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Patented Feb. 15, 1910.

[illegible]

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PAPER BAG MACHINE.

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949,469.

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4 SHEETS—SHEET 2.

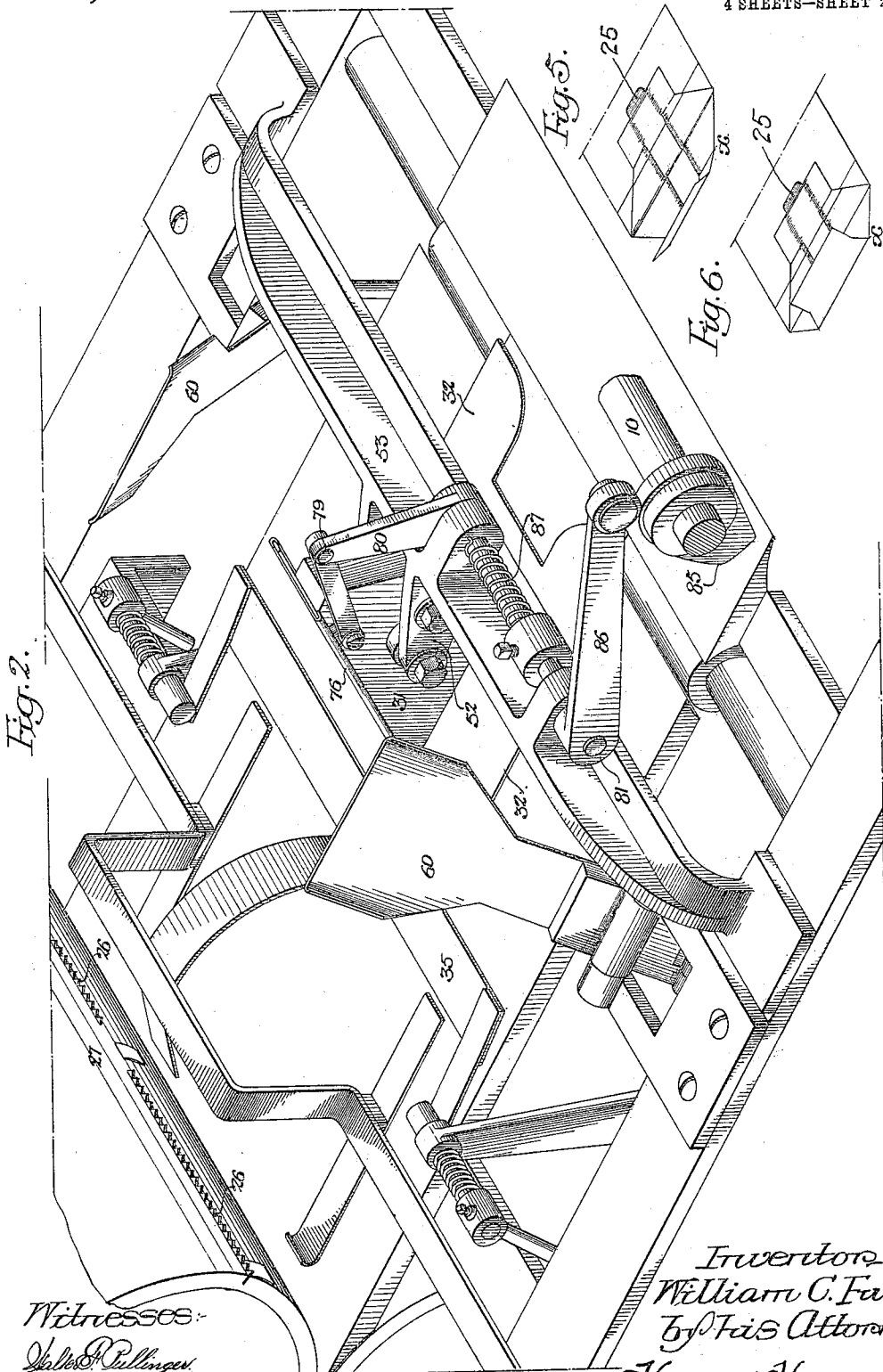


Fig. 5.

Fig. 6.

Fig. 2.

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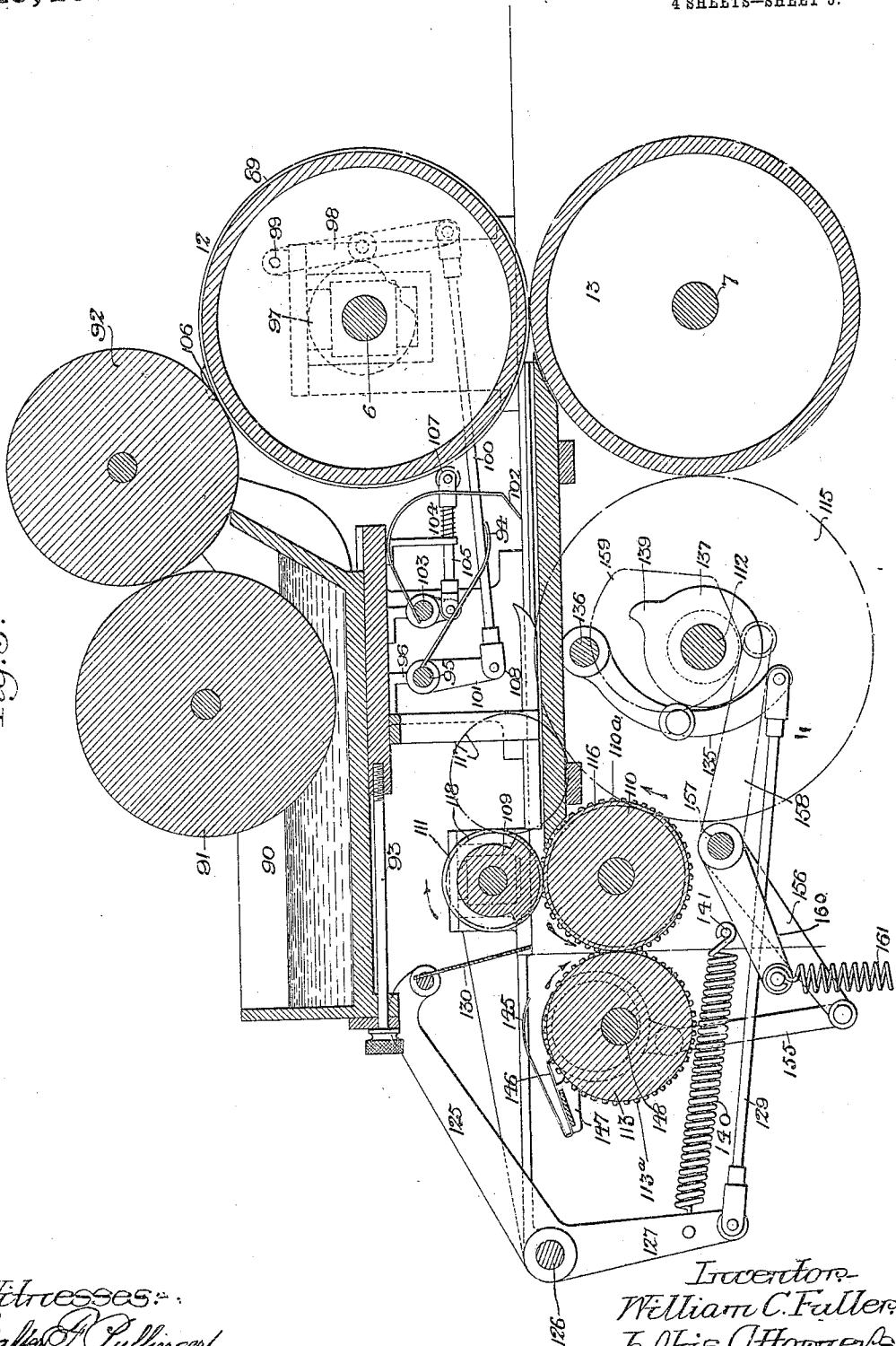
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4 SHEETS—SHEET 3.

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Fig. 3.



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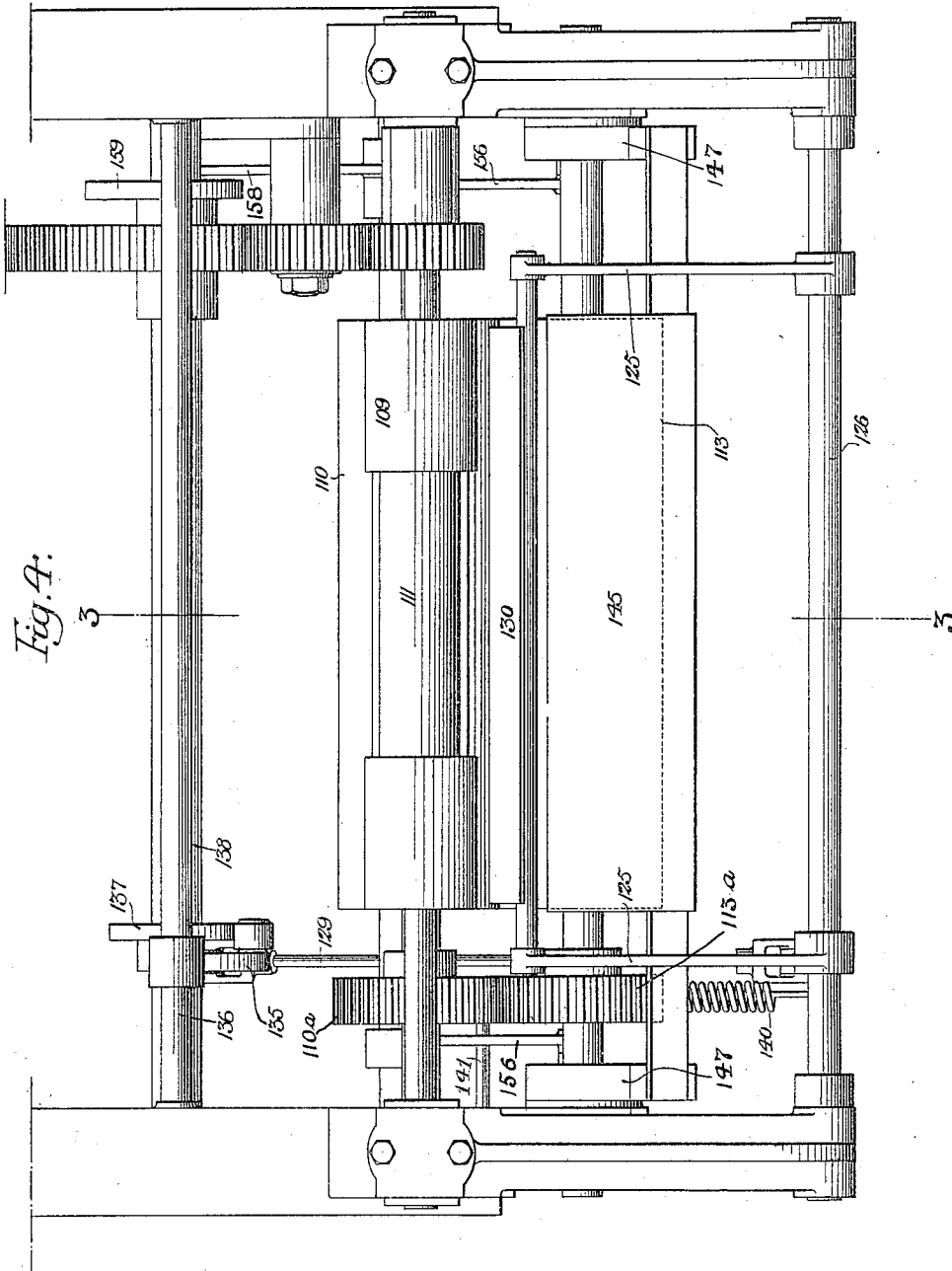


Fig. 4.

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UNITED STATES PATENT OFFICE.

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PAPER-BAG MACHINE.

949,469.

Specification of Letters Patent. Patented Feb. 15, 1910.

Application filed September 5, 1907, Serial No. 391,453. Renewed September 9, 1909. Serial No. 516,915.

To all whom it may concern:

Be it known that I, WILLIAM C. FULLER, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Paper-Bag Machines, of which the following is a specification.

My invention relates to paper bag machines of the type shown and described in my application for patent filed Oct. 9, 1906, Serial No. 338,138; the object of my present invention being to provide means for facilitating the opening, turning and folding of the end section of the bag blank to form the bottom, and to provide certain improvements for facilitating the pasting of such creased and folded portion to form the finished bottom of the bag.

My invention is fully shown in the accompanying drawings, in which:

Figure 1, is a side elevation, partly in section, illustrating sufficient of a paper bag machine to show a portion of my present improvements; Fig. 2, is a perspective view of the same; Fig. 3, is a sectional elevation of the improved bottom pasting and securing devices; Fig. 4, is a plan view of the same, and Figs. 5 and 6, are perspective diagrams of a bag bottom.

As in the machine of my pending application above referred to, the structure forming the subject of my present invention is intended to act upon blanks cut from previously folded paper tubes. As described in said application, before the tube of paper is presented to the first pair of feed rolls, it is acted upon by cutting means which form parallel slits at regular intervals in both plies of the paper, and between the same, semi-cylindrical slits in the upper ply only of the paper whereby tabs are produced for each blank, which tabs are afterward pasted down with the bottom of the bag. The tube in this partially prepared condition is first engaged by feed rolls 8 and 9, the former having a pair of knives 26 arranged in line and spaced apart at 27, and these knives coacting with a slot 28 in the roll 9, sever the blank transversely in line with one end of the parallel slits previously referred to, such cuts meeting the substantially semi-circular slits forming tabs 25 but not sep-

arating the blank from the succeeding portion of the tube as the underply of paper directly beneath each of said tabs is still uncut.

In my present invention, I have provided the same means described in my pending application for preventing the upper ply of the tube blank riding around with the roll 8, owing to the frictional contact of the knives which have made transverse cuts in said blank, and have also provided a releasing plate 41 disposed in a recess 42 in the face of the roll 9, which plate is arranged to be pushed out just after the knife blades 26 have engaged the tube, such plate engaging the severed portion of the latter, thereby freeing the edge of the blank and supporting it until it passes onto the bed-plate of the machine, clear of the space between the same and said roll 9. This plate 41 is operated by arms 43 and levers 44 actuated by a cam 47, in the manner shown and described with reference to my pending application, hence there is no necessity for detailed description herewith.

After the blank leaves the rolls 8 and 9, it passes to the bottom opening and folding mechanism. This comprises an opening nose 31 centrally disposed with respect to the tube blank, and to the bottom of the nose a flat plate 32 is secured; said nose being carried by an arm 52 rigidly attached to a bar 53 extending across the machine and secured to the side frames of the same. The table or bed plate of the machine is recessed at 59 directly beneath the plate 32 carried by the nose 31 and this construction is fully disclosed in my pending application.

A portion of the novel improvements forming the subject of my present application relates to the construction of the opening nose. In my pending application, provision is made for depressing the nose and the plate carried by the same against the body of the moving blank, said nose thereby serving to partially displace the lower ply of the tube blanks and cause the upper ply to buckle slightly and permit said nose to engage the tab of the same succeeding blank so that as the blank is advanced the nose will enter between the plies of the same. In my present structure, however, instead of providing

a vertically moving opening nose, the body of said nose is carried by a fixed bar 53 and carries a movable section 76 adapted to slide on the inclined face of the same and engage the tube blanks. This sliding member, which is depressed at proper intervals to engage said blanks, is carried by a link 78 pivoted at 79 to an arm 80 carried by a rock shaft 81 journaled in suitable bearings at the rear of the bar 53. Motion to lower this slidable portion of the opening nose is imparted by a cam 85 mounted on a shaft 4, carrying the roll 10, which cam engages an arm 86 carried by the end of said rock shaft. Said rock shaft is provided with a torsion spring 87 which serves to maintain the arm 86 in engagement with said cam.

The side folding wings 60 and the defining plate 35 are substantially the same and their operation is entirely the same as that described in connection with my pending application before referred to; being operated by a cam 73 on a shaft 5 carrying a roll 11. The bag blanks are carried through the machine as in my prior structure to the point where the paste is applied, and there delivered to the means for securing the bottom and folding the same upon itself, and the other feature of my present invention relates to this part of the structure.

The severed bags with the bottom portions creased and folded are fed from the rolls 10 and 11 to rolls 12 and 13. From the roll 12, they receive the necessary paste, and by means of both of said rolls they are fed to the mechanism for turning over said bottom and securing the folds together. The roll 12 is provided with the usual horseshoe-shaped engaging surface 89 to apply paste to the folded portions of the bottom of the bag at the points desired as illustrated in the pending application referred to. The paste is carried in a pan 90 at the forward end of the machine, which pan is suitably mounted and has a dipping roll 91; an intermediate roll 92 being employed to transfer a proper amount of paste to the engaging surface 89 of the roll 12. The paste carrying structure is removable, and the pan may be adjusted by a screw 93 to regulate the contact of the roll 92.

As the bags pass on after the paste applying operation, the forward portion in front of the crease α , which is to be first turned over and pasted down to form a portion of the bottom of the bag, is caught by a plate 94 hung from a rod 95 mounted in bearings 96 supported by the frame of the machine. This plate is lowered to engage such portion and raised to effect the required action by means of a cam 97 mounted on the shaft 6, which cam acts against a lever 98, pivoted at 99 and connected by means of a link 100 with an arm 101 connected to the rod 95

which supports said plate 94. To hold the seam during the turning of the bottom, a plate 102 is provided, hung from a rod 103 pivotally mounted in suitable bearings, and normally held out of action by a spring 104 mounted on a rod 105 connected to said rod 103. This plate is lowered at the proper time by a cam or projection 106 mounted on the end of the roll 12, which cam or projection engages a roller 107 on the end of the rod 105 and moves the latter against the action of the spring 104. As the bag blank continues its movement, the forward end is engaged by the plate 94 which is afterward raised and turns over this forward portion of the bottom of the fold α and presses the same against the plate 102 holding the seam. This mechanism is the same as that illustrated in my pending application, and hence it is not thought necessary to refer specifically to the same herein.

As the bag blank proceeds it passes under the guides 108, which serve to hold down this forward pasted portion and pass this end of the bag to the rolls 109 and 110, the former having a cut out portion 111 to avoid the pasted area of the bottom, which roll serves to iron or press the folded portion and also to feed the bag blanks. These rolls are driven from a shaft 112, which is geared to a shaft 7 carrying the roll 13, in the following manner. The shaft 112 carries a gear wheel 115 engaging a gear wheel 116 on the shaft of the roll 110, and said gear wheel 115 also engages an intermediate gear wheel 117 which is in mesh with a gear wheel 118 on the shaft of the roll 109. Thus said rolls 109 and 110 are both driven in opposite directions as indicated by the arrows and at a uniform rate of speed to carry the bag blanks forward with the first part of the bottom turned over against the pasted portion. Beyond the roll 110 I mount a roll 113, which is driven from the roll 110 by means of gears 110^a and 113^a and between which and said roll 110 the bottoms of the bags are passed by a tucking blade 130 in order that the pasted portions of the same may be firmly held together in the final fold. The tucking blade is carried by one arm 125 of a bell crank lever pivotally mounted on a rock shaft 126, the other end 127 of said lever being connected by a link or rod 129 with a lever 135 pivotally mounted at 136 below the bed-plate of the machine. A cam 137 mounted on the shaft 112 is provided with a projection 139 to engage said lever at regular intervals, and through the mechanism just described, operate the tucking blade. The tucking blade is normally held out of action by a spring 140 connected to the machine frame at 141.

As the bags are fed forward by the rolls

109 and 110, they enter between a pair of plates 145 and 146 carried by an arm 147 eccentrically hung on the shaft 148 carrying the roll 113 and as soon as the first pasted
 5 portion of the bag bottom fully enters the space between these blades the tucking blade descends and at the same time the eccentric moves the blades 145 and 146 forwardly with the end of the bag as the latter is
 10 moved into the bite of the rolls 110 and 113, by the tucking blade 130. The purpose of the plates 145 and 146 is to prevent the first fold of the bottom rising away from its pasted engagement with the bottom, and
 15 thereby interfering with its proper passage into the bite of the rolls 110 and 113.

The arm 147 carrying the blades 145 and 146 is connected by means of a link 155 with the arm 156 of a bell-crank lever hung
 20 from a rock shaft 157, the opposite end 158 of said lever being in engagement with a cam 159 to effect movement of said arm 147. The rock shaft 157 is provided with an arm 160 to which a spring 161 is attached
 25 to hold the arm 158 of the bell-crank lever in engagement with the cam 159. From the rolls 110 and 113, the finished bags are carried to any desired point.

I claim:

30 1. In a machine for forming paper bags from tubular blanks, the combination of means for feeding said blanks, bottom folding mechanism including an opening nose
 35 having a slidably movable member to which said blanks are presented, and means for actuating said movable member against the tube to buckle the same and raise the upper ply of the advancing blank and cause it to
 40 pass over said nose.

40 2. In a machine for forming paper bags from tubular blanks, the combination of means for feeding said blanks, bottom folding mechanism including an opening nose to
 45 which said blanks are presented, a movable member slidably mounted on said nose, and means for imparting movement to said slidable member whereby it will be pressed against the tube to buckle the same and raise
 50 the upper ply of the advancing blank and cause it to pass over said nose, and means for advancing the blank.

3. In a machine for forming paper bags from tubular blanks, a table over which said tube of paper is passed, bottom folding
 55 mechanism including an opening nose to which the successive blanks are presented, a slidable member carried by said nose and depressible against the tube to buckle the same and raise the upper ply of the advancing
 60 blank and cause it to pass over said nose, said table having a recess permitting the depression of said movable member, means for actuating said slidable member, and means for advancing the blank.

4. In a machine for forming paper bags 65 from tubular blanks, the combination of means for feeding said blanks, bottom folding mechanism including an opening nose to which said blanks are presented, a slidable member carried by said nose, means for moving
 70 said member against the tube to buckle the same and raise the upper ply of the advancing blank and cause it to pass over said nose, a plate carried by said slidable member, and means for advancing the blank
 75 and carrying the folded portion under said plate.

5. In a machine for forming paper bags from tubular blanks, the combination of means for feeding said blanks, bottom fold- 80 ing or creasing mechanism including an opening nose to which said blanks are presented, a member arranged to slide on said nose to engage the same and raise the upper ply of the advancing blank and cause it to
 85 pass over said nose, a fixed frame carrying said nose, a rock shaft mounted in said frame, a connection between said rock shaft and the sliding member, a rotating cam, and an arm carried by said rock shaft in engage- 90 ment with said cam whereby said sliding member may be operated.

6. In a machine for forming paper bags, the combination of bottom folding and creasing mechanism, feeding mechanism for 95 the partially finished blanks, pasting mechanism therefor, means for turning portions of the bottom whereby the pasted parts may be secured together, a pair of rolls between which said bottom is passed in one direction,
 100 and a pair of plates carried by the shaft of one of the rolls between which the first pasted and folded portion of the bottom is passed, said plates being movable by the shaft independently of the roll carried by 105 the same.

7. In a machine for making paper bags, the combination of bottom folding and creasing mechanism, feeding mechanism for 110 the partially finished blanks, pasting mechanism therefor, means for turning portions of the bottom whereby the pasted parts may be secured, a pair of rolls between which said bottom is passed in one direction, a pair
 115 of plates between which the first pasted portion of said bottom may enter, a shaft carrying one of said rolls, an eccentric carried by said shaft to which said plates are hung, and means for operating said eccentric.

8. In a machine for forming paper bags, 120 the combination of bottom folding and creasing mechanism, feeding mechanism for the partially finished blanks, pasting mechanism therefor, means for turning portions of the bottom whereby the
 125 pasted parts may be secured together, a pair of rolls between which said bottom is passed in one direction, a pair of plates between

which the first pasted portion of said bottom may enter, a shaft carrying one of said rolls, an eccentric carried by said shaft to which said plates are hung, means for operating said eccentric, a tucking blade, and means for operating said tucking blade simultaneously with the movement of said eccentric.

In testimony whereof, I have signed my name to this specification, in the presence of 10 two subscribing witnesses.

WILLIAM C. FULLER.

Witnesses:

WILLIAM E. BRADLEY,
JOS. H. KLEIN.