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PARTITION ASSEMBLY FEEDING MECHANISM

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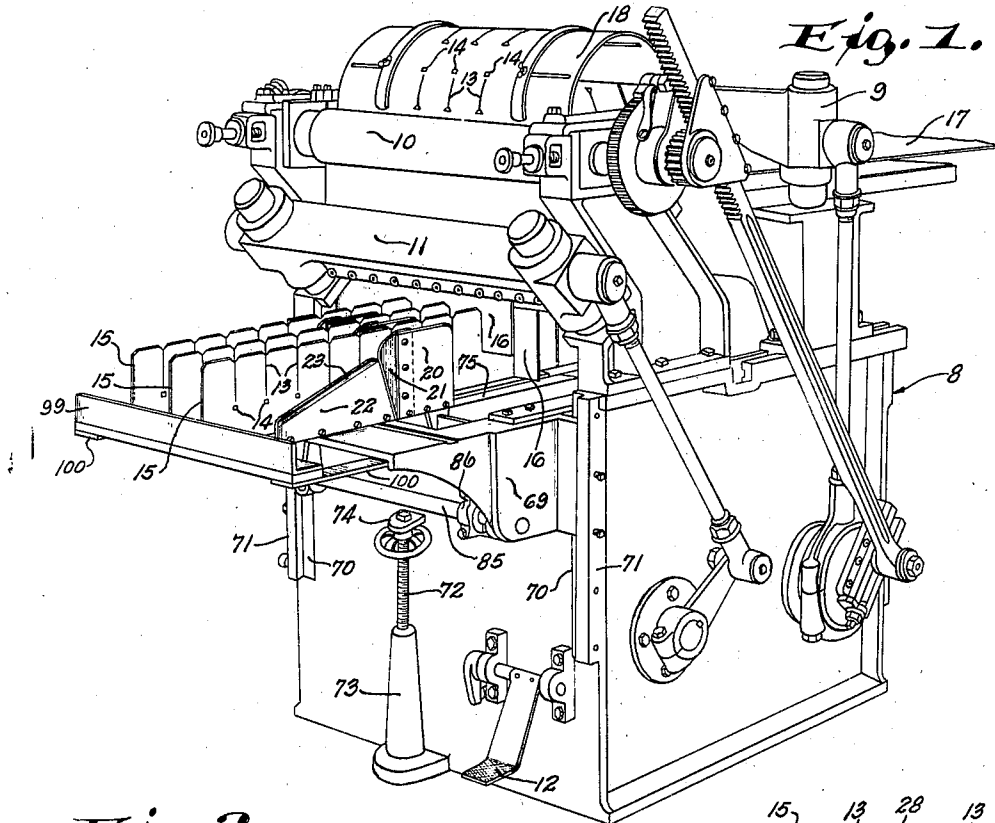


Fig. 2.

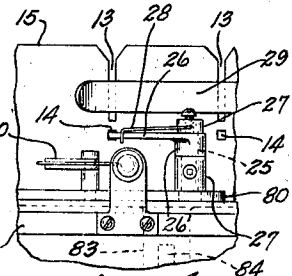
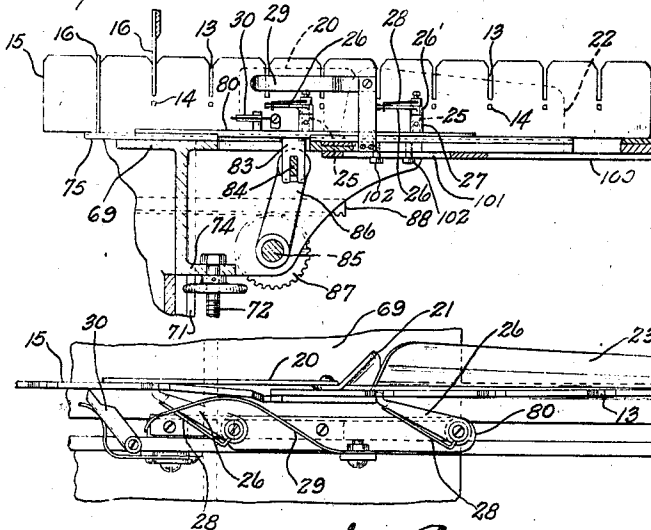


Fig. 4.

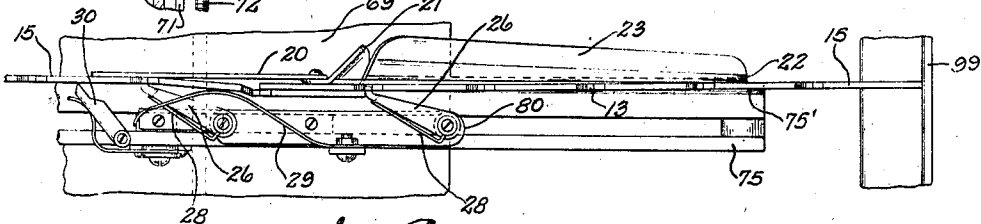


Fig. 3.

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PARTITION ASSEMBLY FEEDING
MECHANISM

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4 Claims. (Cl. 271-2.5)

This invention relates to improvements in partition assembly feeding mechanisms.

In co-pending application Serial No. 189,964, filed February 11, 1938, of which I am a co-inventor, there is disclosed a partition fabricating machine for forming and assembling paper board partition strips of the type employed in various classes of cartons in which individual pockets are required. The machine of said co-pending application continuously forms one set of cut and slotted partitions and successively feeds said partitions into position for assembly while partitions of another and previously formed set are being fed into the machine in vertical disposition to be engaged and assembled with the first-mentioned partitions.

A general object of the present invention is to provide in a machine of the character described, specific improvements in the feeding means for the pre-formed partitions.

The machine of the above-mentioned co-pending application is adapted to form, handle, and assemble partitions having spaced transverse slots whereas the partitions formed and handled in the machine of the present invention are modified therefrom to the extent of having apertures punched therein inwardly of and alined with the inner ends of the various slots, whereby fingers on the reciprocal partition feed slides positively engage in said apertures to feed the preformed partitions toward the other set of partitions being finished and advanced into assembly positions in the machine.

A further object of the invention is to provide a partition assembly feeding mechanism for a machine of the class described wherein the partition advancing fingers, engageable with the partition apertures, may be originally set for any desired reciprocal movement within certain limits, and which fingers will thereafter operate, without adjustment to positively stepedly advance each partition a distance equal only to the distance between a pair of slots therein, whereby extreme accuracy is assured and the partitions are advanced to successively bring their forward slots into exact assembly position.

A further object of the invention is to provide a partition assembly feeding mechanism for a machine of the character described in which succeeding partitions may be indiscriminately and inaccurately dropped into the feeding mechanism in overlapped relation relative to the forward partitions, but which partitions, upon assembly of the forward partitions, will

be immediately advanced accurately with the required spacing as between the slots of the forward and the succeeding partitions.

A further object of the invention is to provide a partition assembly feeding mechanism for a machine of the character described having means permitting easy disposition of successive partition strips thereon in vertical positions.

A further object of the invention is to provide a partition assembly feeding mechanism for a machine of the character described provided with means for preventing undesirable binding as between the forward overlapped end of a succeeding partition and the rear portion of a forward partition.

A further object of the invention is to provide a partition assembly feeding mechanism which is of very simple construction, is automatic, accurate, and expeditious in its operation, is strong and durable, and is well adapted for the purposes described.

With the above and other objects in view, the invention consists of the improved partition assembly feeding mechanism, and its parts and combinations as set forth in the claims, and all equivalents thereof.

In the accompanying drawing in which the same reference characters indicate the same parts in all of the views:

Fig. 1 is a perspective view of a partition fabricating machine incorporating the improved partition feeding mechanism;

Fig. 2 is a side view of the partition feeding mechanism with portions thereof shown in vertical section;

Fig. 3 is an enlarged fragmentary plan view of the partition feeding mechanism; and

Fig. 4 is an enlarged fragmentary side view of the mechanism to show structural details.

Referring now more particularly to the drawing, it will appear that an improved partition fabricating machine, generally of the type disclosed in said co-pending application, is indicated by the numeral 8. Save for the partition assembly feeding mechanism and the dies for cutting the paper board, the machine embodies the same mechanisms and will not be described in detail.

The machine is operated by a main drive shaft (not shown) and through various connections a punch head 9 is reciprocated and feed rollers 10 are revolved. Also, a knife frame 11 is reciprocated and means are furthermore provided for horizontally reciprocating pre-formed partition holding bars. As in said co-pending applica-

tion, operation of the entire machine is controlled by a foot pedal 12 which manipulates a clutch controlling rod associated with a clutch on the operating shaft of the machine. In the co-pending application the punch head carries punches which cooperate with dies to cut spaced elongated slots in the sheet material fed thereto. In the present machine the punches and dies form in the sheet material not only transverse rows of spaced slots 13, but adjacent the inner ends of the slots and slightly spaced therefrom, apertures 14 are also cut, which apertures become important in connection with features of the pre-formed partition feeding mechanism hereinafter to be described.

To understand the utility of the pre-formed partition feeding mechanism in connection with the other features of the machine, a review of said co-pending application will indicate that a set of pre-formed partitions designated 15 are available for assembly with other partitions which are in the process of being formed and successively fed into assembly positions by the machine. The latter partitions, indicated by the numerals 16, are cut from an elongated strip or sheet of paper board material 17 which is fed into the right end of the machine (with reference to Fig. 1) and which is operated on at proper intervals by the punches and dies to provide the slots 13 and apertures 14. Said sheet material is engaged and advanced by the feed rollers 19 after having been extended over an adjustable apron 18 and the material is ultimately severed transversely into strips by a knife carried by the frame 11, which severed and slotted strips are then successively lowered and engaged in the forward aligned slots of a set of the intermittently advanced preformed partitions 15.

With the foregoing general explanation of the entire machine, reference will now be made to the specific improvements in the preformed partition feeding mechanism. At the forward or left end of the machine (referring to Fig. 1), there is a vertically adjustable strip feeding platform 69. The under portion of said platform is provided, at its sides, with depending vertical rails 70 slidably received in vertical tracks 71 on the casing. The platform is held in a desired position of vertical adjustment by a screw 72 threaded into a base support 73 and engaging an under flange 74 on said platform. On said platform 69 there are a plurality of spaced-apart slotted strips 75. Against the side of each strip there is mounted in vertical position a partition supporting panel 20 having an outwardly flared wing 21 on its inner end, as well as a slightly outwardly inclined and tapered plate 22 with an out-turned guiding edge 23 at its upper edge. The panels 20 are adapted to support the rear end portions of forwardly advanced pre-formed partitions 15, while the plates 22 receive and support the forward end portions of succeeding partitions. The succeeding partitions may be put into position indiscriminately at any stage of the advancement of the forward portions and the inclination of the plates 22, together with the out-turned edges 23 thereof and the wings 21 permit easy insertion of said latter partitions with their forward ends overlapped by the rear ends of the forward partitions without undue binding and frictional engagement, as best shown in Fig. 3. Beveled faces 75' on side edge portions of said strips 75 cause the succeeded partitions, when dropped into position, to incline and lean against the plates 22.

Slidably mounted within the slot of each strip 75 is an advancing bar 80 of relatively short length. Extending vertically upwardly from the top face of each bar is a pair of spaced-apart posts 25 with each post having the hub portion 26' of a laterally extending finger 26 pivotally mounted thereon between spaced collars 27. The outer end portion of each of said fingers is reduced and angled for entrance into apertures 14 of the preformed partitions 15, and the fingers are resiliently urged toward the faces of said partitions by springs 28. The post and fingers are so arranged that when the fingers are in engaging positions, the distance between the ends of a pair is equal to the distance between three apertures 14 in a partition. To insure this condition the rear post 25 may be longitudinally adjustably mounted on their bars. Each slotted strip 75, near its inner end carries on a suitable bracket a curved band spring 29 to engage a portion of a forward partition and to hold it against the panel 20, and a resiliently mounted pivotal finger 30 for engaging a lower face portion of a partition. It will be noted that the wing 21 is secured against the inner face of the panel 20 and thereby provides a shoulder which spaces the rear portion of the forward partition. This shoulder, together with the fact that the spring 29 engages a forward portion of the forward partition, are factors in urging a bowing of the rear extend of the forward partition away from the wall 22 for the ready accommodation of a rear partition and to prevent binding or interference as between the lapping portions of the partitions.

In order that the bars 80 may be reciprocated, each of the same carries a depending yoke 83 which straddles and is moved by a transverse connection 84. The transverse connection is moved forwardly and rearwardly relative to the platform 69, to thereby move the bars 80 in their slotted strips 75 with resulting intermittent advancing movements of the partitions 15, by an upper, transverse rock shaft 85. Said rock shaft has fast thereon a pair of cranks 86 whose free ends are pivotally connected with a suitable portion of the connection 84. One end portion of the upper rock shaft 85 has fast thereon a pinion 87 meshing with the teeth of a longitudinal rack bar 88. Said rack bar is supported in the machine and receives reciprocal motion from the main drive of the machine in the manner described in said co-pending application.

Through the mechanism described, the advancing bars 80 of the partition feeding platform are intermittently reciprocated forwardly and rearwardly. On movements of said bars toward the machine, the ends of the fingers 26 drop into spaced pairs of apertures 14 in the forward partitions 15. After engagement of the same and continued forward movement of the bars the engaged partitions are moved inwardly until the forward limit of movement of said bars is reached, the movement being initially adjusted so as to bring a series of slots in said pre-formed partitions beyond the ends of the panels 20 and into correct assembly position for engagement with a partition 16 being projected downwardly from the machine knife frame.

The band springs 29, the fingers 30, and the engaged partition 16 serve to hold the partitions 15 in their advanced positions so when the bars 80 commence their rearward reciprocations the fingers 26 become disengaged from the apertures 14 and slide rearwardly over face portions of the

partitions. The adjustment of the parts may be such that the rearward reciprocation of the bars 80 is somewhat greater than the distance between slots in a partition, but this is of no consequence because after the complete rearward movement of the bars, they again move forwardly and during the forward movement the forward fingers 26 enter partition apertures immediately rearwardly of the apertures previously engaged during the last forward stroke. The rear fingers engage rearwardly disposed apertures either in the forward partitions or in rearwardly disposed partitions and in any event, during the forward strokes of the bars the forward partitions are advanced only the distance between slots and the proper slots are projected into assembly position.

As previously suggested, in order to produce continuous feeding of the pre-formed partitions, it is necessary for the operator to maintain on the platform a series of rearwardly disposed partitions 15 whose forward end portions are originally overlapped by the forward partitions, as in Fig. 3. After a certain state of advancement of the forward partitions, during forward movements of the bars the rear fingers 28 will engage in apertures of the rear partitions whereby the same will be steppedly advanced with the forward partitions until the forward partitions are completely out of the feeding mechanism.

The rear ends of the overlapped, rearwardly disposed partitions, for subsequent feeding, can be gauged against an angle bar 99. Said angle bar is mounted transversely on the upper faces of longitudinal supports 100, which supports are slotted, as at 101, and are longitudinally adjustably secured to the platform 69 by screws 102.

It will be evident that the improved pre-formed partition feeding mechanism in the machine insures accurate and continuous feeding of the partitions, and the mechanism furthermore simplifies the procedure in receiving subsequent partitions, as due to the members 20 and 22 they are readily received and are supported in correct positions, and said members prevent binding and bending of the lapping portions of the partitions. Furthermore the mechanism is of simple and novel construction, and is well adapted for the purposes set forth.

What is claimed as the invention is:

1. In a partition strip advancing mechanism, a support for slidably receiving a lower edge of a partition strip, a forward wall carried by the

support to engage a face portion of a forwardly disposed partition, a rear wall for engaging a face portion of a rearwardly disposed partition, the adjacent ends of said walls being outwardly flared to permit ready overlapping of adjacent ends of alined partitions, and reciprocating partition advancing means associated with the support.

2. In a partition strip advancing mechanism, a support for slidably receiving a lower edge of a partition strip, a forward wall carried by the support to engage a face portion of a forwardly disposed partition, a rear wall for engaging a face portion of a rearwardly disposed partition, the adjacent ends of said walls being outwardly flared to permit ready overlapping of adjacent ends of alined partitions, the upper edge of said rear wall being outwardly flared to permit ready insertion of a subsequent partition between the face of said wall and an extended rear portion of a forward partition, and reciprocating means associated with the support for steppedly advancing the forward partition.

3. In a partition strip advancing mechanism, a support for slidably receiving a lower edge of a partition strip, a forward wall carried by the support to engage a face portion of a forwardly disposed partition, a rear wall for engaging a face portion of a rearwardly disposed partition, the adjacent ends of said walls being outwardly flared to permit ready overlapping of adjacent ends of alined partitions, said rear wall tilted slightly outwardly from vertical and the face of the support there adjacent being downwardly outwardly beveled whereby a partition disposed thereon will lean against the inner face of said wall, and reciprocating means associated with the support for steppedly advancing the forward partition and ultimately similarly advancing the succeeding partition.

4. In a partition strip advancing mechanism, a support for slidably receiving an edge of a partition strip, a wall carried by the support to engage a face portion of a forwardly disposed partition and a face portion of a rearwardly disposed partition, an intermediate portion of said wall being outwardly offset to permit ready overlapping of adjacent ends of alined partitions, and reciprocating partition advancing means associated with the support.

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