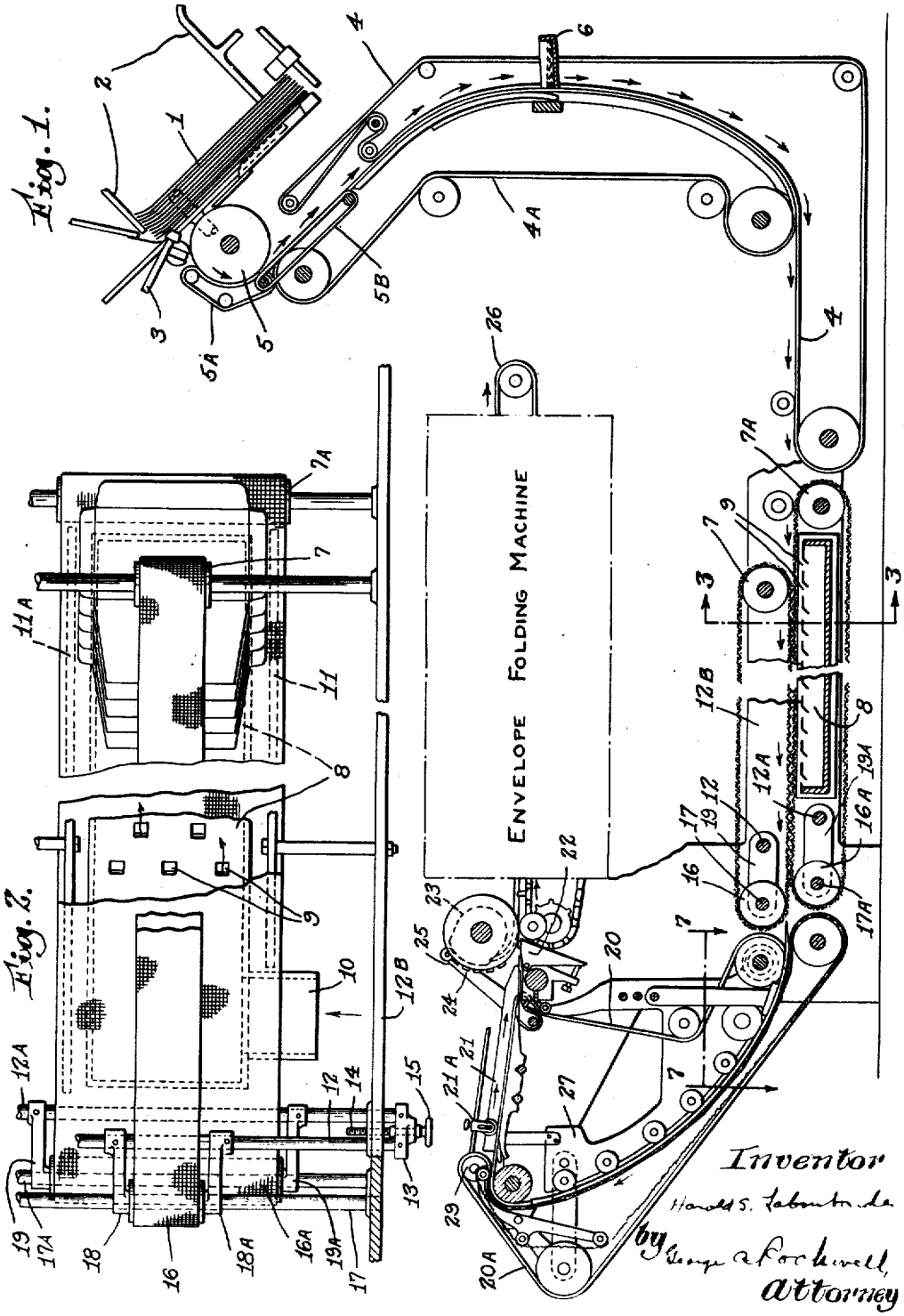
Sept. 19, 1939. H. S. LABOMBARDE 2,173,171

MACHINE FOR ACTING ON BLANKS

Filed July 19, 1935 4 Sheets-Sheet 1



Sept. 19, 1939. H. S. LABOMBARDE 2,173,171

MACHINE FOR ACTING ON BLANKS

Filed July 19, 1935 4 Sheets-Sheet 2

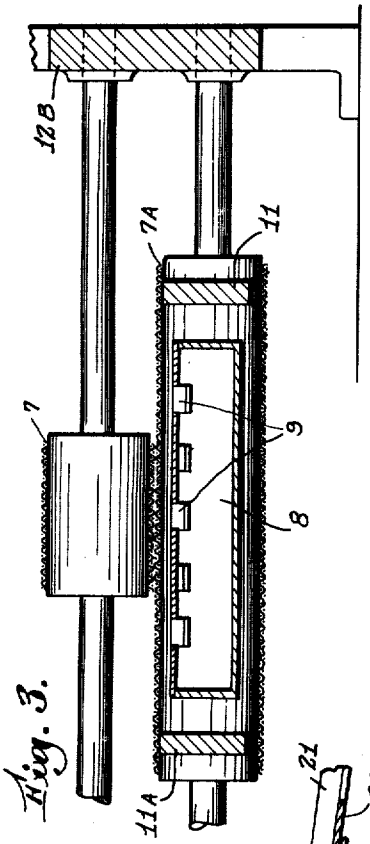


Fig. 3.

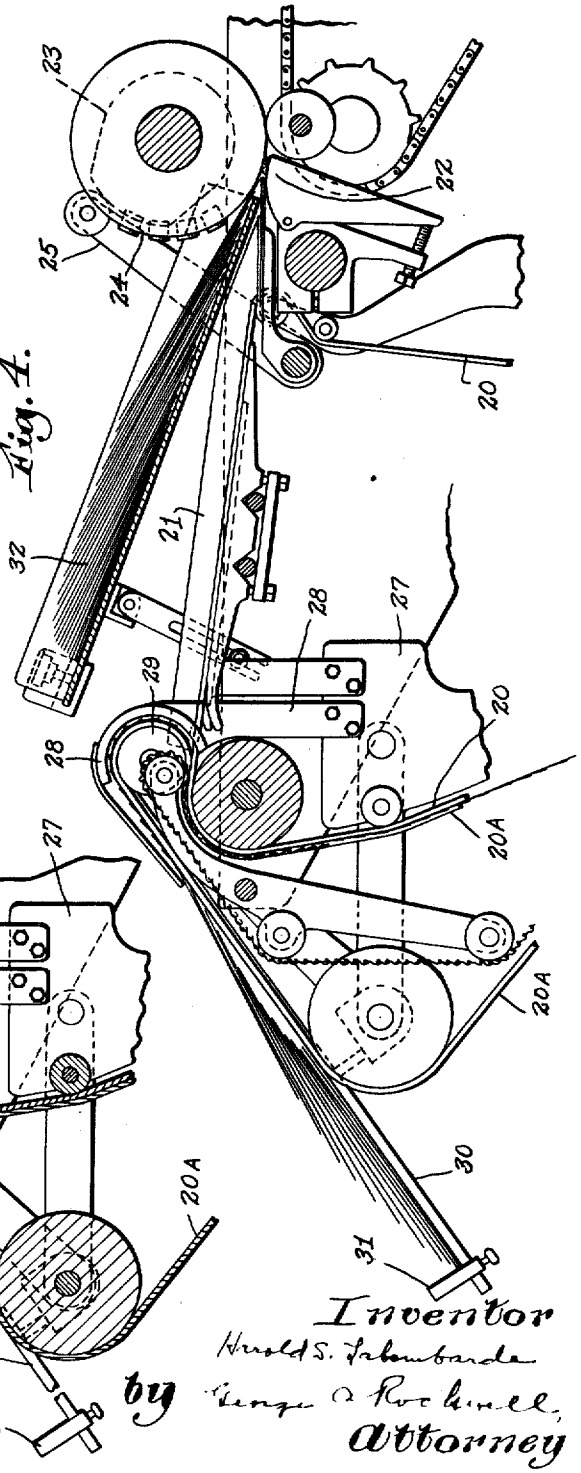


Fig. 4.

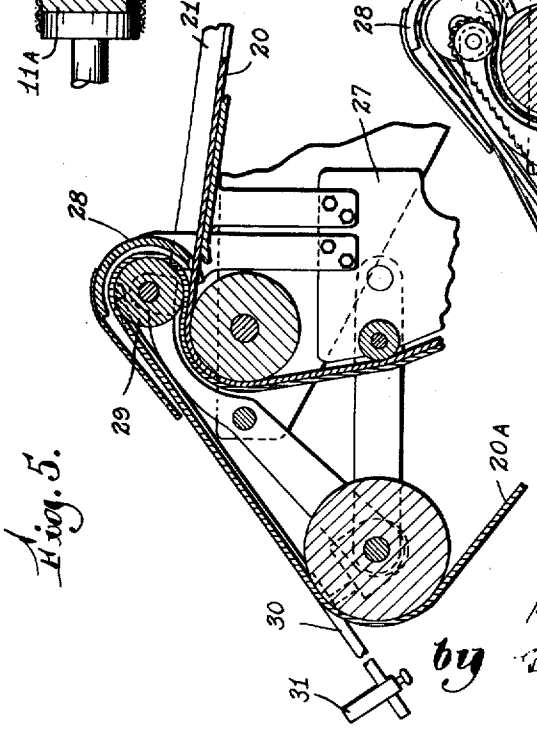


Fig. 5.

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Sept. 19, 1939. H. S. LABOMBARDE 2,173,171

MACHINE FOR ACTING ON BLANKS

Filed July 19, 1935 4 Sheets-Sheet 3

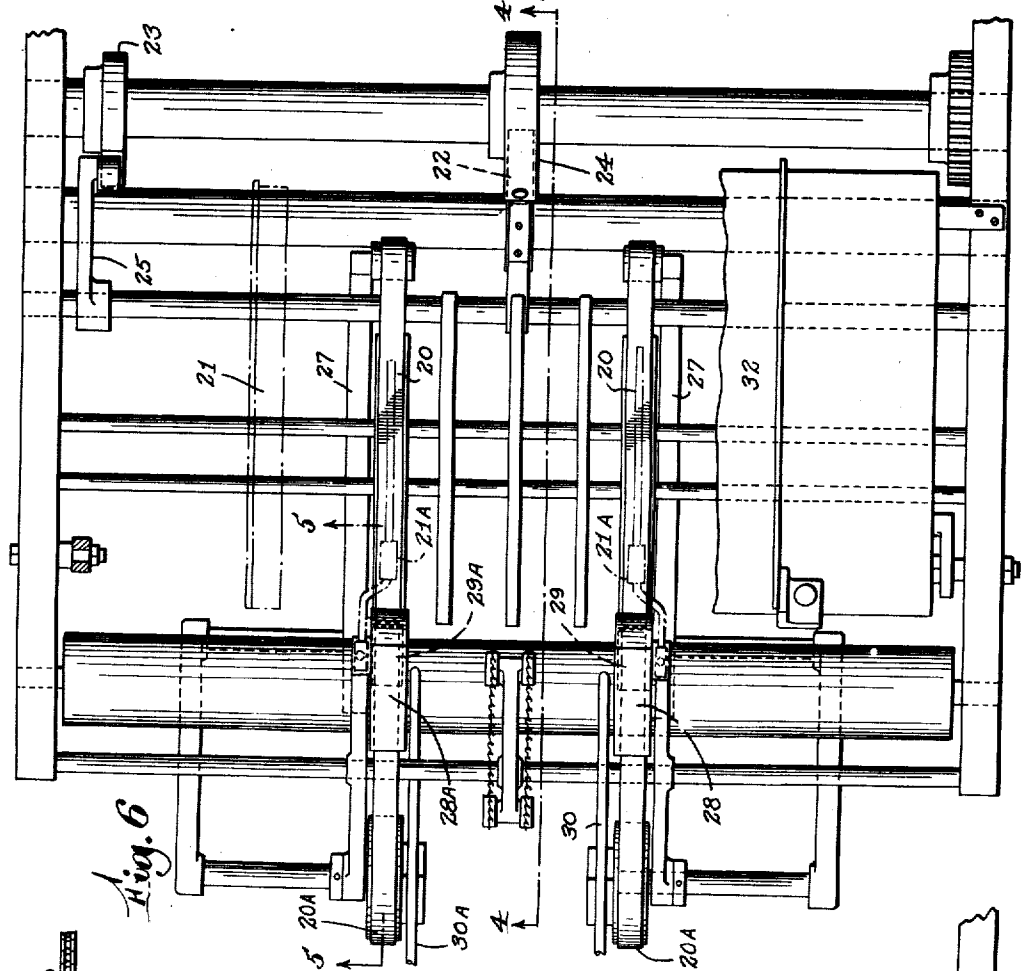


Fig. 6

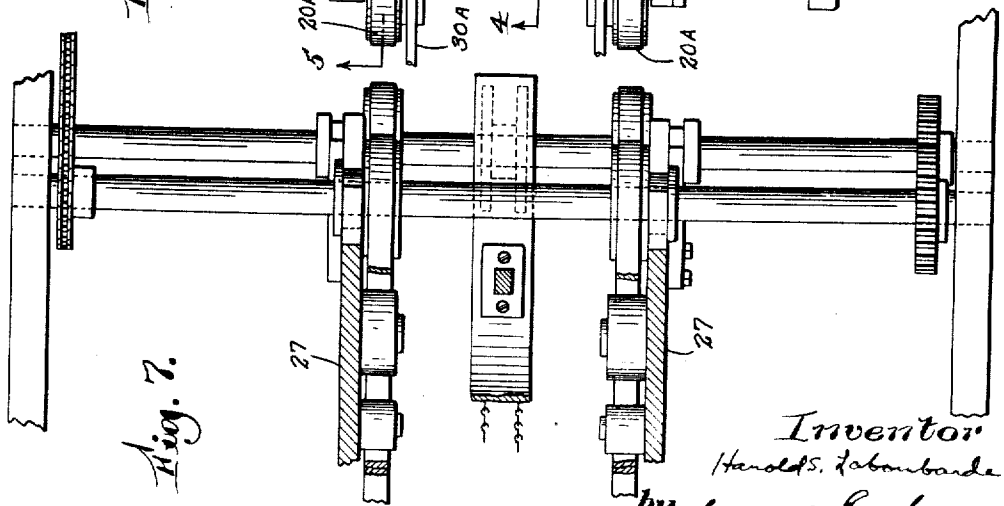


Fig. 7.

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Sept. 19, 1939. H. S. LABOMBARDE 2,173,171

MACHINE FOR ACTING ON BLANKS

Filed July 19, 1935 4 Sheets-Sheet 4

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Patented Sept. 19, 1939 2,173,171

UNITED STATES PATENT OFFICE

2,173,171

MACHINE FOR ACTING ON BLANKS

Harold S. Labombarde, Nashua, N. H., assignor to The International Paper Box Machine Company, Nashua, N. H., a corporation of Maine

Application July 19, 1935, Serial No. 32,307

7 Claims. (Cl. 93—62)

A feature of my invention relates to an overlapped gumming mechanism feeding to a chain belt conveyor. The chain conveyor holds the blanks from curling because the blank is supported throughout the gummed area of the sealing flap. The fact that the chain belt extends beyond the gumming, means that no adjustment is necessary and this means quicker set up. The chain conveyor has a sidewise adjustment at one end, so that the gummed and dried blanks may be lined up properly with relation to the feed to the folding mechanism.

Another feature is that the delivery from the gumming mechanism is such that the blanks may be conducted into the feed of the folding machine or to an accumulator. In the latter case the top feed board is put on as in Figure 4. Other different types of blanks may be fed into the envelope machine from the top feed board or the blanks on the accumulator may be turned 90° by hand after being taken from the accumulator in order that the proper gumming and folding sequence may be obtained.

Another feature is a conveyor which is the only one carrying blanks in a straight line and holding the blanks from curling through the weight of one of the conveyor belts. The belts are preferably of open metal construction that permits the circulation of the drying air. The width of the conveyor belts is such that they will take a minimum and maximum blank and therefore there is no need of making any adjustment to the conveyor mechanism in changing from one size envelope to another. The drying belts are preferably of a woven mesh structure for free circulation of the hot air with very limited contact with the gum on the sealing flaps, the weight of the upper belt holding down the gummed overlapped sealing flaps to prevent curling. A suitable form of such belt is Wickwire belt.

Another feature of my invention is the use of a straight pass folding mechanism in combination with other features referred to below.

Other features will be pointed out below.

In the drawings

Figure 1 is a longitudinal cross section, partly diagrammatic, through the complete machine;

Figure 2 is a plan, partly in section, of the dryer portion of the machine;

Figure 3 is a cross section on the line 3—3 of Fig. 1 showing the dryer and belts;

Figure 4 is a cross section on the line 4—4 of Fig. 6 showing how the left hand end of the machine is arranged to deliver at this end and also to feed blanks to be folded even if such blanks have not passed through the drying mechanism;

Figure 5 is a detail cross section on line 5—5 of Figure 6;

Figure 6 is a plan view of the left hand end of the machine arranged to deliver to the accumulator;

Figure 7 is a cross section on the line 7—7 of Figure 1; and

Figures 8 to 15 illustrate steps of folding and gumming described below.

At the right in Figure 1 is a stack of blanks 1, magazine 2 and sucker feeding mechanism 3, all similar to mechanism in patent to Winkler, No. 1,396,906 dated November 15, 1921. The blanks, in overlapped position, are then fed to belts 4, 4A which are slower than feed roll 5 and belt 5A and belt 5B. This reshuffles or respaces the overlapped blanks to the required spacing to permit the proper amount of gum on each sealing flap. The overlapped blanks, so respaced, are carried by belts 4 and 4A past the gummer 6, which applies the desired amount of gum along the edges of each sealing flap. Belts 4 and 4A are in pairs as shown in said Patent No. 1,396,906. Then the overlapped blanks are delivered to the belts 7 and 7A, each of which is of spiral wire mesh, the lower one of which being wider than the widest sealing flap, and the upper one, together with the weight of the overlapped blanks, holding the sealing flaps against curling, and this prevention of curling will function and last even if the machine is shut down overnight, whereas heretofore a temporary shutting down will result in excessive curling and spoilage. The belts 7 and 7A carry the overlapped blanks with the gummed sealing flaps exposed downwardly over a heating chamber 8 which has openings 9. Pipe 10 conducts hot air or other suitable heating medium to the chamber 8, the air passing through openings 9 and the mesh openings of belt 7A into contact with the gum on the sealing flaps to completely dry said gum. The lower belt 7A is supported on side plates 11 and 11A, these side plates serving also to cage or confine the heat so that the latter will be concentrated on the blanks.

Two tie bars 12 and 12A mounted in side frames (only one, 12B, being shown) are fixed to cross piece 13, which has a connection to the frame 12B by screw 14 so that by turning hand wheel 15 fixed to screw 14 the tie bars may be moved transversely. The wire belt pulleys 16 and 16A are slidably mounted on shafts 17 and 17A and these pulleys are guided by arms 18 and 18A

and 19 and 19A with the result that the pulleys 16 and 16A may be moved transversely for the purpose of aligning the dried blanks with relation to the feed of the folding mechanism.

From the drier the overlapped blanks are delivered between belts 20 and 20A which convey them, in Figure 1, to hopper 21 and thence to retard 22, the latter and the wheel 23, rubber plugs 24 and arm 25 corresponding to similar parts in my Patent No. 1,897,484 dated February 14, 1933. Wheel 23 combs off a blank so that it is no longer overlapped and delivers it to any suitable envelope folding machine, preferably a straight pass folding machine, such for example, as is shown in the patent to Goss, Reissue No. 18,463 dated May 17, 1932, this being indicated in Figure 1 as Envelope Folding Machine, and from this folding machine the blanks, after being individually folded, are delivered, as by belt 26, to a suitable stacker.

In Figures 4 to 6 I show a mechanism to be used when the blanks coming from the drier are not to be conveyed by belts 20 and 20A to the folding machine.

In the form of these figures casting 27, (shown also in Figure 1), has fixed to it removable deflectors 28, 28A, which act to deflect the web of overlapped blanks around the belt pulleys 29, 29A onto the accumulator supports 30, 30A, which carry an abutment 31, adjustable for different lengths of blanks. When the blanks, overlapped, accumulate on the accumulator they may be taken from the latter and used, in the condition in which they then are, as, for example, for postal wrappers, in which no folding is required. In this case the folding machine may be operating entirely independently of the gummer and drier on blanks of entirely different shape and size from those on the accumulator and they may be, for example, blanks with ungummed sealing flaps. In this latter case blanks would be placed in hopper 32 and removed individually by comb wheel 23 and delivered to the folding machine.

In case the blanks are to be gummed while moving in one direction and for proper sequence of folding, they are folded in a transverse direction, the attendant will take a substantial number of the blanks on accumulator 30 and turn them 90° and then refan them and deposit them in hopper 32, to be individually delivered as above described by comb wheel 23. The purpose of this 90° turning is to take care of folding where the gummed sealing flap passes through the first folding step longitudinally of the machine instead of crosswise thereof, the crosswise position being the position in which the gummed sealing flaps come from the drier.

In Figures 8 to 11 the steps are illustrated by which the blank passes through the gummer and then through the folder with the sealing flap crosswise of the machine through the first fold, the side flaps being folded inside the end flap, as in Figures 10 and 11.

In Figure 12 the blanks have passed through the gummer and then, having been accumulated and turned 90° and refanned, are fed through the first fold, as indicated in Figure 13, with the sealing flap extending longitudinally of the machine, and then the side flaps are folded outside as in Figures 14 and 15. One or more rollers 21A are preferably used to hold the blanks down on conveyor belts 20.

By the expression "straight pass" folding machine I mean that the blank moves continuously in one direction throughout all the folding operations.

The expression "gum" includes any suitable adhesive.

What I claim is:

1. A machine of the character described comprising drying means; means to convey overlapped gummed blanks past said drying means in a flat band, said conveying means including driven means engaging the tops of the overlapped blanks; and driven means for engaging the bottom faces of the blanks including means for contacting portions of the gummed surfaces; and means for adjusting said two engaging means as a unit at their delivery end transversely of the machine to properly align the blanks for subsequent action on them, said adjusting means including means to preserve the relative position of said two engaging means during said adjustment so as to deliver the blanks under perfect control to the sidewise adjusted position.

2. In a machine of the character described the combination of means for gumming the sealing flaps of the blanks; means for drying the gummed flaps; a traveling endless wire belt supporting said blanks and extending transversely beneath the gummed surfaces thereof for conveying the blanks past the drying means in overlapped relation with the gum on the sealing flaps facing downward; and a complementary traveling endless wire belt of relatively narrow width above and resting upon the overlapped blanks to cooperate in the conveying and to exert pressure on the overlapped blanks and prevent curling of the gummed flaps during drying.

3. In a machine of the character described, the combination of means for gumming the sealing flaps of the blanks; means for drying the gummed flaps; a traveling metal belt below the blanks, extending over the gummed surfaces, and extending transversely thereof beyond the ends of the blanks for conveying the blanks past the drying means in overlapped relation in a flat band with the gum on the sealing flaps facing downward; and another traveling metal belt above and resting upon the overlapped blanks to cooperate in the conveying and to exert pressure on the overlapped blanks; both of said belts cooperating with each other to permit drying and prevent curling of the sealing flaps.

4. A machine of the character described comprising folding mechanism; drying means; means to convey overlapped blanks, with their sealing flaps gummed, past the drying means; an accumulator; switching means to guide the blanks from the conveying means to said accumulator and away from the folding mechanism; means to operate the folding mechanism while the switching means is operative; and a single source of power to operate said conveying means and the folding mechanism.

5. A machine of the character described comprising folding mechanism; drying means; means to convey overlapped blanks, with their sealing flaps gummed, past the drying means, an accumulator; a deflector to guide the blanks from the conveying means to said accumulator and away from the folding mechanism; means to operate the folding mechanism while the deflector is operative; and a single source of power to operate said conveying means and the folding mechanism.

6. A machine of the character described comprising means to apply gum to the sealing flaps

of overlapped blanks; means to dry the gum; means to convey the blanks into adjacency to said drying means, said conveying means including means to engage the tops of the blanks and means to engage the bottoms of the blanks; and means for adjusting said two engaging means as a unit at their delivery and transversely of the machine to properly align the blanks for subsequent action on them, said adjusting means including means to preserve the relative position of said two engaging means during said adjustment so as to deliver the blanks under perfect control to the sidewise adjusted position.

7. A machine of the character described comprising means to apply gum to the sealing flaps of overlapped blanks; means to dry the gum; means to convey the blanks into adjacency to said drying means, said conveying means including a wire mesh belt to engage the tops of the blanks and including a wire mesh belt to engage the bottoms of the blanks, the latter belt being wider than the widest sealing flap; and means for adjusting said two engaging means as a unit at their delivery end transversely of the machine to properly align the blanks for subsequent action on them, said adjusting means including means to preserve the relative position of said two belts during said adjustment so as to deliver the blanks under perfect control to the sidewise adjusted position.

HAROLD S. LABOMBARDE.

CERTIFICATE OF CORRECTION.

Patent No. 2,173,171. September 19, 1939.

HAROLD S. LABOMBARDE.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, first column, line 7, claim 6, for the word "and" read end; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 24th day of October, A. D. 1939.

Henry Van Arsdale,
Acting Commissioner of Patents.

(Seal)

DISCLAIMER

2,173,171.—*Harold S. Labombarde*, Nashua, N. H. MACHINE for ACTING on BLANKS. Patent dated September 19, 1939. Disclaimer filed October 19, 1939, by the assignee, *The International Paper Box Machine Company*.

Hereby enters this disclaimer of claim 4 in said patent.

[*Official Gazette November 7, 1939.*]

of overlapped blanks; means to dry the gum; means to convey the blanks into adjacency to said drying means, said conveying means including means to engage the tops of the blanks and means to engage the bottoms of the blanks; and means for adjusting said two engaging means as a unit at their delivery and transversely of the machine to properly align the blanks for subsequent action on them, said adjusting means including means to preserve the relative position of said two engaging means during said adjustment so as to deliver the blanks under perfect control to the sidewise adjusted position.

7. A machine of the character described comprising means to apply gum to the sealing flaps of overlapped blanks; means to dry the gum; means to convey the blanks into adjacency to said drying means, said conveying means including a wire mesh belt to engage the tops of the blanks and including a wire mesh belt to engage the bottoms of the blanks, the latter belt being wider than the widest sealing flap; and means for adjusting said two engaging means as a unit at their delivery end transversely of the machine to properly align the blanks for subsequent action on them, said adjusting means including means to preserve the relative position of said two belts during said adjustment so as to deliver the blanks under perfect control to the sidewise adjusted position.

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