

Feb. 9, 1926.

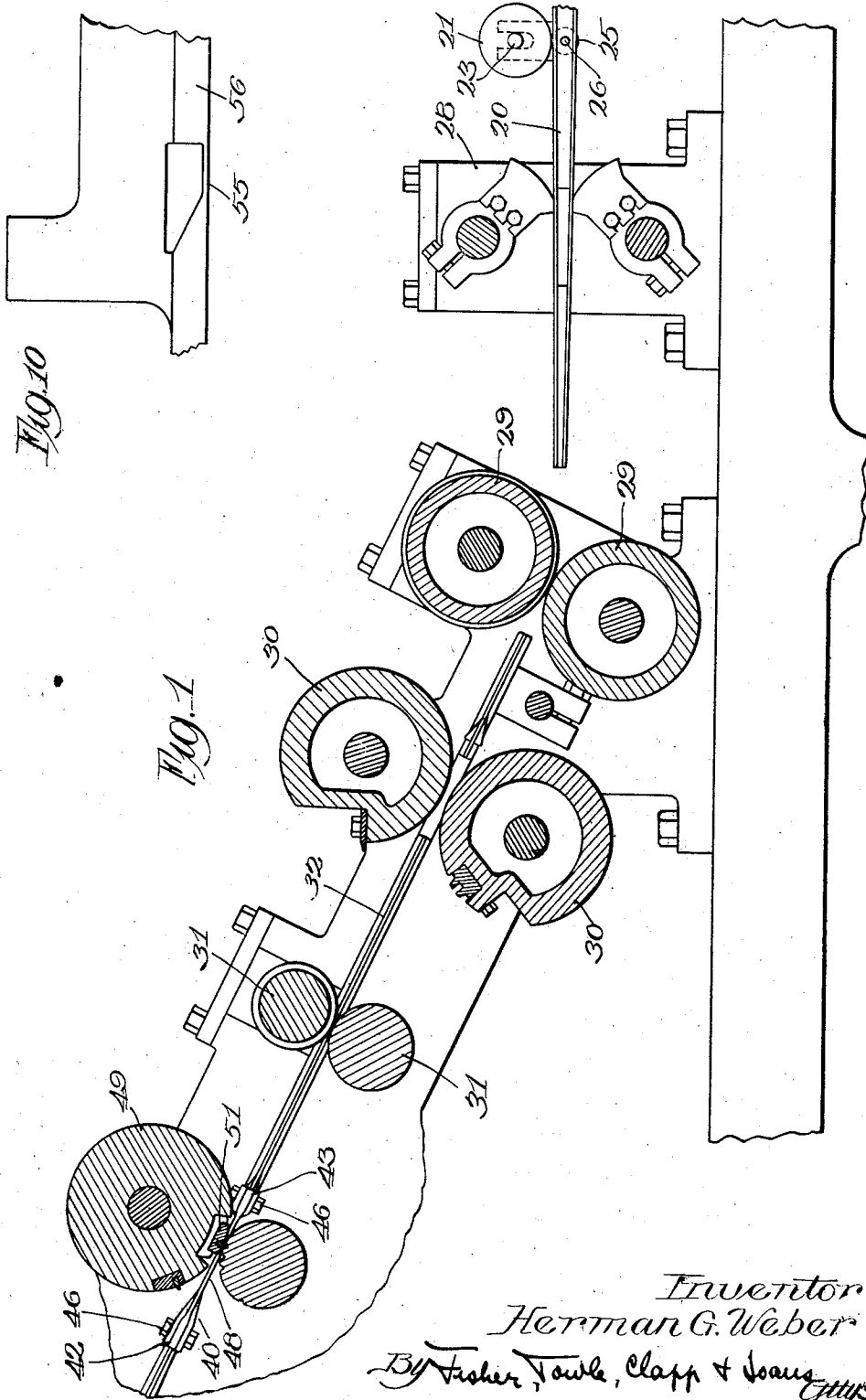
1,571,984

H. G. WEBER

PAPER BAG MACHINE

Filed Feb. 2, 1925

3 Sheets-Sheet 1



Inventor:
Herman G. Weber
By Fisher, Towle, Clapp & Jones

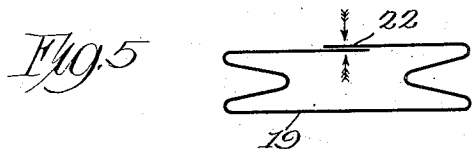
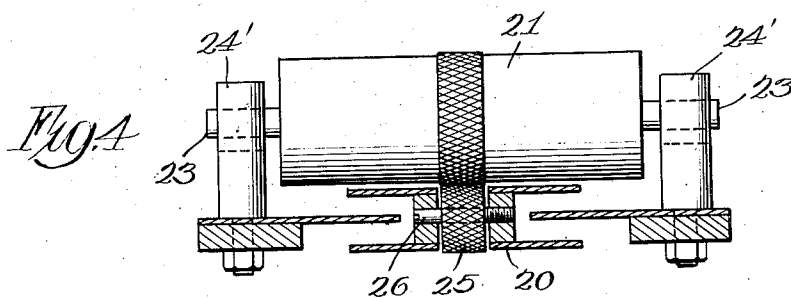
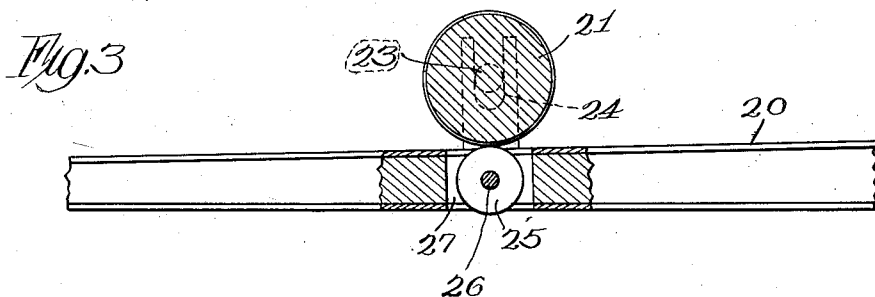
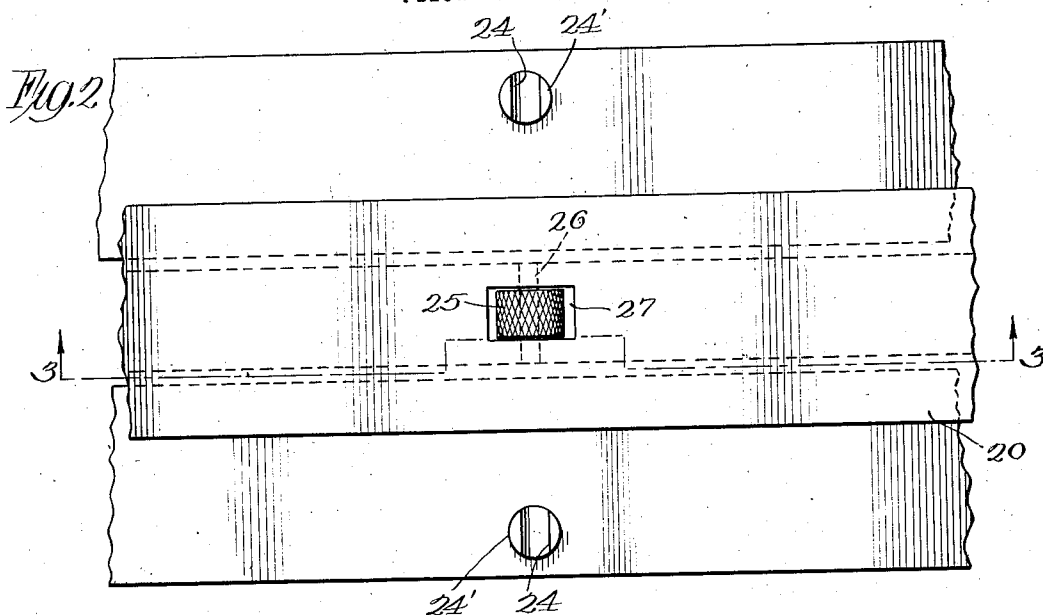
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3 Sheets—Sheet 2



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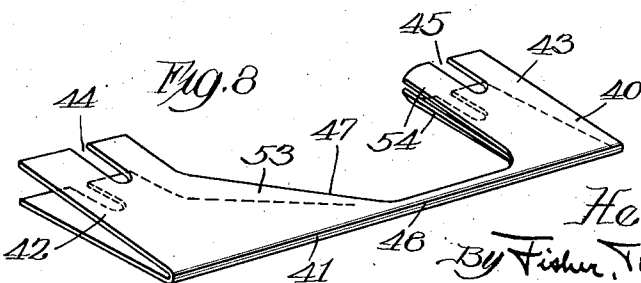
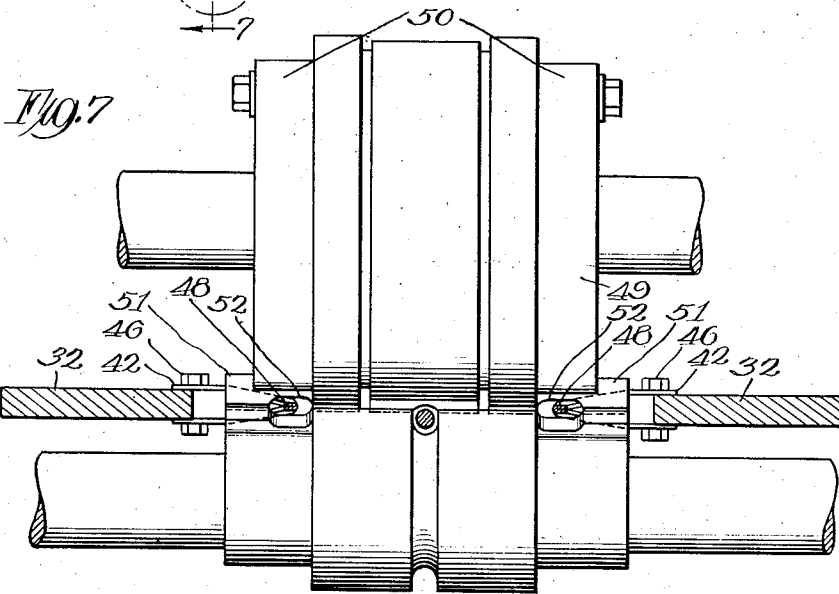
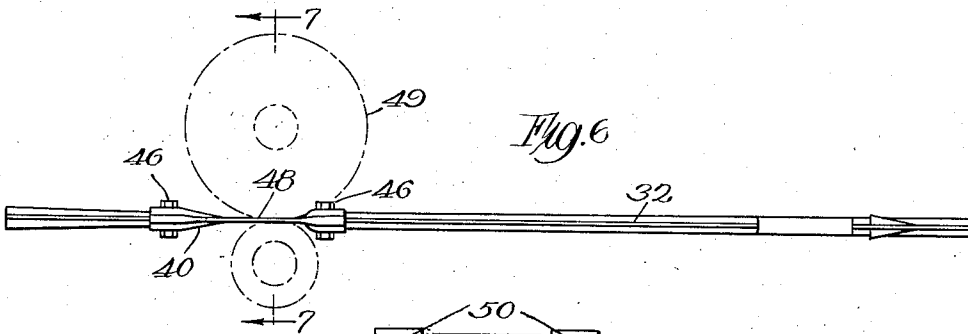
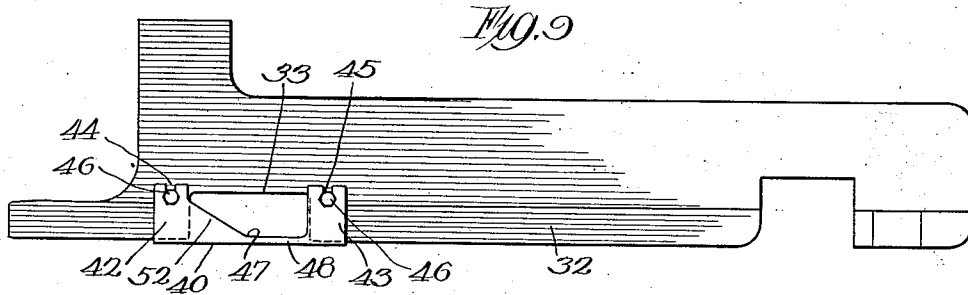
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H. G. WEBER

PAPER BAG MACHINE

Filed Feb. 2, 1925

3 Sheets-Sheet 3



Inventor:

Herman G. Weber

By Fisher, Toule, Clapp & Loane, Attys

UNITED STATES PATENT OFFICE.

HERMAN G. WEBER, OF APPLETON, WISCONSIN, ASSIGNOR OF ONE-HALF TO AMERICAN LAKES PAPER COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF DELAWARE.

PAPER-BAG MACHINE.

Application filed February 2, 1925. Serial No. 6,166.

To all whom it may concern:

Be it known that I, HERMAN G. WEBER, a citizen of the United States, and a resident of the city of Appleton, county of Outagamie, and State of Wisconsin, have invented certain new and useful Improvements in Paper-Bag Machines, of which the following is a specification.

This invention relates to machines for the manufacture of paper bags and has for its primary object to provide a machine of this type which may be effectively operated at high speed.

Further objects of my invention are to eliminate noise in the operation of the machine, to insure the even distribution of the paste between the layers of paper at the time of forming the tube, to insure a complete closure of the tube at the seam, to facilitate the scoring of the blank, to prevent the closing of the tucks in the blank during the scoring operation, and in general to provide a simple and efficient machine of this class.

The mechanisms forming the subject matter of the present invention are adapted to be incorporated in a machine of the type illustrated and described in my copending application, filed October 24, 1923, Serial No. 670,433, and reference may be had thereto for a full description.

The many other objects and advantages will be better understood by reference to the following specification when considered in connection with the accompanying drawings illustrating a selected embodiment thereof, in which:

Fig. 1 is a vertical longitudinal section of a portion of a paper bag machine incorporating the principles of my invention.

Fig. 2 is a detail plan view of a portion of the tube forming device.

Fig. 3 is a vertical section on the line 3—3 of Fig. 2.

Fig. 4 is a detail transverse section of the portion of the mechanism shown in Fig. 3.

Fig. 5 is a diagrammatical view of a partially formed tube.

Fig. 6 is a detail elevation of one of the tuck opening devices.

Fig. 7 is a detail front elevation of the scoring mechanism.

Fig. 8 is a detail perspective view.

Fig. 9 is a plan view of the device shown in Fig. 6, and

Fig. 10 is a modified form of tuck opening device.

Referring to the drawings, the paper in the form of a sheet or strip is drawn from the usual supply roll and gum is applied to one edge of this strip preparatory to the forming of the strip into the usual tube as 19. The mechanism for this part of the bag forming operation is not shown in the drawings as it forms no part of the present invention and is well known in the art.

Upon reaching the tube forming device, the gummed strip is folded about a former or mandrel as 20 by the usual folders (not shown) and is then drawn longitudinally of this former under a pressure roller as 21 which acts to compress the seam at 22 (Fig. 5). This roller is usually mounted on a shaft as 23 which is vertically slidable in slots as 24 in posts as 24' disposed on opposite sides of the former. The weight of the roller is usually supported by the upper face of the former and the roller is rotated by the drawing of the paper tube over this former.

In order to more effectually seal the seam and provide an even distribution of the gum between the layers of the paper forming the same, I have mounted in the former a small roller as 25 which underlies the seam and coacts with the roller 21. In the present embodiment, this roller 25 is revoluble on a pin as 26 which projects across a slot as 27 in the former provided to receive the roller. The roller 25 preferably projects slightly above the upper face of the former so that the entire weight of the roller 21 is supported thereon. This greater pressure is applied to the seam of the tube and this pressure is exerted by co-acting rollers which freely rotate with the tube as such tube is drawn therebetween. I prefer to knurl the periphery of the roller 25 and the portion of the periphery of the roller 21 which contacts therewith. The high rate of speed of the advancing tube and the weight of the roller 21 combine to insure an even distribution of the gum or paste in the seam and the complete closure of such seam.

After the seam is closed in the manner

described, the formed tube passes through the usual slitting mechanism as 28, draw rolls as 29, severing mechanism as 30, transfer rolls as 31 and scoring rolls 49.

5 In order to prevent the closing of the tucks prior to the delivery of the blank to the bottom forming mechanism (not shown), I have provided a pair of oppositely disposed blades as 32, 32 which extend longitudinally of the path of the blank from a point in front of the severing mechanism 30 substantially to the bottom forming mechanism. These blades are normally stationary and are adjustable for different sizes of bags. 10 The draw rolls and severing rolls are preferably so formed that no pressure is exerted thereby on the tucked or edge portions of the blank but it is advisable that these portions should be scored to facilitate the bottom forming operation and produce a well shaped bag. This has necessitated the notching of the tuck opening blades at the scoring position as indicated at 33. If some means is not provided to maintain 15 the tucks open while the forward end portion of the blank is passing these gaps in the blades, it has been found in practice that the edges of the blades at the far end of the gaps will not always enter their respective tucks. To insure the proper entry, I have provided a simple device which does not interfere with the scoring of the blank. This device may be made in a variety of ways but comprises primarily a narrow strip of metal 20 which bridges the gap. A very satisfactory embodiment of my invention is illustrated in detail in Fig. 8 of the drawings and comprises a sheet metal member 40 which is folded as at 41 into substantially V-shape so that the end portions 42 and 43 may be slid over and will fit upon the edge portions of the tuck opening blade on opposite sides of the gap in the manner illustrated. The inner edges of these end portions are preferably 25 slotted as at 44 and 45 to admit clamping bolts 46 which pass through the blade. The intermediate portion of each of the folds is cut away substantially as at 47 to have a narrow strip 48 of metal which connects the end portions of the bridge member and forms substantially a continuation of the edge portion of the tuck opening blade. It is this strip which forms the bridge proper to conduct the advancing front end of the 30 blank across the gap. The periphery of the upper scoring roll 49 is formed with reduced end portions 50, 50 to afford clearance for these strips 48 and the scoring blades 51 thereon are notched as at 52, 52 for the same purpose. The cut-away portions of the bridge members permit the entire width of the blank to be scored with the exception of the narrow strips occupied by the portions 48 of the bridges. It has 35 been found in practice that the omission of

the score at these points does not in the least interfere with the subsequent forming of the bag. I prefer to gradually widen the bridge member 40 as at 53 beyond the scoring position to facilitate the entry of the edge of 40 the blade at the far side of the gap into the tuck of the blank. The edge of the blade at the opposite side of the gap is usually formed rather blunt and in such case I bend inwardly the edges of the bridge as at 54, 54 75 to substantially fit the same.

The form of bridge member 40 which I have described may be quickly and easily attached to the tuck opening blade and has the advantage that it may be readily removed and replaced when it becomes worn. However, it is not necessary that the bridge be separate from the blade and I have illustrated in Fig. 10 of drawings a modified form in which the bridge as 55 is an integral 85 part of the tuck opening blade 56.

It will be evident from the foregoing description that my improved bridge is simple in construction, economical to produce, and efficiently performs the operation for which 90 it is intended. The improved tube forming device insures the proper distribution of the gum between the edges of the paper forming the seam and tightly closes this seam. The improved tuck opening mechanism permits the blank to be properly scored and insures 95 the delivery of such blank to the bottom forming mechanism with the tuck open. This bridge does not include any moving parts. The separable form of the bridge 100 permits replacement when the bridge becomes worn in service.

I am aware that the form and arrangement of parts may be considerably varied without departing from the spirit of my invention, and I reserve the right to make all such changes as fairly fall within the scope of the following claims. 105

I claim as my invention:

1. In a machine for making paper bags, 110 the combination with a tube former adapted to have a strip of paper folded thereover with the edges overlapping to form a seam, of means for advancing the folded strip longitudinally of said former, and means for 115 closing said seam comprising co-operating pressure rolls acting on opposite faces of said seam and rotated by frictional pull of the latter.

2. In a machine for making paper bags, 120 the combination with a tube former adapted to have a strip of paper folded thereover with the edges overlapping to form a seam, of means for advancing the folded strip longitudinally of said former, and means for 125 closing said seam comprising a revoluble pressure roll disposed opposite said former, and a second pressure roll revolubly mounted in said former and co-acting with the first mentioned pressure roll, said pressure 130

rolls being rotated by the passage of the paper therebetween.

3. In a machine for making paper bags, the combination with a tube former adapted to have a strip of paper folded thereover with the edges of the strip overlapping to form a seam and having gum applied to one of said edges, and means for advancing said strips longitudinally of said former, of means for closing said seam including a roll mounted in said former with its axis disposed transversely thereof and its periphery projecting above the face of the former in the path of said seam, and a pressure roll disposed opposite the first mentioned roll and co-acting therewith; both said rolls being rotated by the frictional pull of the seam.

4. In a machine for making paper bags, the combination with a slotted tube former having a flat top surface adapted to have a strip of paper folded thereover with the edges of the strip overlapping to form a seam and having gum applied to one of said edges, and feed rolls for advancing said strip lengthwise of said former, of means for closing said seam including a roll rotatably mounted in the slot of said former with its periphery projecting above the face of the latter in the path of said seam, vertically slotted uprights mounted on said former on opposite sides of said slot, and a gravity pressure roll journaled in said slotted uprights with its periphery co-operating with the periphery of said first-named roll to close said seam passing between said rolls.

5. In a machine for making paper bags, the combination with scoring rolls, of side tuck openers disposed in front and in rear of said rolls, and means connecting the front and rear openers to maintain the forward ends of the side tucks of a blank open while the blank is passing therebetween.

6. In a machine for making paper bags, the combination with scoring rolls, of side tuck openers disposed in front and in rear of said rolls, and means connecting the inner edge portions of the front and rear openers to maintain the forward ends of the side tucks of a blank open while the blank is passing therebetween.

7. In a machine for making paper bags, the combination with scoring rolls, of side tuck openers disposed in front and in rear of said rolls, and means connecting the front and rear openers to maintain the forward ends of the side tucks of a blank open while the blank is passing therebetween, said connecting means comprising narrow strips of metal.

8. In a machine for making paper bags, the combination with scoring rolls, of side tuck openers disposed in front and in rear of said rolls, and means connecting the front and rear openers to maintain the for-

ward ends of the side tucks of a blank open while the blank is passing therebetween said connecting means comprising narrow strips of metal having their inner edges substantially forming a continuation of the corresponding edges of the tuck openers.

9. In a machine for making paper bags, the combination with scoring rolls, of side tuck openers disposed in front and in rear of said rolls with a gap between each of said front openers and the corresponding rear openers, and means for bridging said gaps comprising a sheet metal member having one end attached to the rear end portion of the front opener and the opposite end attached to the forward end portion of the rear opener.

10. In a machine for making paper bags, the combination with scoring rolls, of side tuck openers disposed in front and in rear of said rolls with a gap between each of said front openers and the corresponding rear openers, and means for bridging said gaps comprising a sheet metal member having one end attached to the rear end portion of the front opener and the opposite end attached to the forward end portion of the rear opener, the portion of said member passing between said rolls being substantially in the form of a narrow strip and scoring blades on said rolls being notched opposite each of said strips to admit said strips.

11. In a machine for making paper bags, the combination with scoring rolls, of side tuck openers disposed along the path of the blank in front and in rear of said rolls, and bridge members connecting the opposing ends of corresponding front and rear members to maintain the forward portions of the side tucks of the blank open while the blank is passing therebetween, each of said bridges forming substantially a continuation of the inner edge portions of the openers which it connects.

12. In a machine for making paper bags, the combination with scoring rolls having scoring blades mounted therein, of side tuck opening strips extending longitudinally of the path of a blank in front and in rear of said rolls with a gap between each of said front openers and the corresponding rear openers to permit the scoring of the side portions of the blank by said blades, and means for bridging each of said gaps, comprising a sheet metal member having one end fitting on the rear end portion of the front opener and clamped thereon and its opposite end fitting on the forward end portion of the rear opener and likewise clamped thereon, the portion of said member passing between said rolls being substantially in the form of a narrow strip, and one of said scoring rolls being peripherally grooved to permit said passage.

13. In a machine of the class described, the combination of a tuck opening blade having a gap formed in its operative edge intermediate the ends thereof, of a bridge for said gap comprising a sheet metal plate folded into substantially V-shape to permit the end portions thereof to be slid over and to fit upon the edge portions of the tuck opening blade on opposite sides of the gap, the intermediate portion of said plate being cut away to form a narrow strip connecting the inner edge of said end portions and extending over said gap. 10

HERMAN G. WEBER.