

Dec. 2, 1941.

A. POTDEVIN

2,264,550

BAG MAKING MACHINE

Filed Feb. 9, 1939

6 Sheets-Sheet 1

Fig. 1.

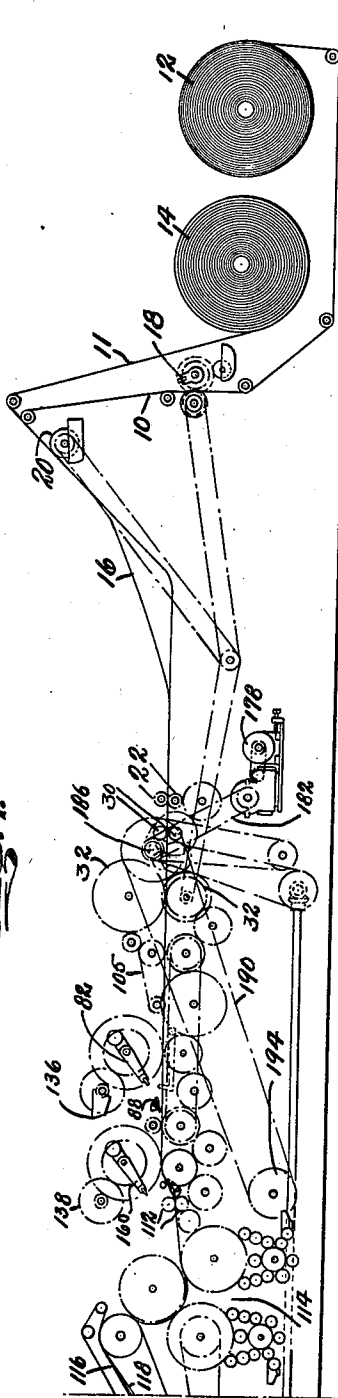


Fig. 11.

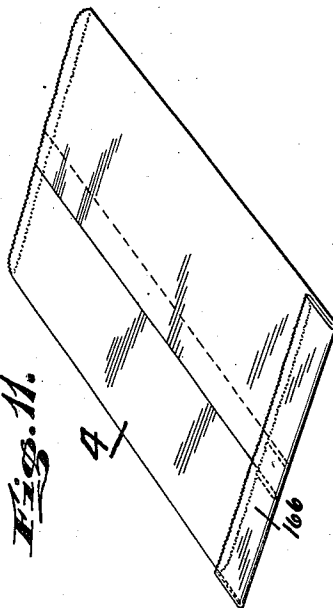
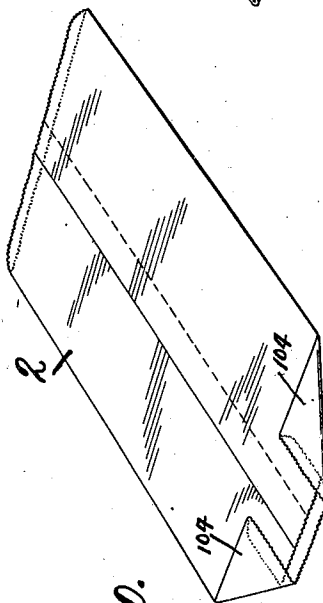


Fig. 10.



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Fig. 1A.

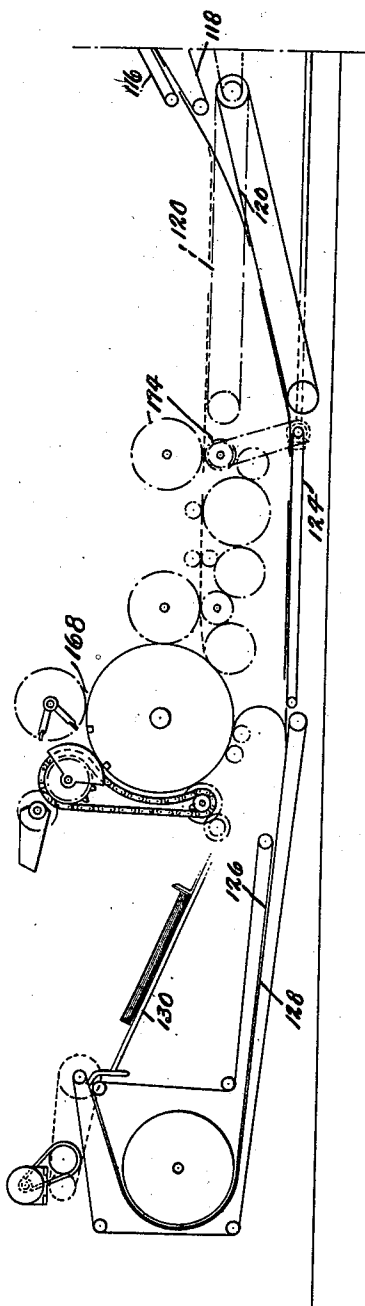


Fig. 13.

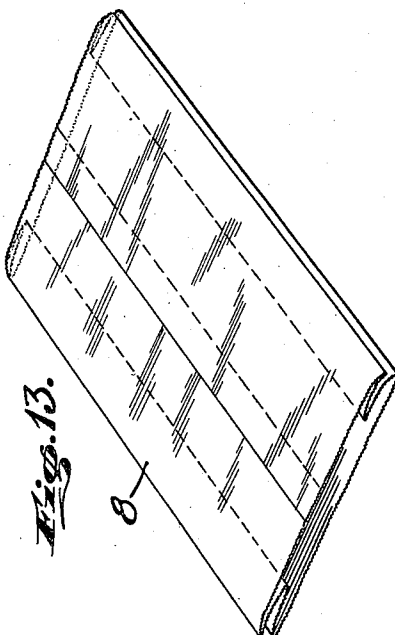
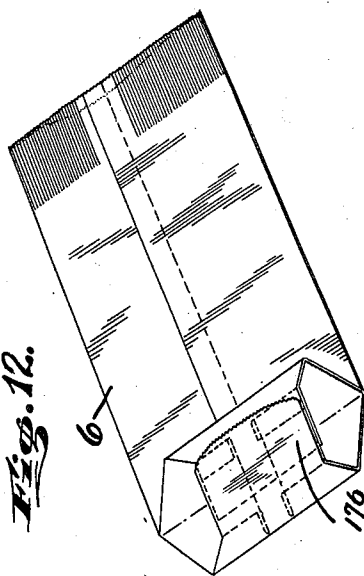


Fig. 12.



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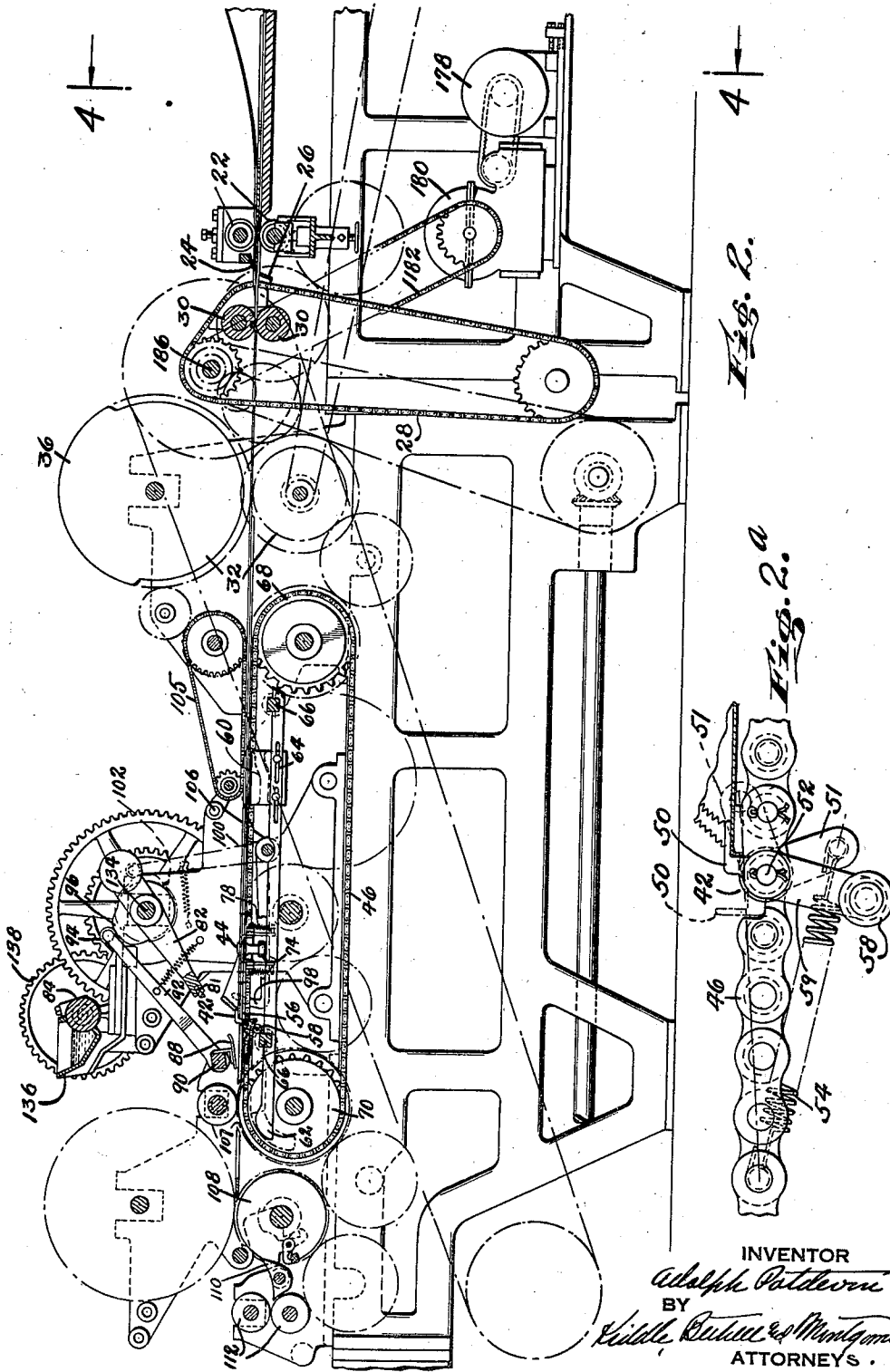


Fig. 2.

Fig. 2a.

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Fig. 3.

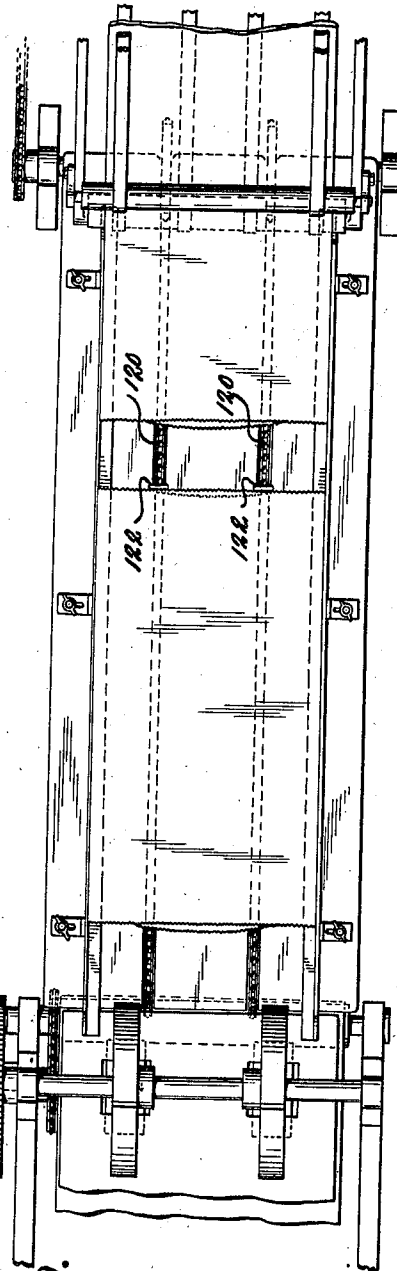
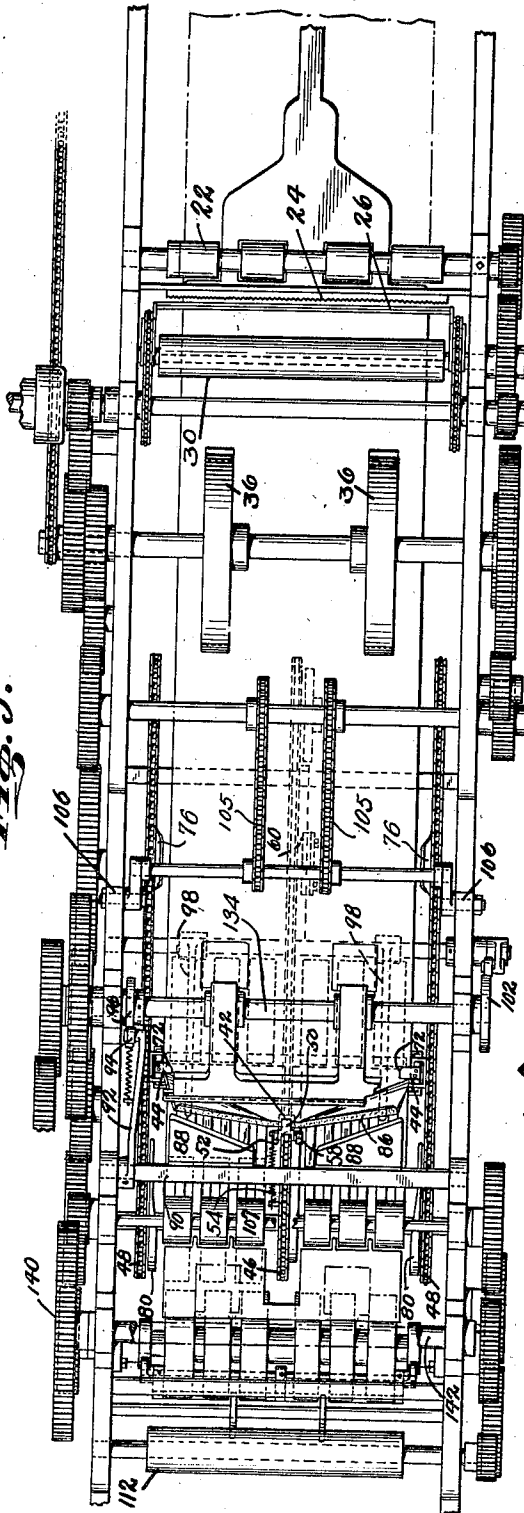


Fig. 9.

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Fig. 5.

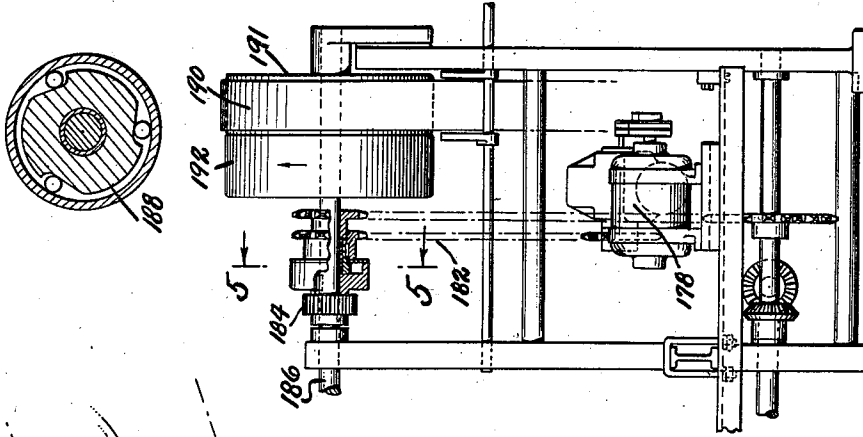
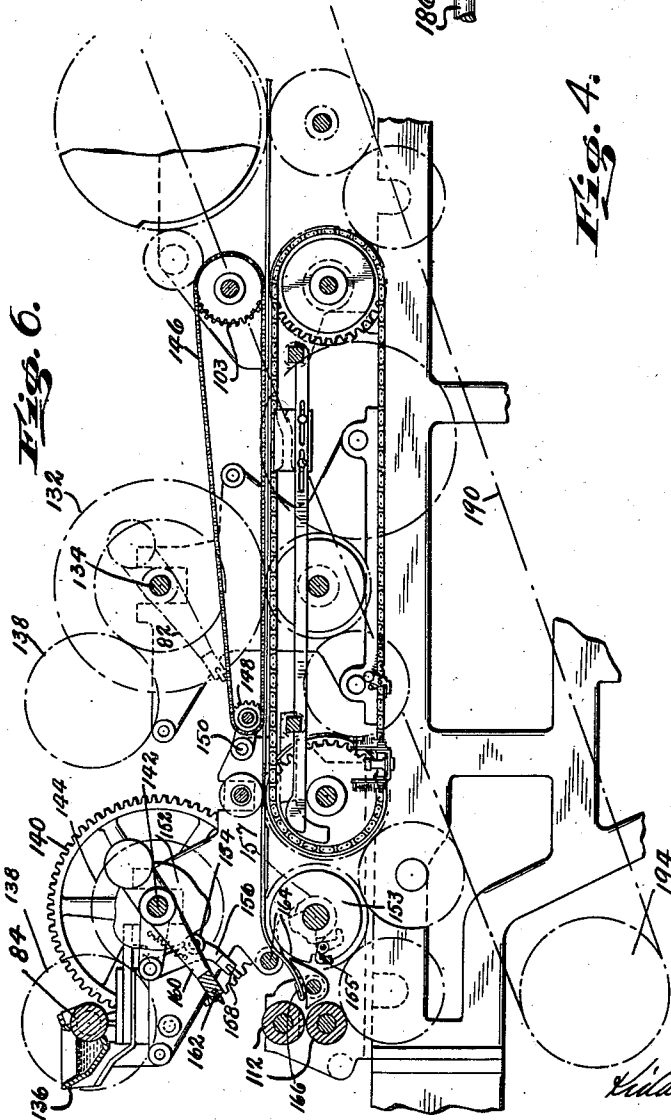


Fig. 4.



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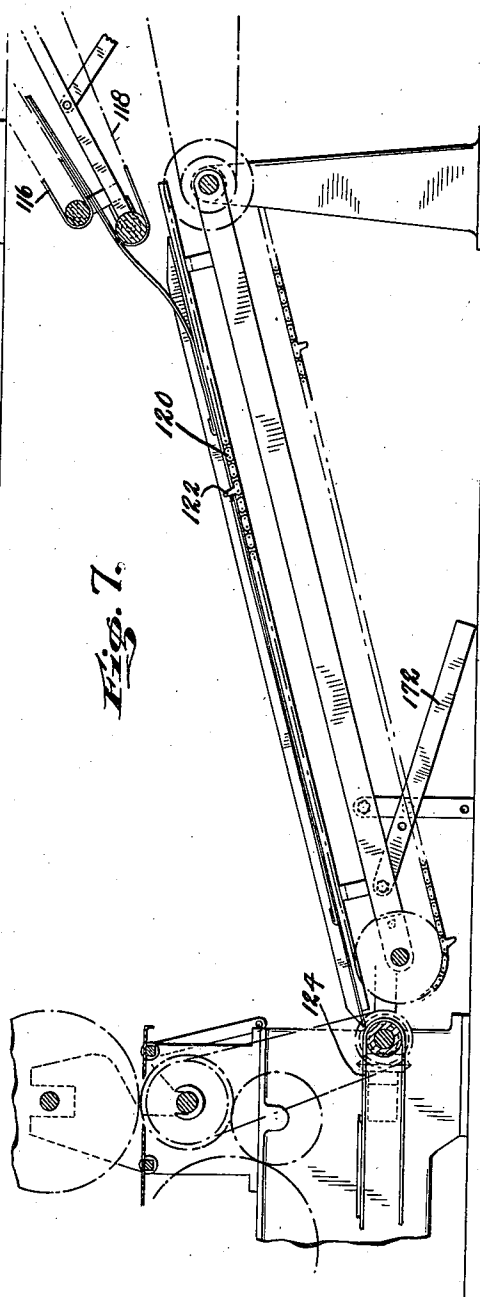
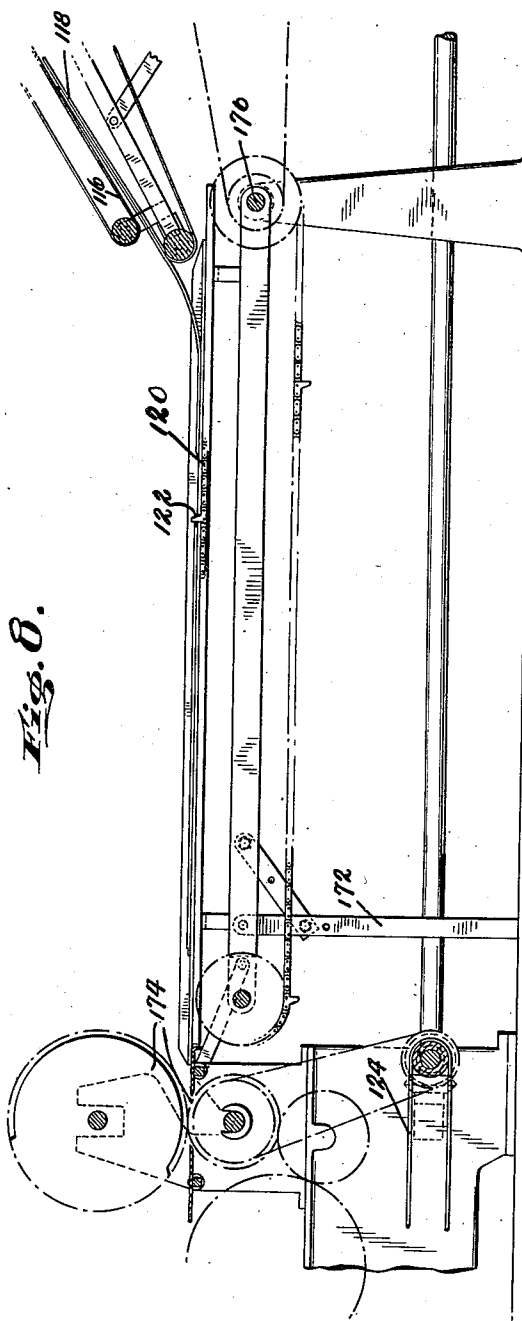
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UNITED STATES PATENT OFFICE

2,264,550

BAG MAKING MACHINE

Adolph Potdevin, Garden City, N. Y., assignor to
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a corporation of New York

Application February 9, 1939, Serial No. 255,403

8 Claims. (Cl. 93—8)

This invention relates to an improvement in bag making machines, and has for one of its objects the provision of a machine which is adapted for the making of several different types of bags, as, for example, square bottomed bags, gable type bags, satchel bottomed bags and bag tubes.

In the accompanying drawings:

Figs. 1 and 1^A together show an embodiment of the invention in side elevation;

Fig. 2 is a part side elevational view of the machine taken at that part of the machine where gable type bags are fabricated;

Fig. 2^A shows in detail a center gripper employed in the machine;

Fig. 3 is a plan view of the apparatus illustrated in Fig. 2;

Fig. 4 is a view on the line 4—4 of Fig. 2;

Fig. 5 is a section on the line 5—5 of Fig. 4;

Fig. 6 is a view similar to Fig. 2 but of that part of the machine where square bottomed bags are fabricated;

Figs. 7 and 8 are side elevational views of part of the forwarding mechanism showing the same in two different positions;

Fig. 9 is a plan view of Fig. 8, for instance;

Figs. 10, 11 and 12 show in perspective bags of the gable type, square bottomed type and satchel bottomed type, respectively; and

Fig. 13 is a view in perspective of a bag tube.

Referring to the drawings in detail: The machine of this invention is adapted for the manufacture of gable type bags such as designated 2 in Fig. 10; for the manufacture of square bottomed bags such as shown at 4 in Fig. 11; for the manufacture of satchel bottomed bags such as shown at 6 in Fig. 12; and for the manufacture of tubes such as shown at 8 in Fig. 13.

The bag making materials designated 10 and 11, assuming that multi-ply bags are to be fabricated, are taken from supply rolls 12 and 14 and pass into the machine through the tubing mechanism, which is shown more or less diagrammatically at 16 in Fig. 1 where they are tubed. As the materials pass to the tubing mechanism transverse stripes of paste are applied to the face of the web 10, which is opposed to the web 11, by paste-applying device 18, and as the webs are advanced a longitudinally extending stripe of adhesive is applied to the opposite face of the web 10 by adhesive-applying mechanism 20. The webs are folded transversely by the tubing mechanism 16 as is well understood to provide a tube.

Assuming for purposes of description that bags of the gable type, as illustrated in Fig. 10, are to

be fabricated, printed and discharged from the machine. The tubed material after passing through the tubing mechanism 16 passes between forwarding rollers 22 to cut-off mechanism.

This cut-off mechanism comprises a stationary plate 24 extending transversely of the machine, as will be seen from Fig. 3, and a cutter bar 26 carried by a driven chain 28. The cutter bar, as will be seen from Fig. 2, is so disposed with respect to the continuously advancing bag tubing that at predetermined intervals the bar in conjunction with the cut-off plate 24 will divide the tubing into bag lengths. Beyond the cutting-off mechanism is a pair of slackening rollers 30 which, at the instant the cutter bar 26 is active to divide the tubing into bag lengths, will have gripped the bag tubing and have produced a slack portion in the tubing between the rollers 30 and the cut-off plate 24.

The bag lengths thus produced are advanced by a pair of drawing rolls 32, one of which is provided with a segmental portion 36 which periodically engages each succeeding bag length and advances it in proper timed relation toward end-folding apparatus presently to be described.

The bag lengths are moved forward until they are picked up by traveling grippers which grip the leading end and the two side edges of the bag length positively to advance the bag lengths lengthwise of the machine.

There are three grippers, a central gripper 42 and lateral grippers 44. These grippers are carried by a central chain 46 and side chains 48, respectively. The upper jaw 50 of the central gripper 42 is pivoted to the chain 46 by cross pin 52. The jaw 50 carries an arm 51 to which is attached one end of tension spring 54. This spring moves below and above the pivot for the jaw 50, so as to hold the jaw closed or open with respect to the lower jaw 56.

A roller 58 is secured to a depending arm 59 attached to the upper jaw 50 and intermittently engages cam members 60 and 62 carried by a bar 64 extending longitudinally of the machine and supported by means of cross bars 66. The cam member 60 is so located as to engage the roller 58 after the central gripper has passed about the wheel 68. When the roller 58 engages the cam 60 the gripper is closed on the advancing tubing against the action of the tension spring 54, and is maintained in closed position by the spring until opened by engagement of the roller with the cam 62. As above noted the gripper will then be held open by the spring until again closed by the cam 60. The cam is adjustable

longitudinally of the bar 64 so that the time of closure of the gripper may readily be varied.

Each of the side grippers 44 comprises a fixed lower jaw carried by a chain 48 and a movable upper jaw 72 mounted on a bracket carried by the chains 48 and provided with a roller 74. These rollers engage cam rails 76 which cause the upper movable jaws 72 to open, the jaws closing, under the action of the springs 78, to grip the side of the bag length when the rollers leave the cam rails, the jaws opening again when the rollers 74 engage the cam tracks 80. This provides, therefore, for gripping the bag lengths at the center and at the sides. It is to be noted that the side grippers are diagonally displaced with respect to the center gripper.

Prior to folding the end of the bag length paste is applied to the leading end thereof by a paste bar 81 carried by an arm 82 which is being constantly rotated, the paste bar in its movement wiping a paste roll 84 and applying the paste which is thus picked up across the end of the bag length as shown at 86.

Folding of the end of the bag length is effected by means of converging plates 88 which are carried by a bar 90 which extends transversely of the machine, this bar carrying an arm 92, the free end of which carries a roller 94 cooperating with a cam 96 whereby the plates 88 are given a rocking motion which, of course, is properly timed with the other operations of the machine. As the leading end of the bag length approaches the plates 88 the end of the bag length is slightly raised by the action thereunder of vertically movable fingers 98 rocked by arm 100, the outer or free end of which carries a cam roller cooperating with a cam 102. This mechanism will, as will be appreciated, fold the corners of the leading end of the bag tube over as shown at 104 in Fig. 10 to provide what is known in the trade as a gable type bag. In their forward travel the bag lengths pass under a pair of chains 105 which hold the bag lengths flat until the grippers function.

The finished bag then passes between forwarding rollers 107 and over rollers 108 from which it is stripped by stripping fingers 110, thence between forwarding rollers 112 to printing mechanism 114, shown diagrammatically in Fig. 1.

The printed bags pass from the printing mechanism between belts 116 and 118 to conveyor 120. The latter comprises a pair of chains each provided with lugs 122 disposed thereon at regular intervals. This conveyor discharges the bags upon another belt conveyor 124 which passes the bag along to still another conveyor in the form of two belts, one above the other, designated 126 and 128, respectively, this conveyor delivering the finished bag to delivery platform 130.

As pointed out at the beginning of this description, the present machine is adapted for the making of several types of bags and the construction and operation of the machine as employed for the making of square bottomed bags such as shown in Fig. 11 will now be described.

The bars 88 and 81 and fingers 98 are first rendered inoperative and the paste pot 136 together with the paste roller 84 are removed from the position shown in Fig. 2 to the position shown in Fig. 6 together with the gear 138 for the paste roller 84, this gear being mounted to mesh with the gear 144 which is on the same shaft 142 which carries drive gear 140. The gear 140, it will be seen from Fig. 3, is geared through intermediate gears to the drive gear 132. The chain

105 which is employed in connection with the making of the gable type bags is substituted by a longer chain 146, this chain now extending from the first sprocket 103 for the chain 105, past the gable bag forming mechanism to a sprocket 148 pivoted at 150. With this new setup, the paper as it comes into the machine is cut off by the cutter bar 26, as previously described in connection with the making of gable type bags and is fed forward through the machine by the same mechanism as before including the grippers 42 and 44 until its leading end comes up to the rotating drum 153, carrying a gripper 155, which is controlled by a cam 157. As shown in Fig. 6 the shaft 142 which carries the gear 140 is provided with a cam 152 which cooperates with a cam follower roller 154 carried by an arm 156 which carries a tucker bar 158 extending transversely of the machine. The shaft 142 also carries an arm 160 provided with paster bar 162 similar to the bar 80 and cooperating with the paste roller 84 in its new position. The cam 152 is so shaped that as the leading end of each bag length comes up to the drum 153, the bar 162 will tuck the bag length into the gripper 155, the latter will close and the paster bar will apply paste across the face of the bag length, so that when the end of the bag length is released by the gripper 155 and the pasted bag length passes between the rollers 164, the end of the bag length will be folded over to bottom the bag, as shown at 166, to provide a square bottom on the bag length, as shown in Fig. 11. The bag then passes between the rollers 112, already referred to, through the printing mechanism 114 and from thence is conveyed or advanced by the conveyor belts 116 and 118, conveyors 120 and 124 and conveyor belts 126 and 128 to the stacking platform 130.

In the event that bag tubes, such as illustrated in Fig. 13, as distinguished from bottomed tubes or bags, are to be fabricated on this machine, then it will be appreciated that the bottoming mechanisms referred to in connection with the making of gable type and square bottomed type bags are rendered inoperative and the tube simply cut off by the cutter bar 26 and forwarded through the machine, as already described in connection with square bottomed bags and gable type bags, to the stacking platform 130.

This machine is also adapted for the making of satchel bottomed bags. The bottoming mechanism is shown diagrammatically in Fig. 1A and has been designated 168. This mechanism may be like that shown in Patent No. 1,893,285 and hence will not be described in any detail. When satchel bottom bags are to be fabricated then the conveyor 120 is moved from the position shown in Fig. 7 to the position shown in Fig. 8. It is pivoted at 170 to permit of this movement and is held in its horizontal position, as illustrated in Fig. 8, by the legs 172. It is necessary, therefore, in this instance merely to render the paster bars and tucker bars as well as the fingers 90 inoperative and to forward the bag lengths as they are cut off by the cutter bar 26 through the machine, through the printing mechanism 114, if printing is desired, after the bag length has passed the gable bottoming and square bottoming mechanism, and to the conveyor belts 116 and 118. These belts will convey the bag lengths to the conveyor 120, which is now in a horizontal position, as above explained, this conveyor delivering the bag lengths to forwarding rollers 174. The bag lengths will be

forwarded from thence to the bottoming mechanism 168 where the bags will be provided with a satchel bottom 176, delivered to the conveyor belts 126, 128, finally to be discharged at the stacking platform 130.

The driving mechanism for this machine is of novel construction in that means have been provided for initially "inching" or driving the machine at very slow speed to permit of threading the machine readily and to permit inspection of the bags until the operator is assured that the bags are being properly formed whereupon the machine is speeded up to its normal speed of several hundred bags per minute. This slow speed driving mechanism comprises an electric motor 178, gear reducer 180 and drive chain 182 which drives gear 184 on the shaft 186 which is the main drive shaft of the machine. The gear 184 is driven from the chain 182 through over-running clutch 188, shown in Fig. 5. Initially, in threading the machine, the motor 178 drives the machine through clutch 188 at very slow speed until the operator can see that the machine is functioning properly whereupon the main drive belt 190 is shifted from loose pulley 191 to the pulley 192 which is fixed to the shaft 186 so that the machine is then driven at high speed from main driving motor 194, the clutch 188 permitting of this changeover due to the fact, as above mentioned, the same is an over-running clutch.

From all of the foregoing it will be seen that the present invention provides a machine which is capable of making a variety of types of bag. It is to be understood that changes may be made in the details of construction and arrangement of parts within the purview of the invention.

What I claim is:

1. A bag making machine comprising in combination bottoming mechanism, forwarding and conveying mechanism for forwarding the bottomed bags through the machine and for discharging them from the machine, a portion of said conveying and forwarding mechanism being shiftable at will to by-pass the bottoming mechanism whereby unbottomed bag tubes are discharged from the machine.

2. A machine for making bags, comprising in combination a plurality of aligned tube bottoming mechanisms adapted to provide bag tubes with bottoms of different types, means for selectively positioning any one of said mechanisms for operation while rendering the other inoperative, and a single conveying mechanism common to the plurality of bottoming mechanisms for effecting discharge of the bottomed tubes from the machine after being bottomed by the selected bottoming mechanism.

3. A machine for making bags, comprising in combination a plurality of aligned tube bottoming mechanisms adapted to provide bag tubes with bottoms of different types, means for selectively positioning any one of said bottoming mechanisms for operation while rendering the other inoperative, and single forwarding mechanism common to the plurality of bottoming mechanisms for advancing bag lengths to the selected bottoming mechanism.

4. A machine for making bags, comprising in combination a plurality of aligned bottoming mechanisms adapted to provide bag tubes with bottoms of different types, means for selectively positioning any one of said mechanisms for operation while rendering the other inoperative, single forwarding mechanism common to the plurality of bottoming mechanisms for advancing bag lengths to the selected bottoming mechanism, and a conveying mechanism common to said plurality of bottoming mechanisms for effecting discharge of bottomed bag lengths from the machine after being bottomed by the selected bottoming mechanism.

5. A machine for making bags, comprising in combination tubing mechanism, cutting-off mechanism for dividing the tubing into bag lengths, a plurality of aligned bottoming mechanisms adapted to provide the bag lengths with bottoms of different types, means for selectively positioning any one of said mechanisms for operation while rendering the other inoperative, forwarding mechanism common to the plurality of bottoming mechanisms and comprising side grippers and a center gripper for forwarding the bag lengths to the bottoming mechanisms, and single conveying mechanism common to the plurality of bottoming mechanisms for effecting discharge of the bottomed tubes after the same have been bottomed by any one of the bottoming mechanisms.

6. A machine for making bags, comprising in combination a plurality of aligned selectively operable tube bottoming mechanisms, parts of said bottoming mechanisms being interchangeable so as to enable one bottoming mechanism to be rendered operative while the other is rendered inoperative, conveying mechanism common to the plurality of bottoming mechanisms for effecting discharge of the bottomed tubes from the machine irrespective of the bottoming mechanism employed.

7. A bag making machine comprising in combination a plurality of aligned tube bottoming mechanisms parts of which are interchangeable so as to enable one of said mechanisms to be rendered operative while the other is rendered inoperative, printing mechanism, and forwarding and conveying mechanism common to the plurality of said bottoming mechanisms for passing the tubes bottomed by any of said bottoming mechanisms through the printing mechanism and to effect discharge of the bottomed and printed tubes from the machine.

8. A bag making machine comprising in combination a plurality of aligned tube bottoming mechanisms parts of which are interchangeable so as to enable one of said mechanisms to be rendered operative while the other is rendered inoperative, forwarding and conveying mechanisms common to the plurality of bottoming mechanisms for forwarding and conveying the bottomed tubes through the machine, said forwarding and conveying mechanisms being in sections, one of said sections being shiftable to selectively by-pass one of the bottoming mechanisms.

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