

March 9, 1943.

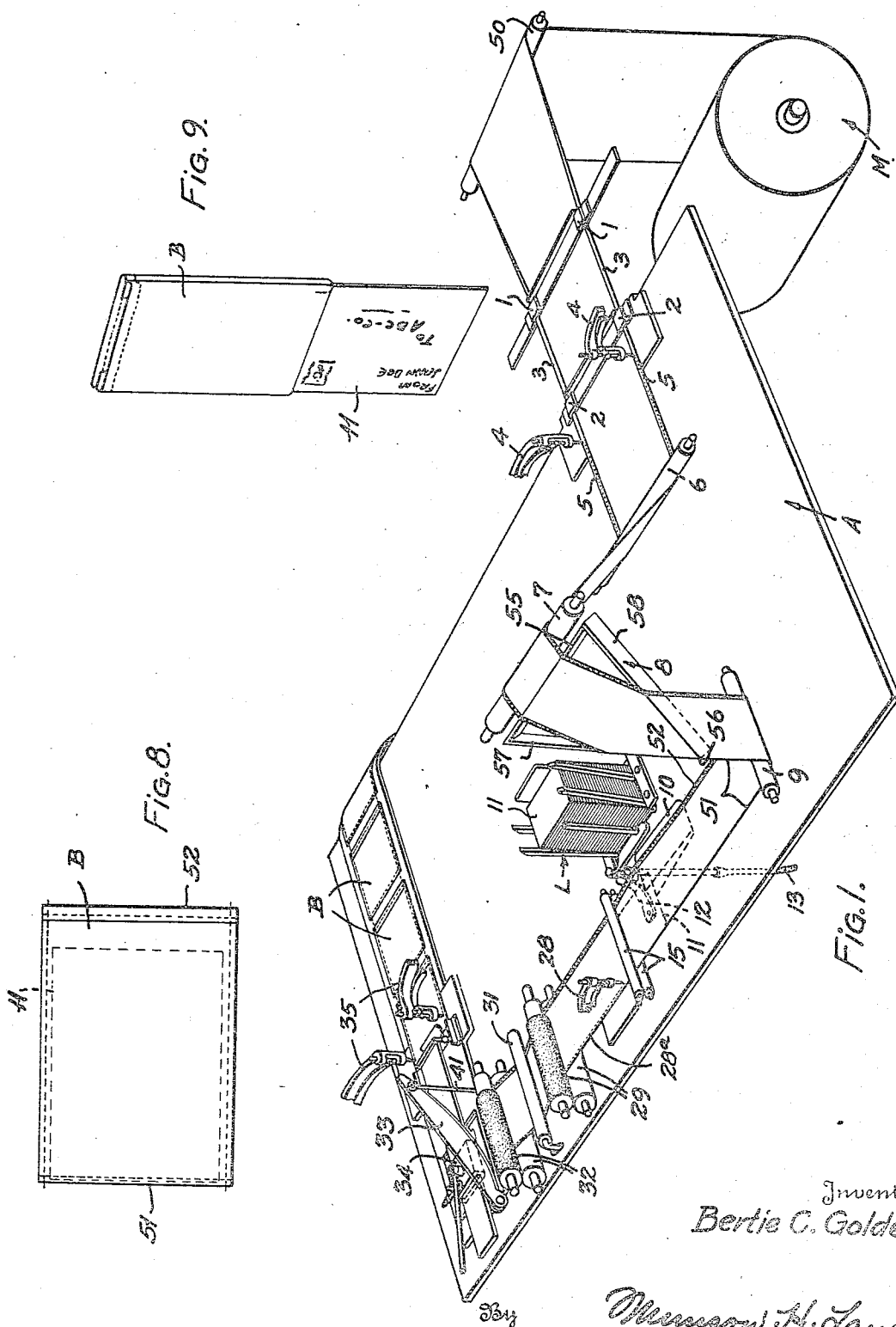
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2,313,433

BAG-MAKING AND LABEL-INSERTING MACHINE AND METHOD

Filed Feb. 26, 1942

8 Sheets-Sheet 1



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8 Sheets-Sheet 2

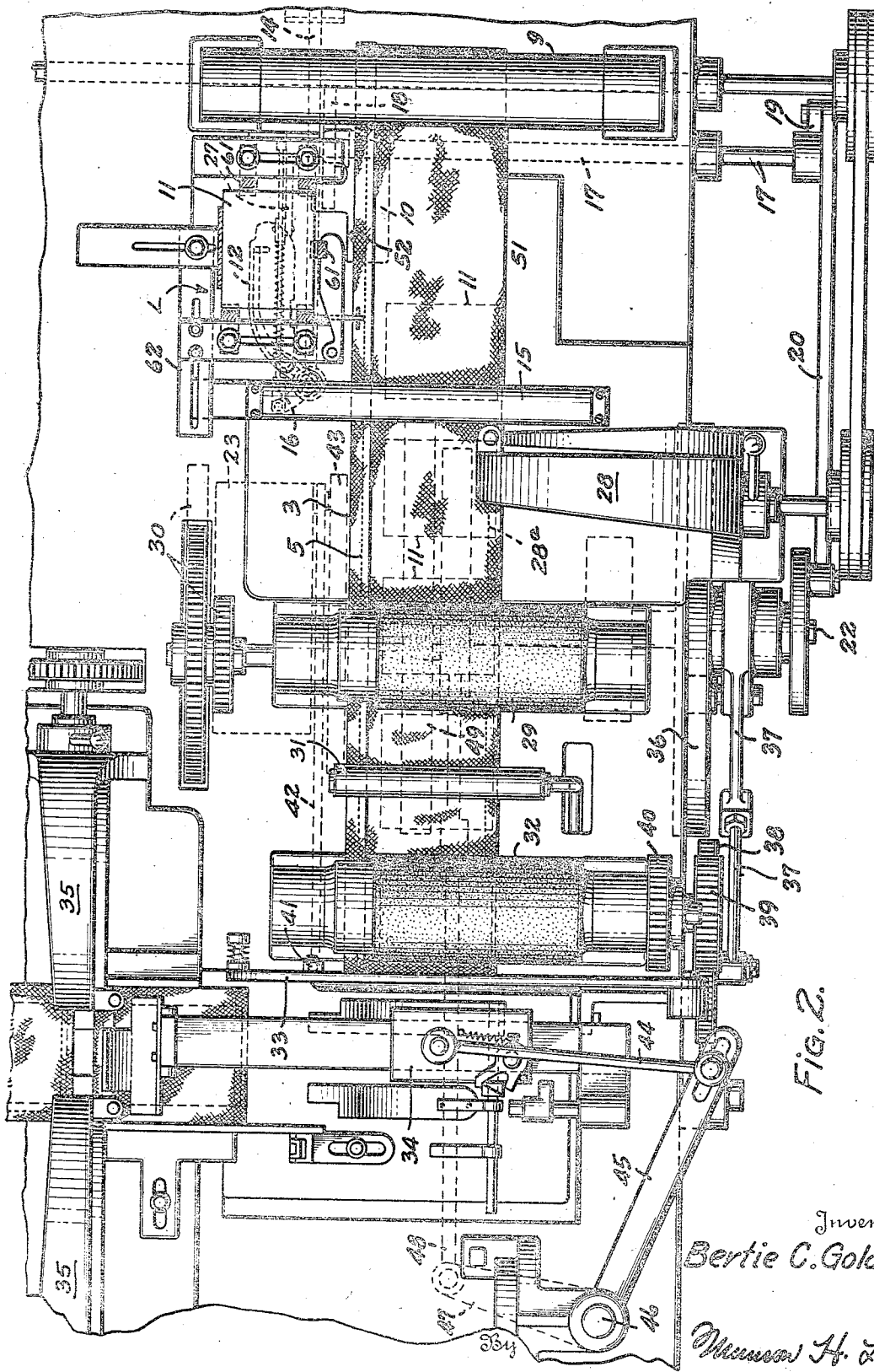


Fig. 2

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8 Sheets-Sheet 3

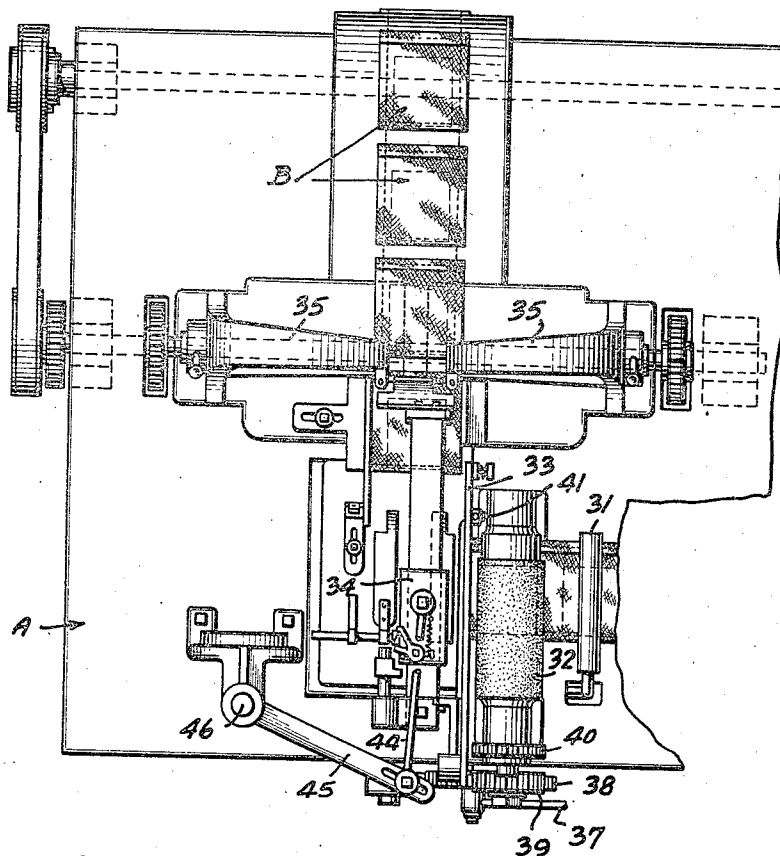


Fig. 3.

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8 Sheets-Sheet 4

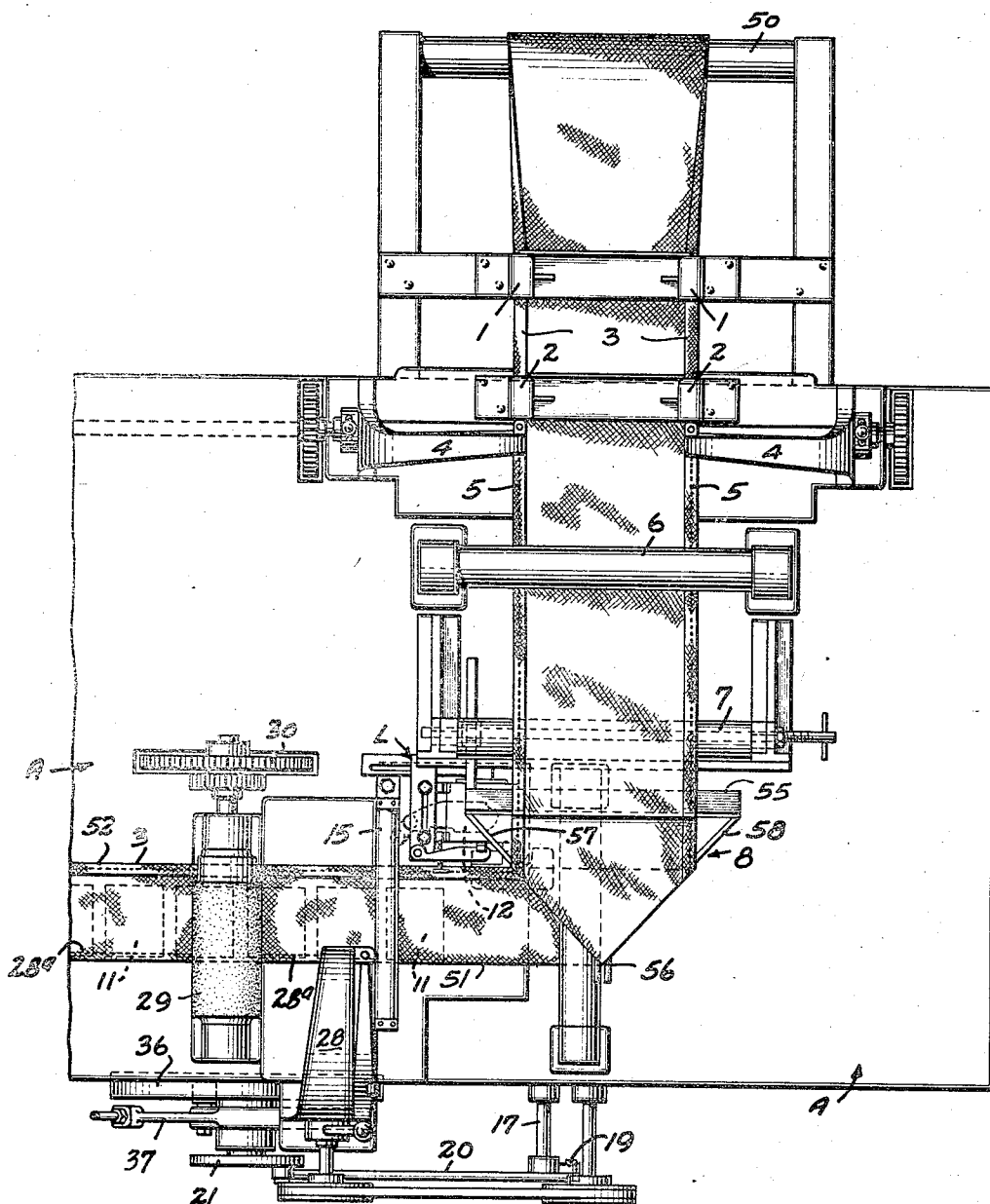


Fig. 3A.

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8 Sheets-Sheet 5

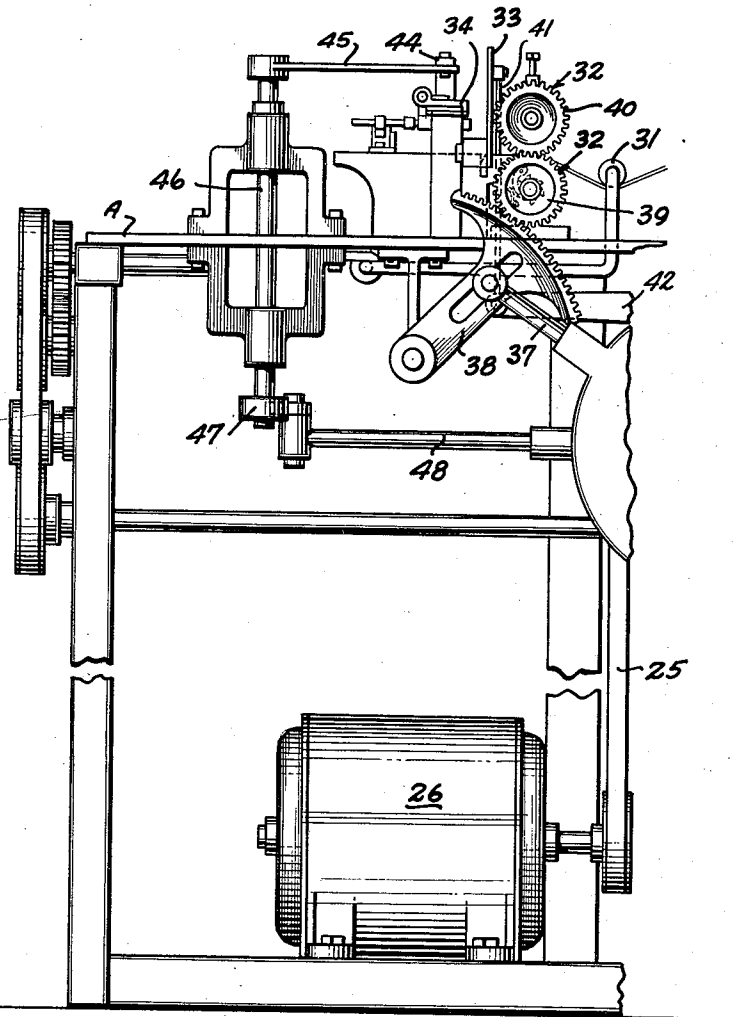


Fig. 4.

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8 Sheets-Sheet 6

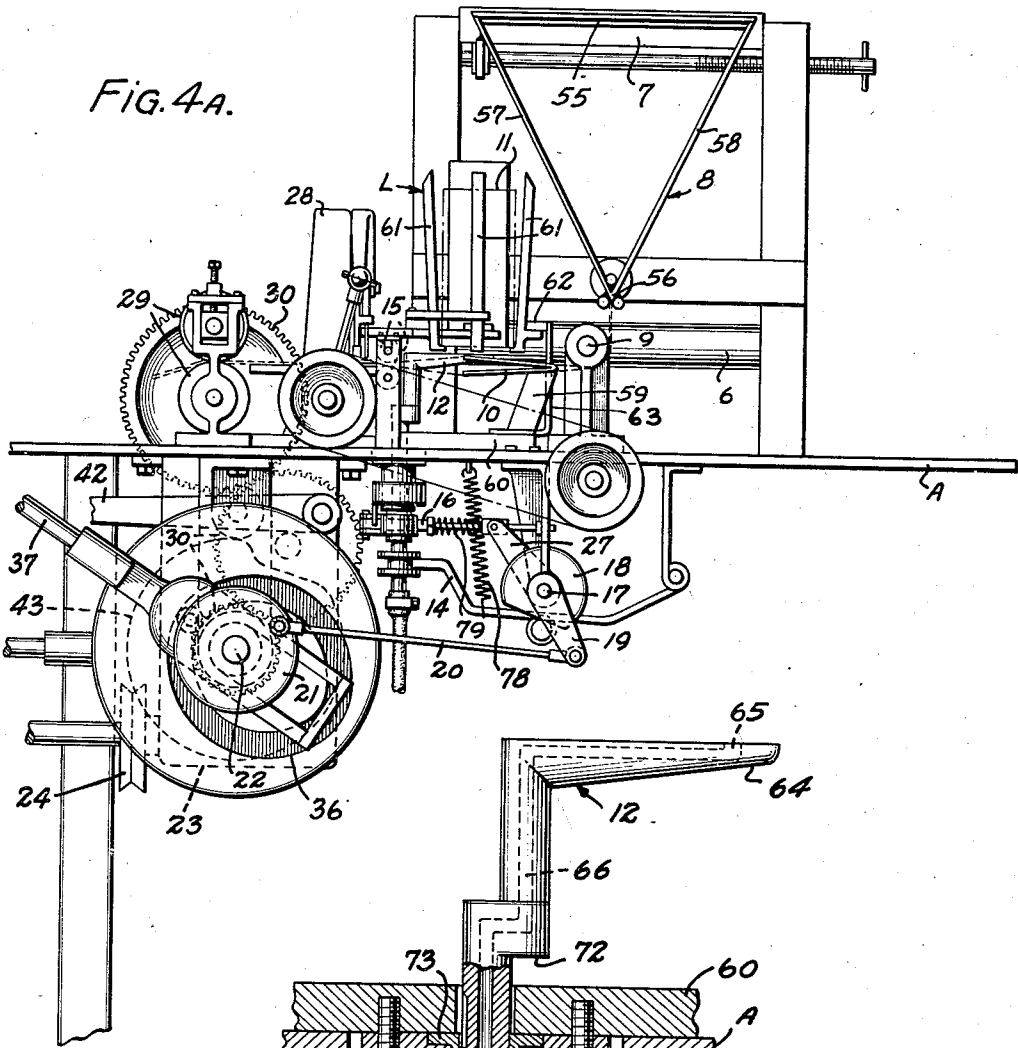
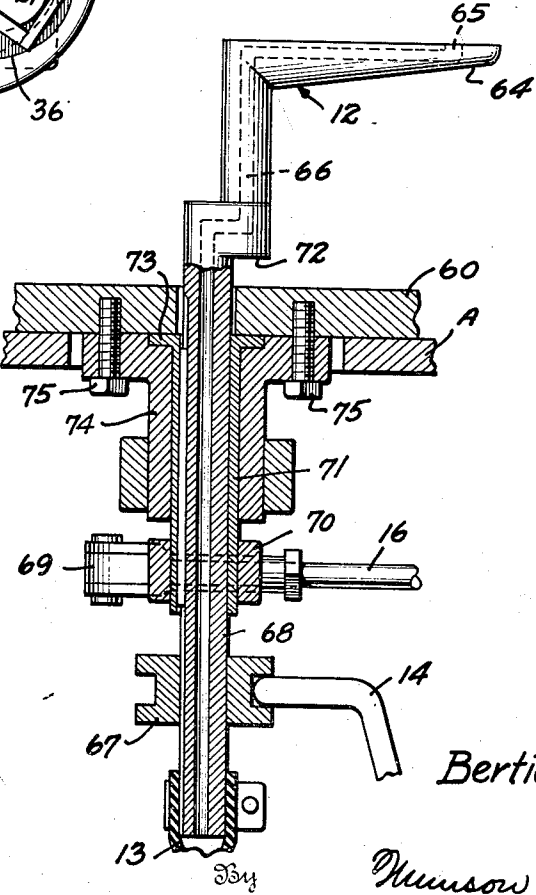


Fig. 5.



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8 Sheets-Sheet 7

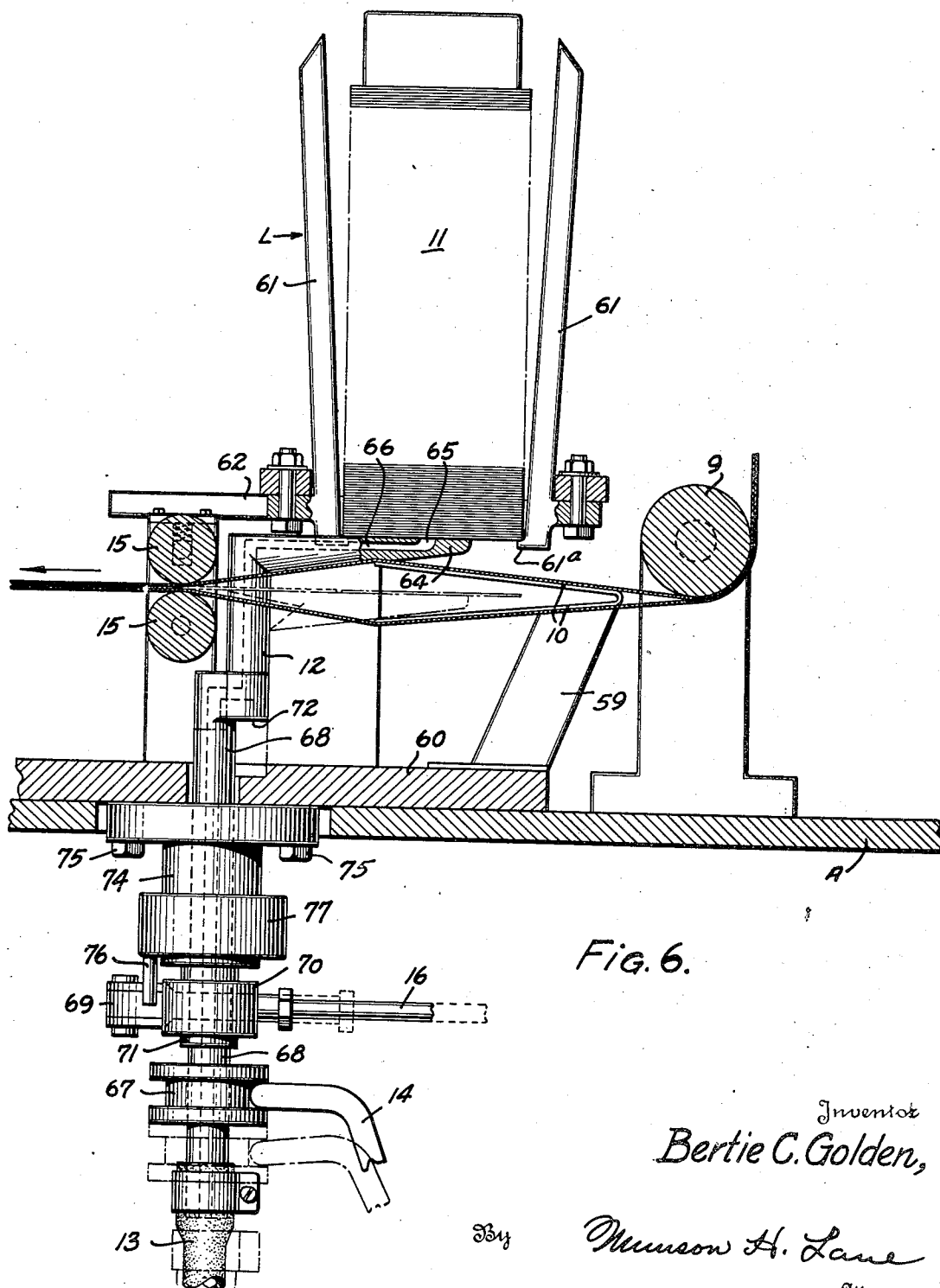


Fig. 6.

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8 Sheets-Sheet 8

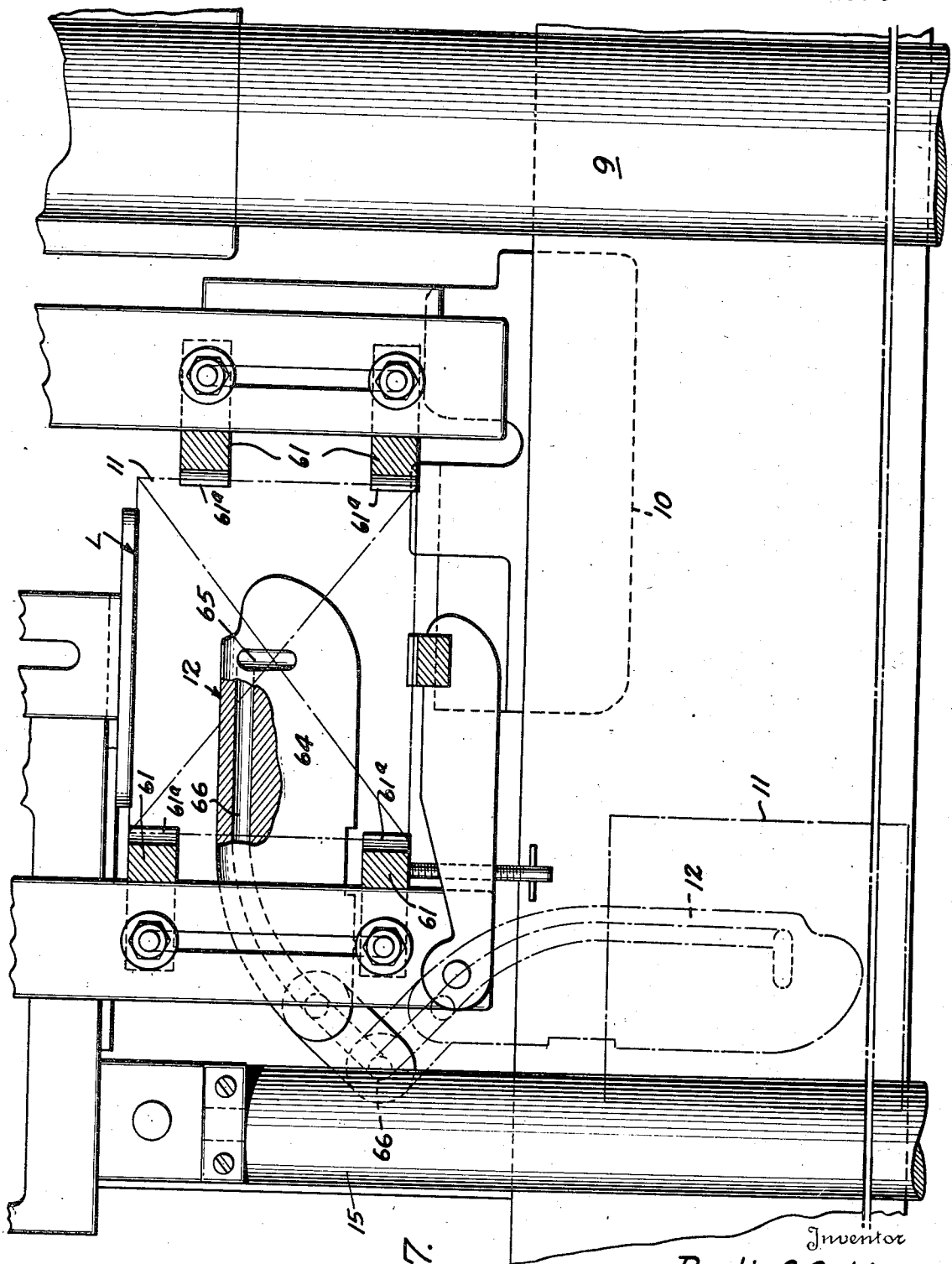


Fig. 7.

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UNITED STATES PATENT OFFICE

2,313,433

BAG-MAKING AND LABEL-INSERTING
MACHINE AND METHOD

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Application February 26, 1942, Serial No. 432,524

8 Claims. (Cl. 112—104)

The invention relates to a method and apparatus for making bags, wherein a suitable label is stitched within the bag during the course of manufacture and while the bag is wrong side out. When the bag is reversed in accordance with the usual procedure, the label will then be on the outside of the bag projecting therefrom but secured thereto along one end. The bag is particularly intended for shipping small articles, with a label attached thereto bearing the name and address of the consignee and other necessary data.

At the present time it is the usual practice to sew a label to the end of a completed bag, in an operation separate from the bag-making steps. This requires separate handling of both bag and label and consequently adds to the expense of the article. As these articles must sell for a low price, each handling operation is important and detracts from the available profit.

In the making of bags it is common practice to draw the material for making a series of bags from a continuous roll of fabric and to turn the edges of the material inward toward each other, laying them upon the body of the strip, after which the folded-over portions are stitched to form hems. The material is then folded in half, with the two hemmed portions outward, after which the material is severed into successive bag-forming portions or blanks, the edges of which are then sewed or stitched to form a series of bags which come from the bag-forming machine at spaced intervals but generally stitched together in chain form. These bags are then furnished to the customer, who separates the bags and applies draw-strings, labels or other attachments thereto. An early machine for performing these operations is shown in Lowe Patent No. 416,474, dated December 3, 1889. The order of the steps may be varied as desired, and numerous patents have been granted for producing stitched and hemmed bags which are widely used by tobacco manufacturers and others.

In its broadest aspect, the present invention contemplates the insertion of a series of labels into the bag-making material during the course of manufacture of the bags, regardless of the particular order in which the bag-making steps are carried out, and stitching these labels into said material so that when the successive bags are completed on the bag-making machine each will have included therein a label 11 such as is shown in Fig. 8, which, when the bag B is reversed, will project from the bag as shown in Fig. 9.

While the invention is of broad application as described above, I have illustrated the same by

reference to a particular machine and method which have been found satisfactory and which embody the essential features of my invention.

In the drawings:

Fig. 1 is a perspective view, largely diagrammatic in character, illustrating the various stages in the preparation of the completed bag including the label-inserting and label-stitching steps;

Fig. 2 is a top plan view of those portions of the machine which receive the hemmed and folded cloth, insert successive labels between the folds of the cloth, stitch such labels adjacent the fold line, then cut the material into bag-making portions or blanks, each including a label stitched therein, and finally deliver the successive bag-making portions or blanks to sewing machines which stitch the sides of the bags to complete the bag-making operation;

Figs. 3 and 3A are plan views of the left- and right-hand portions, respectively, which together make up the entire machine;

Figs. 4 and 4A are side elevations showing, respectively, the left- and right-hand portions of the machine;

Fig. 5 is a detailed view, partly in vertical section and partly in elevation, of the label-inserting mechanism shown separate from the other parts of the machine;

Fig. 6 is a vertical elevation of the label-inserting mechanism shown in its relation to the moving web of fabric, the label hopper, and related parts of the machine;

Fig. 7 is a detailed plan view on a larger scale than is shown in the other figures, showing the label-inserting mechanism and closely related parts of the machine;

Fig. 8 is a view showing a bag as it comes from the machine, with an inserted label sewed into the folded or closed end of the bag, and

Fig. 9 is a view showing the bag reversed from the position shown in Fig. 8 and with the label projecting from the closed end thereof.

Referring first to Fig. 1, in which the entire machine is diagrammatically shown and the bag-making and label-inserting process illustrated, A represents a table top upon which the entire mechanism is mounted. The parts of the machine are compactly arranged along three sides of the table, with two horizontal changes of direction of the bag-making material indicated, the web of bag-making material moving first along the right edge of the table, during which period the initial stitching and folding operations are performed, the web then changing direction and moving along the front edge, during

which period the labels are inserted and sewed and the material severed to form individual bag-making blanks, which are then moved sidewise along the left edge of the table to be stitched along their edges; the completed bags being finally taken off the table at the left rear of the machine. The arrangement of the parts of the machine upon the table is largely a matter of convenience and may be varied as desired without departing from the spirit of the invention in its broadest aspects, although applicant's particular combination and arrangement of elements as herein set forth are believed to be an advance in the art of making bags.

A continuous web of bag-making material is drawn from a roll M, herein shown as located below the table A, which material passes first vertically over a roller 50 and then in a horizontal direction past a pair of preliminary folders 1—1 located at opposite sides of the web, which serve to partially fold over the longitudinal edges of the material, after which the web passes to a second pair of folders 2—2 which complete the folding operation prior to hemming or sewing. These folded-over portions of the material form the tops of the finished bags and are adapted to receive the draw-strings for closing the bag mouths as is well known in the art. The folded-over portions 3 of the web are suitably stitched by means of sewing machines 4—4 of any suitable or conventional type, which apply stitches or hems 5 to the folded portions. After the stitching operation, the hemmed material passes beneath a guide roller 6 and thence upwardly to a second guide roller 7, over which the material passes to a V-shaped folding device 8, which doubles the material over on itself leaving one edge 51 closed and the other edge 52 open. The open edge 52 includes the two hemmed portions 5, which form the top of the completed bag, whereas the closed or folded edge 51 constitutes the bottom. The folded material then passes beneath a guide roller 9, which is set at right angles to the roller 7, and the material then passes along the front edge of the table in a direction at right angles to that in which it was moving during the hem-forming and folding operations.

The open edges of the fabric now pass over opposite faces of a material spreader 10, which is wedge-shaped and serves to separate the two edges of the material to permit entrance of an intermittently-acting label-feeding device 12 which serves to deposit a label 11, taken from a hopper L, between the folds of the material. The label-feeding device 12 is provided with a suction hose 13 and includes a suction opening in its head so that suction may be applied to the individual labels, which are thereby withdrawn from the hopper as the feeder-head is moved downward. The movement of the label-feeding device is in two directions, up-and-down and oscillatory or rotary. The up-and-down movement is for the purpose of removing successive labels from the hopper, and the oscillatory or rotary movement is for the purpose of delivering such labels to the proper position between the folds of the fabric. The details of this device will be more fully described hereinafter, but it is sufficient at this time to state that the feeding device 12 serves to remove successive labels from the bottom of the stack and to insert them at spaced intervals between the folds of the moving web of fabric, the labels being snugly fitted against the folded-over or bottom portion 51.

As soon as each label is inserted between the folds, the web is gripped between a pair of tension rollers 15, which hold the label snugly in position and insure its delivery to a sewing machine 28, which sews the label permanently in position, forming a series of stitches 28A adjacent the lower or folded edge of the cloth or fabric. The bag-making material then passes between feed rollers 29, which serve to continuously advance the material with the labels stitched therein.

After passing between the feed rollers 29, the material is engaged by a yielding mounted take-up device 31 prior to passage between intermittent feed rollers 32, which present the material at proper intervals of time to a knife 33, which cuts the material between successive labels into bag-forming portions or blanks B.

After the severing operation, the blanks are moved at right angles to the previous direction of movement along the left-hand edge of the table A by means of a blank-feeding head 34 to suitable sewing machines 35, which stitch the sides of the successive bags and at the same time form a continuous chain of the stitched bags.

The completed bags, with the labels sewed therein, are removed at the left rear of the table, and the stitches connecting successive bags may be severed to form individual bags, although in practice the bags in chain formation are generally delivered to bag-stringing mechanism, wherein draw-strings may be applied to the hemmed portions.

When the bag is completed, as represented in Fig. 8, a label 11 will be firmly and neatly stitched into the bottom of the bag near the fold line, which bag at this time is wrong side out. To reverse the bag and bring it right side out, it is only necessary to open the mouth of the bag and grasp the free end of the label, which is then pulled to reverse the bag and bring the same to the position shown in Fig. 9.

It will be understood that the label-inserting mechanism together with the sewing machine 28 may be readily installed as an attachment to any bag-making machine now in use, and both the bag-making machine and the label-applying mechanism may be varied in detail without departing from the spirit of the invention.

While the main principles of operation of the machine are apparent from the foregoing description, the details of construction of applicant's particular device which have been found to be particularly suitable for the purpose of the present invention will now be described in greater detail, with particular reference to the novel label-inserting mechanism.

The edge folding devices 1—1 and 2—2 and the sewing machines 4—4 are or may be of conventional type and require no detailed description.

The folder 8 constitutes a triangular frame (shown in Figs. 1, 3A and 4A) supported in inclined position with the side 55 elevated and the apex 56 lowered. The web of fabric is guided over the inclined sides 57 and 58 and folded by means of the apex 56, the folding operation being aided by the roller 9. It will be noted that the hemmed portions remain on the outside.

The spreader 10, shown in Figs. 1, 2, 4A, 6 and 7, is supported by a bracket 59 upon a base 60 carried by the table A. The spreader may be formed of sheet metal or other suitable material, and, as shown, is V-shaped in longitudinal section with the point of the V projecting toward

the guide roller 9. The spreader serves to open the folds of the web to permit insertion of one of the labels 11 from the label holder L.

As shown, the holder L comprises an open framework consisting of a plurality of spaced upright stakes or rods 61 which are wider apart at the top than at the bottom. The stakes are supported upon a base 62 open at the bottom to permit removal of the labels one by one, the base being carried upon a support mounted upon the table. The position of the label carrier is adjustable with reference to the table and to the moving web. As shown, the stakes 61 are provided with short flanges 61A at the bottoms which serve to retain the labels in position but allow removal of the labels one at a time when withdrawn by the label-feeding mechanism 12.

The label-feeding mechanism is best shown in Figs. 5, 6 and 7. As illustrated, it includes a head portion 64 having an opening 65 in the upper face thereof communicating through a passage 66 passing lengthwise through the stem of the holder with the suction hose 13, so that suction may be applied to the bottom of the label as shown in Figs. 6 and 7.

Up-and-down movement may be imparted to the label-feeding mechanism by means of an operating rod or lever 14, which, as shown in Figs. 5 and 6, engages a collar 67 secured to the lower portion of the stem 68 of the label-feeding device.

Rotary or oscillatory movement is imparted to the label-feeding device by means of an operating rod 16 secured to a crank arm 69 attached to a collar 70 secured to sleeve 71, which in turn is splined to stem 68, so that rotation of the collar 70 rotates sleeve 71 and stem 68. The stem 68 is free to move up and down within the sleeve 71 for a limited distance, such movement being limited by contact between collar 70 and shoulder 72 with fixed portions of the frame of the machine.

As shown in Fig. 5, the sleeve 71 depends below the table A, being rotatably supported by a circular flange 73 which rests in a recess formed in a depending frame member 74 secured to the base of the machine by means of screws 75. The sleeve 71 may be rotated within the member 74, but such movement is limited by a finger 76 (Fig. 6) depending from a collar 77 secured to the member 74, which finger is adapted to be engaged by the crank arm 69 at one limit of the oscillatory movement. The other limited movement occurs when the rod 16 is pulled outwardly to its fullest extent.

Any suitable mechanism may be employed for reciprocating and oscillating the label-feeding device so as to deposit labels at spaced intervals within the folded web in timed relation to the stitching, cutting and related parts of the machine.

As shown in Fig. 4A, the lifting and lowering lever 14 is normally held in raised position by means of a spring 78, whereby the suction face of the lifter head 64 is held in contact with the lowermost label as shown in full lines in Fig. 6. The lever 14 is lowered to withdraw a label from the pack, by means of a cam 18 (Fig. 4A) splined to a stub shaft 17. The lowered position of the label-feeding mechanism is shown in dotted lines in Fig. 6. A crank arm 27 (Fig. 4A), also splined to the shaft 17, connects with the rod 16, which imparts rotary or oscillatory movement to the feeding mechanism. A spring 79 urges the crank

arm 69 against the finger 76, and provides the necessary lost motion between the crank arm 26 and rod 16 to secure delayed action of the member 64.

5 Movement is imparted to the stub shaft, and thereby to cam 18 and crank arm 27, through an arm 19, likewise mounted on the shaft 17 and keyed thereto. The end of the crank arm 19 is secured to one end of a connecting rod 20, the other end of which is connected to a disk 21. This disk is keyed to the shaft 22 of a reduction gearing unit 23 which is driven by a pulley 24 through a belt 25 from the motor or other prime mover 26.

15 From the foregoing it will be apparent that upon rotation of the shaft 22 and disk 21 reciprocatory movement will be imparted to the connecting rod 20 and crank arm 19, thereby oscillating shaft 17, cam 18 and crank arm 27. The oscillation of the cam 18 actuates the rod 14, thereby moving the label-feeding device to its up and down positions. The same movement of the shaft 17 acts through crank arm 27 to rotate label-feeding device 12 to carry a label to a position between the layers of fabric where the label can be gripped through the web material by tension rollers 15 and be fed along by means of the same to a position where the label is sewed between the layers of material, whereupon the label-feeding mechanism is returned to its original position beneath the stack of labels. It will be apparent that the up-and-down movement and the rotary movement of the label-feeding mechanism do not take place at the same time, but instead in timed relation to each other.

35 The order of steps beginning with the label-feeding head in the position shown in full lines in Fig. 6 is first downward, the head carrying with it the lowermost label, then the suction head is rotated so as to deliver the label into its position between the folds of the web and to the tension rollers 15. The head is then oscillated in the opposite direction and is raised to its original position into contact with the lowermost label of the pack. Means (not shown) may be provided for cutting off suction when the label is in place between the folds of the material and has been gripped between the rollers 15, the suction being restored when the label-feeding mechanism is back in its original position ready to grip another label.

45 The stitching of the labels in the bottom or folded portion of the web may be performed by a conventional sewing machine 28, which accordingly does not require further description.

50 The feed rollers 29 are preferably covered with friction material and are driven through gearing 30 from a reduction gearing unit 23. The movement of these rollers is continuous so that the fabric material is continuously advanced.

60 The take-up device 31 is necessary to allow for a change from continuous feed at the rollers 29 to intermittent feed at the rollers 32, which latter operate in timed relation to the material-severing means 33.

65 The intermittent feed rollers 32 are driven by a cam 36 keyed to shaft 22, which cam imparts movement through a connecting rod 37 with a segment 38 and thence through clutch 39 and gears 40 to the shaft of the feed rollers 32.

70 The knife 33 is operated through a connecting rod 41, arm 42 and cam 43, which cam is keyed to the shaft 22 of the reduction gearing unit 23. The knife severs the web into successive bag-

forming portions or blanks each of which has stitched therein a label B.

After being cut from the web, the blanks are then fed at right angles to their previous direction of movement to the sewing machines 35 by means of the blank-feeding head 34, which is intermittently operated through rod 44, crank arm 45, shaft 46, crank arm 47, connecting rod 48, and cam 49, which cam is keyed to the shaft 22 of the reduction gearing unit 23. The feeding head 34 operates in timed relation to the knife 33 and moves the blanks at spaced intervals to the sewing machines 35, which stitch the sides of the blanks, thereby completing the bag-making operation. Any suitable means (not shown) may be employed for progressively moving the bags in chain formation along the table after leaving the sewing machines 35.

The invention has been described in detail for the purpose of illustration, but it will be apparent that numerous modifications and variations may be resorted to without departing from the spirit of the invention.

The label-holding and -inserting mechanism, while applied to a particular bag-making machine, may be applied, along with the sewing machine 28, to any bag-making machine now in use. Thus, the invention in its broadest aspects contemplates the insertion and stitching of a label between folds of bag-making material at any point subsequent to the folding operation and prior to the completion of the bag-making operation.

What I claim is:

1. A method which comprises inserting a label between folds of bag-making material prior to completion of the bag, stitching the label to the bag along the fold line, and subsequently serving the sides of the bag to complete the bag-making operation.

2. A method which comprises inserting a label between folds of bag-making material prior to completion of the bag, stitching the label to the bag along the fold line, subsequently sewing the sides of the bag to complete the bag-making operation, and then reversing the bag so that the label extends externally therefrom.

3. A method of producing bags having labels stitched therein, which comprises inserting successive labels between folds of continuously moving bag-making material, stitching the label to said material, severing the bag-making material into blanks each including a label stitched therein, and sewing the sides of the blanks to form completed bags.

4. A method of producing bags from a continuously moving web of fabric, comprising folding the web in half in the direction of its length, separating the layers of material at their outer edges, inserting labels between said layers at

spaced intervals so that one edge of each label contacts the fold line of the material, sewing the labels to the fabric adjacent the fold line, severing the web between successive labels into spaced blanks each containing a label stitched thereto, and sewing the sides of the blanks to form completed bags.

5. A method which comprises inserting a label between folds of bag-making material prior to completion of the bag, stitching the label to the bag along the fold line, and subsequently securing together the sides of the bag beyond the lateral limits of the label, whereby the bag may be reversed by grasping the free end of the label and pulling it outwardly through the mouth of the bag.

6. A machine for making bags from a continuously moving web of fabric, comprising means for folding the web in half in the direction of its length, means for separating the layers of material, means for inserting labels at spaced intervals between said layers so that their edges contact the fold line, means for sewing the labels to the fabric, means for severing the web between successive labels into spaced blanks each containing a label stitched therein, and means for stitching the sides of the blank to form a completed bag.

7. A machine for making bags from a continuously moving web of fabric, comprising means for folding the web in half in the direction of its length, means for separating the layers of material, means for inserting labels at spaced intervals between said layers so that their edges contact the fold line, means for sewing the labels to the fabric, means for severing the web between successive labels into spaced blanks each containing a label stitched therein, and means for stitching the sides of the blank to form a completed bag, said label-inserting means including a pneumatic label-gripping head.

8. A machine for making bags from a continuously moving web of fabric, comprising means for folding the web in half in the direction of its length, means for separating the layers of material, means for inserting labels at spaced intervals between said layers so that their edges contact the fold line, means for sewing the labels to the fabric, means for severing the web between successive labels into spaced blanks each containing a label stitched therein, and means for stitching the sides of the blank to form a completed bag, said label-inserting means comprising a label-gripping head, means for imparting up-and-down movement to the head, and means for imparting oscillatory movement to the head to insert successive labels between the layers of material.

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