Oct. 4, 1932. A. E. CURRIER 1,880,839

METHOD OF AND APPARATUS FOR ADDING SUPPLEMENTAL MEMBERS TO BAG ENDS

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Fig. 1

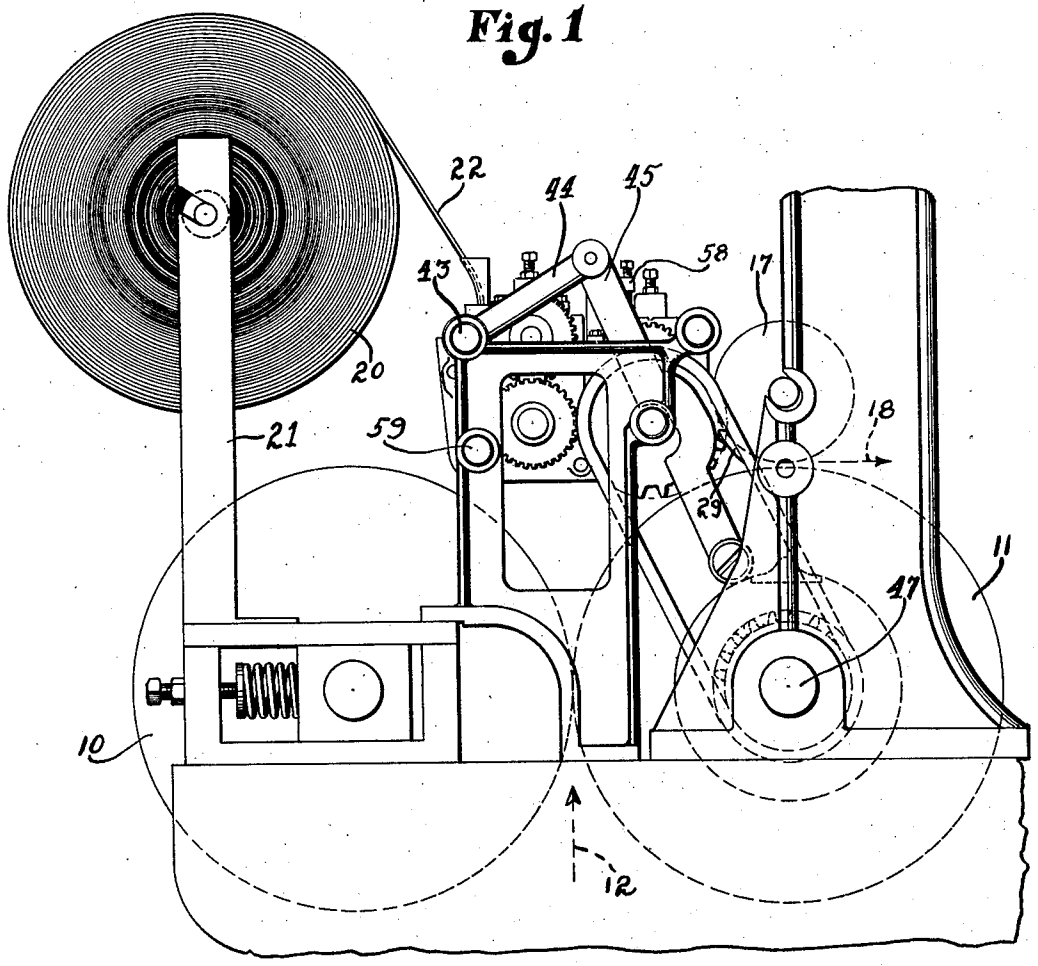


Fig. 2

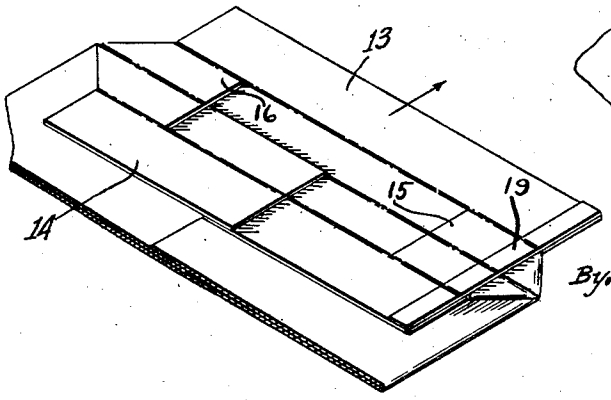
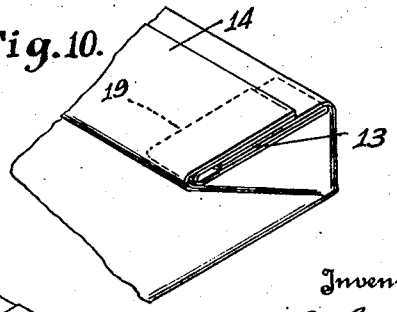


Fig. 10.



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Fig. 3

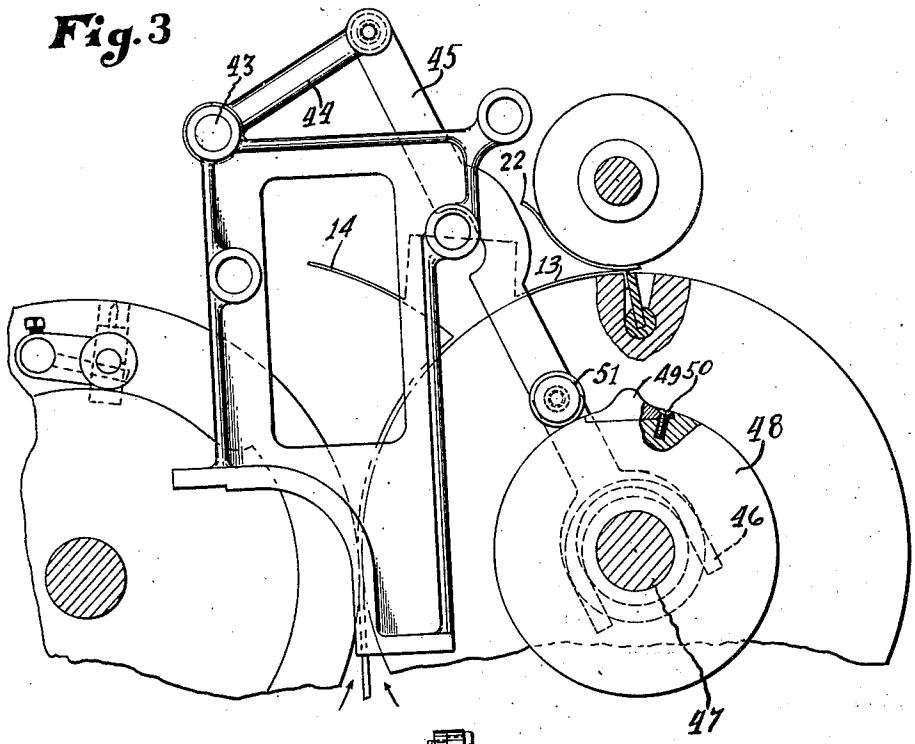
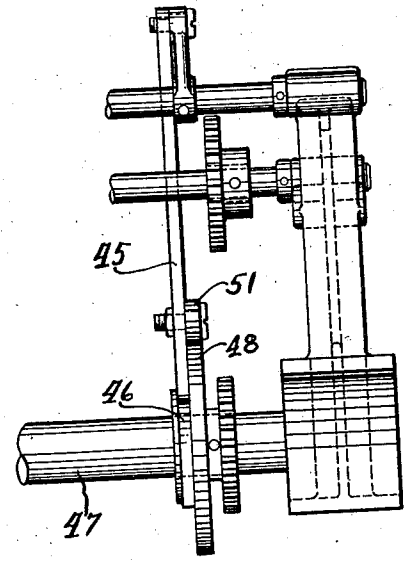


Fig. 4



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METHOD OF AND APPARATUS FOR ADDING SUPPLEMENTAL MEMBERS TO BAG ENDS

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Fig. 5

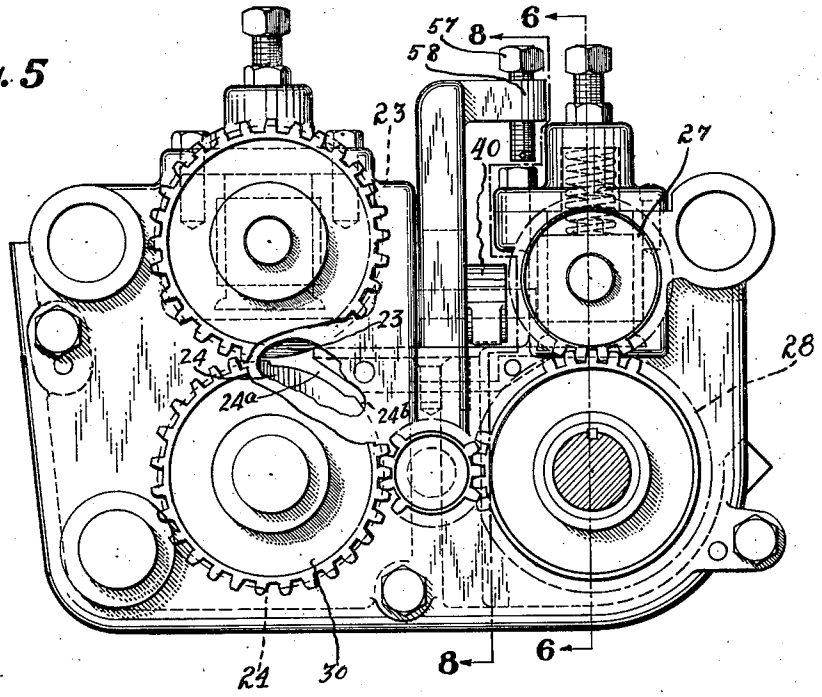
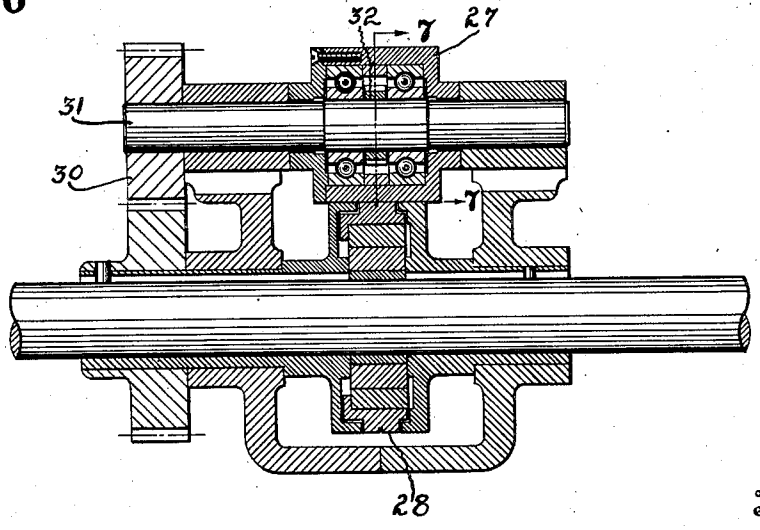


Fig. 6



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METHOD OF AND APPARATUS FOR ADDING SUPPLEMENTAL MEMBERS TO BAG ENDS

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Fig. 9

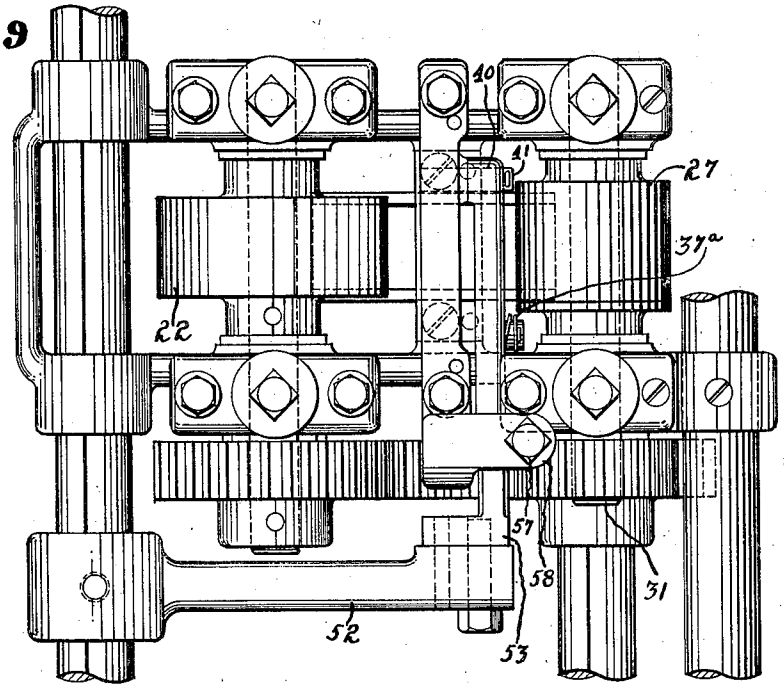


Fig. 8

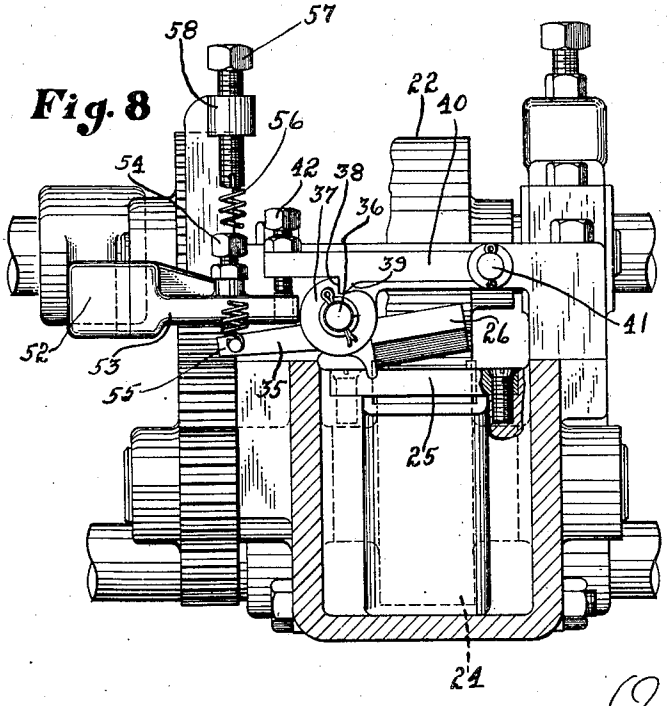
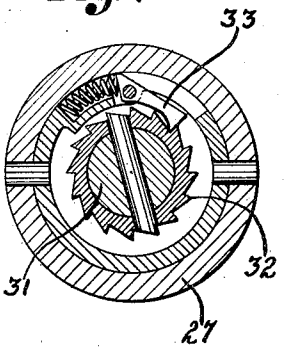


Fig. 7



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UNITED STATES PATENT OFFICE

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METHOD OF AND APPARATUS FOR ADDING SUPPLEMENTAL MEMBERS TO BAG ENDS

Application filed August 28, 1930. Serial No. 478,328.

This invention relates to a method of and apparatus for adding supplemental members to bag ends, particularly to the corners of bags where valves are to be formed.

In forming valve bags, particularly those having pasted ends, it is frequently desirable to add supplemental members for various reasons. Sometimes tape may be added for strengthening purposes and sometimes additional sheets may be applied either to form extensions of the valve flap or to form outturned sleeves which may be closed at the outer end after the bag is filled. The object of this invention is to supply such an additional member during the formation of the bottom of the bag, and without interfering with or retarding the regular bottoming operation. The method and apparatus will be described as specifically applied to adding a reinforcing strip across the valve corner of the bag at the point where the end of the bag is slit to form flaps, but it will be readily understood that the construction can be varied in obvious ways to apply supplemental sheets or members of different shapes and adhered or attached to the bag in different ways.

In the accompanying drawings forming a part of this specification, Figure 1 is a side elevation of a portion of a regular bag bottoming machine showing an attachment for applying a supplemental member to the bottom; Fig. 2 is a view of a bag end as it leaves the device shown in Fig. 1; Fig. 3 is an enlarged detail showing the operating cam and arm for the cutting knife; Fig. 4 is a detail view of the parts shown in Fig. 3, viewed from the left of Fig. 3; Fig. 5 is a side elevation of the feeding, cutting and moistening mechanism for the supplemental sheet; Fig. 6 is a section along the line 6—6 of Fig. 5; Fig. 7 is an enlarged detail along line 7—7 of Fig. 6; Fig. 8 is a section along the line 8—8 of Fig. 5; Fig. 9 is a plan view of substantially the same parts shown in Fig. 5; and Fig. 10 is a view of the reinforced corner of the bag after closing.

The attachment embodying this invention is applicable to the customary bottoming machine, and in Fig. 1 is shown in conjunction with the opening rolls 10 and 11 of a typical bottoming machine. As will be readily understood, a bag to be bottomed is fed upwards between the opening rolls in the direction of arrow 12 and while the forward flap 13 of the bag is carried forward by roll 11 the rear flap 14 is attached in a suitable way to roll 10 until it is spread apart from flap 13 in the manner indicated in Fig. 2, whereby end flaps 15 and 16 are folded inward, as shown in Fig. 2. The rear flap 14 is released from roll 10 after it has been sufficiently spread apart from flap 13 and the bag end, thus spread apart, is carried by roll 11 beneath a pressing roll 17 and delivered in the direction of arrow 18 to suitable flap folding mechanism.

The purpose of this invention is to apply to the opened up bottom of the bag, while in substantially the position in which it is shown in Fig. 2, a supplemental sheet, which in the example illustrated is a tape 19 running across the insides of the ends of flaps 13 and 14 and the outside of flap 15.

In order to apply this tape 19, there is mounted a roll 20 of tape upon a suitable bracket 21. From this a strip of tape 22 is lead by suitable guiding means beneath a feed roller 23 and over a measuring roller 24. From these rollers the tape is guided over a stationary knife 25 and beneath a movable knife 26 (see Fig. 8). Thereafter the tape passes under a roller 27 and over a moistening roll 28. After passing over the moistening roll, the tape is guided by a deflector 29 to the bite between rollers 11 and 17. The apparatus is so timed that the front end of each strip of tape is substantially even with the leading edge of flap 13, and the strip of tape is cut off in such length that the rear edge will come substantially even with the rear edge of flap 14. The feeding and moistening rolls are driven by suitable gearing indicated generally by the reference numeral 30 and which does not need to be specifically described. In order to avoid any strain upon the strip after it is applied to the bag and is being moved forward with the bag between rollers 11 and 17, the moistening roller 28 is mounted loosely upon its shaft so that

while the turning shaft normally moves roll 28 at substantially the desired speed, the roll is free to move at a different speed without putting any appreciable strain upon the tape. Roll 27 is mounted upon drive shaft 31 with an intermediate ratchet wheel 32 and pawl 33 so that it is positively driven at a definite speed, which speed is not greater than and preferably slightly less than the speed at which the bag is carried by opening roller 11. When the tape is seized between roll 17 and roll 11 it may be pulled forward at a rate more rapid than the peripheral speed at which roll 27 is driven, the ratchet arrangement allowing that roll to overrun and move faster than its drive shaft.

Feed roller 23 has a continuous periphery, but measuring roll 24 is grooved at 24^a so that for a slight distance it is out of contact with roller 23 and therefore relieves the tape from the feeding roll. The continuous periphery 24^b of measuring roll 24 is constructed of the exact length desired for each strip 19, and the apparatus is so timed that feed roll 24 makes one complete revolution for each bottoming operation.

Movable knife 26 is mounted upon a carrier 35 pivoted at 36. A spiral spring normally urges the movable carrier in a direction to carry knife 26 downward to make it cut in cooperation with stationary knife 25. The carrier has fixed thereon a member 37 with a notch 38 into which a tooth 39 on a latch member 40 is adapted to drop. Latch member 40 is pivoted to the frame at 41 and has at its free end an adjustable set screw 42.

Mounted in the frame there is a rock shaft 43 which has an arm 44 pivoted to a drive member 45. The lower end of member 45 is forked at 46. (See Figs. 3 and 4.) This fork straddles the shaft 47 which carries opening roller 11. Mounted on shaft 47 there is a cam carrier 48 which has a movable protruding portion 49 which may be removably fastened in position by screw 50. In this way the cam may be readily adjusted by removing member 49 and substituting another therefor. A roller 51 carried by member 45 normally rests upon cam carrying disk 48, and member 49 contacting roller 51 oscillates rock shaft 43, as will be obvious.

Extending from rock shaft 43 there is an arm 52 carrying at its end a lug 53 through which there is an adjustable screw 54 in position to contact the tail 55 of carrier 35. While roller 51 rests upon the circular periphery of disk wheel 48, arm 52 is lowered so that a screw 54 holds carrier 35 in position to receive tooth 39 in notch 38. When roller 51 runs up upon member 49, arm 52 is raised and the end of lug 53 contacts the bottom of screw 42 and raises the latch member 40 so as to lift tooth 39 out of notch 38 whereupon carrier 35 is oscillated to cut the tape. If desired, in addition to the torsion spring 37^a, there may be employed a tension spring 56 attached to tail 55 and to an adjustable screw 57 mounted in a bracket 58. Both springs 37 and 56 may be employed in conjunction or either may be dispensed with where not needed. It will be readily seen that member 49 lifts roller 51 only momentarily so that immediately after the cut arm 52 is again dropped to return knife carrier 35 to the position in which it is shown in Fig. 8. The parts are timed so that the cut occurs just at the instant when the forward end of the tape enters the bite between rollers 11 and 17.

In the construction shown, roller 28 is spoken of as a "moistening roller" and is intended to be used with a tape to which adhesive has been previously applied, and which is again rendered adherent by the moisture applied by roller 28. It will be readily understood that strips of different width or shapes may be employed where desired, and that the adhesive may cover all or any desired selected portion of the strip and that an adhesive applying device may be substituted for the moistening roll where preferred. In this way the device may be readily varied to suit the requirements for applying various forms of supplemental members to the corner of a bag during the bottoming operation.

The moisture may be applied to roller 28 in any well known manner, as, for instance, by a wick leading from a reservoir and contacting the surface of the roller, or either moisture or adhesive may be applied by intermediate rollers transferring a film from a roller running in a tank, in a manner well known in pasting, inking and similar devices.

In the construction shown, it will be seen that the strip feeding and cutting device, together with the means for rendering the strip adherent, are all mounted in a unitary construction which in turn may be mounted slidably upon shafts 59 and 60 so that the device may be adjusted sidewise of the machine in order to apply the strip at the desired point on the bag. Various changes other than those mentioned may be made within the terms of the appended claims.

What I claim is:

1. The method of applying a supplemental member to the corner of a bag during bottoming, which consists in moving a bag tube longitudinally and, while it is so moving, spreading apart the side flaps at the end of the tube, folding the end flaps towards each other and over the side flaps, and moving a supplemental member at the same speed as the tube and applying it to the outside of an inwardly-turned end flap.

2. The method of applying a supplemental member to the valve corner of a bag during bottoming, which consists in moving a bag tube longitudinally and, while it is so moving, spreading apart the side flaps at the end

of the tube, folding the end flaps towards each other and over the side flaps, moving a supplemental strip at the same speed as the tube and applying it longitudinally of the tube across the outside of an inturned end flap and the inside of the outturned side flaps and thereafter folding the side flaps over said end flap.

3. The method of applying a supplemental member to a bag end which consists in moving a bag tube, opening the end of the tube, moving a continuous strip in a direction converging with the path of the opened end, cutting a length from the strip, applying the length to the opened end of the tube, and thereafter closing said end.

4. The method of forming a valve bag with a part of the bag wall turned in to form a valve and with a supplemental member in said valve, which comprises moving the material of the wall of the bag towards a valve-forming point, moving a supplemental member at the same speed as said wall material and adhering the member to the portion of the wall which is turned in to form the valve, and then completing the formation of the valve with the member in place therein.

5. In apparatus of the character described, means for spreading apart the side flaps at the end of a bag tube and folding the end flaps towards each other and over said side flaps, means for attaching a supplemental member to the outside of an inwardly turned end flap while the side flaps are thus spread apart, and means for operating the spreading means and the attaching means in timed relation.

6. In apparatus of the character described, means for spreading apart the sides of a bag at the end thereof and folding the corners of the bag at that end over the spread apart sides, and means operating in timed relation with said spreading means for supplying a supplemental member across the outside of one of said in-folded corners and across the inside of the adjacent portions of the spread apart sides.

7. In apparatus of the character described, opening rolls, a pressing roller cooperating with one of said rolls to press thereon the opened end of a bag, and means to feed a supplemental member beneath said roller and above the spread apart bag end.

8. In apparatus of the character described, opening rolls for spreading apart the two sides of a bag and folding in the corners of the bag over the spread apart side, a pressing roller cooperating with one of said opening rolls to press the opened bag end, and means actuated in timed relation to said opening rolls for presenting a supplemental member to the bite of said pressing roller and opening roll and across the open end of the bag.

9. Apparatus in accordance with claim 8, and in which said presenting means comprises a support for a roll of material, a measuring roll for feeding forward the desired length of supplemental material, a cutter for cutting off the desired length of material in timed relation with the opening roll, and means for rendering the cut-off portion adherent on its side which is presented to the bag.

10. Apparatus of the character described, comprising means for spreading apart the two sides of an end of a bag and folding the corners over the spread apart sides, and means for supplying a supplemental member to the outside of the inturned corner while the two sides are spread apart, said supplying means comprising a support for a roll of supplementary material, means for feeding measured lengths of said material, means for severing said lengths, and means for rendering said lengths adherent on the side presented to the bag.

11. Apparatus of the character described, comprising means for spreading apart the two sides of an end of a bag and folding the corners over the spread apart sides, means for supplying a supplemental member to the outside of the inturned corner while the two sides are spread apart, and a support for said presenting means supporting said means adjustably transversely of the path of the opened bag end.

12. Apparatus of the character described, comprising means for spreading apart the two sides of an end of a bag and folding the corners over the spread apart sides, means for supplying a supplemental member to the outside of the inturned corner while the two sides are spread apart, said supplying means comprising a support for a roll of supplementary material, means for feeding measured lengths of said material, means for severing said lengths, and means for rendering said lengths adherent on the side presented to the bag, and a support for said presenting means supporting said means adjustably transversely of the path of the opened bag end.

In testimony whereof I have hereunto signed my name to this specification.

ANDREW ELLISON CURRIER.