintain the latch in holding position. A latch 74 also operated by gravity is provided to be engaged by the top of the envelopes, such latch being pivoted at 75 and being disposed in suitable slots in the cover portions 51 and 60. In order that the blanks may be stacked upon the proper compression, a weight 77 is disposed on said table at the remote end of the stack, this weight being pushed along by the action of the envelopes received on the table.

In operation the envelopes which have been received from the folding machine by means of the conveyor bands 20 and 21 are engaged by the members 35 on the conveyor chains 30 and 31 as has already been described and brought to the stacking mechanism. As each member 35 nears the position shown in Figure 3 the deflector 65 is moved to transfer same from said members 35 against the stack already formed or if it is the first envelope in the stack against the weight 77. The action of the deflector 65 is such as to bring the envelope through the latches 68, 74 which thus support the stack at its receiving end. It will be noted that by virtue of conveying mechanism shown it is possible to locate the receiving table at a conveniently accessible point beyond the envelope folding machine and at a suitable distance above the floor. Conveyors 30, 31, it will be noted, move at a speed considerably in excess of the conveyors 20, 21, with the result that the envelopes are further spaced apart, thereby allowing greater freedom of movement of the stacking element 65.

It will be evident that I have provided a rapid and accurate mechanism for delivering the envelopes from the folding machine to the stacking table, such action being more or less the reverse of the feeding action of the blanks originally fed to the envelope making machine in the form of a stack. Furthermore, due to the action of the stationary deflector members 63 the envelopes are caused to assume their correct position in the stack irrespective of the angle at which they leave the conveyors 30, 31.

It will be understood that various changes may be made within the embodiment specifically described without departing from the spirit of the invention and the scope of the appended claims. I claim:

1. In a stack receiving device, a horizontally extending table upon which the envelopes are received in vertical position, a cover plate above said table and a cover member loosely supported from said cover plate and adapted to contact with said envelopes and maintain them in vertical position.

2. A stacking device according to the preceding claim in which said cover plate and cover member carried thereby are adjustable to fit above said table for different sizes of envelopes.

3. A device for delivering and stacking envelopes from an envelope making machine or the like, in combination, a stack receiving device including a table, means for feeding envelopes from said envelope making machine thereto, and latch mechanism associated with said table and disposed so as to be operated by said envelopes upon their arrival at said table whereby the latter are prevented from dropping backward from off said table receiving means, said conveyor having resilient means thereon for engaging the edges of said envelopes.

4. A device for delivering and stacking envelopes from an envelope making machine or the like, in combination, a stack receiving device including a table, means for feeding envelopes from said envelope making machine thereto, and latch mechanism associated with said table and disposed so as to be operated by said envelopes upon their arrival at said table whereby the latter are prevented from dropping backward from off said table receiving means, said conveyor having resilient means thereon for engaging the edges of said envelopes.

5. In a sheet delivering and stacking device, a table for holding the stacked sheets, means for receiving the sheets from a machine which has performed an operation upon them and delivering them to said table, including a pair of conveyors adapted to hold and convey the sheets between them, one of said conveyors terminating short of the other, means including a third conveyor, a resilient finger carried thereby and a stack extending from said first two conveyors to said table and disposed so as to permit said finger to push the individual sheets therealong.

6. In a device for delivering and stacking envelopes from an envelope folding machine, means for receiving said envelopes from said machine, a table for the stacked envelopes, and means including a conveyor individually taking the envelopes from said receiving means and presenting them in a substantially vertical position to the stacking device above said table, said stacking device including a deflector above said table against which the leading edge of the envelope strikes and by which it is deflected toward the stack, and means to move the deflected envelope against the stack.

7. In a sheet delivering and stacking device, a table for holding the stacked sheets, means for receiving the sheets from a machine which has
performed an operation upon them and delivering them to said table, including a pair of conveyors adapted to hold and convey the sheets between them, one of said conveyors terminating short of the other, a third conveyor delivering the sheets from the first two conveyors to said table, and a transfer device comprising a track member which extends into the path of travel of the sheets between the pair of conveyors first mentioned and thence along and beneath said third conveyor between which and said track member the sheets are caused to travel.

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