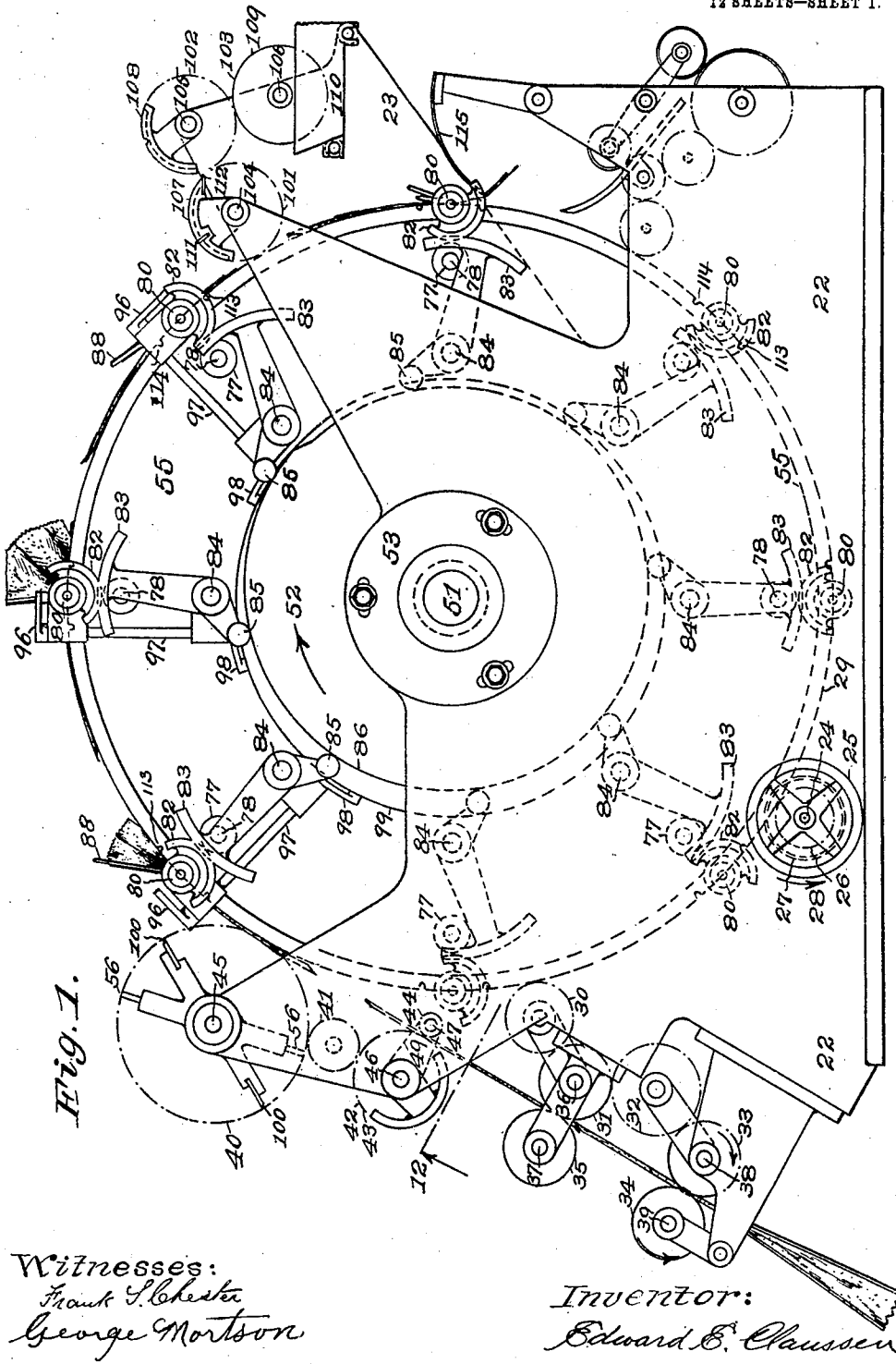


E. E. CLAUSSEN.
PAPER BAG MACHINE.
APPLICATION FILED NOV. 27, 1908.

925,296.

Patented June 15, 1909.

12 SHEETS—SHEET 1.



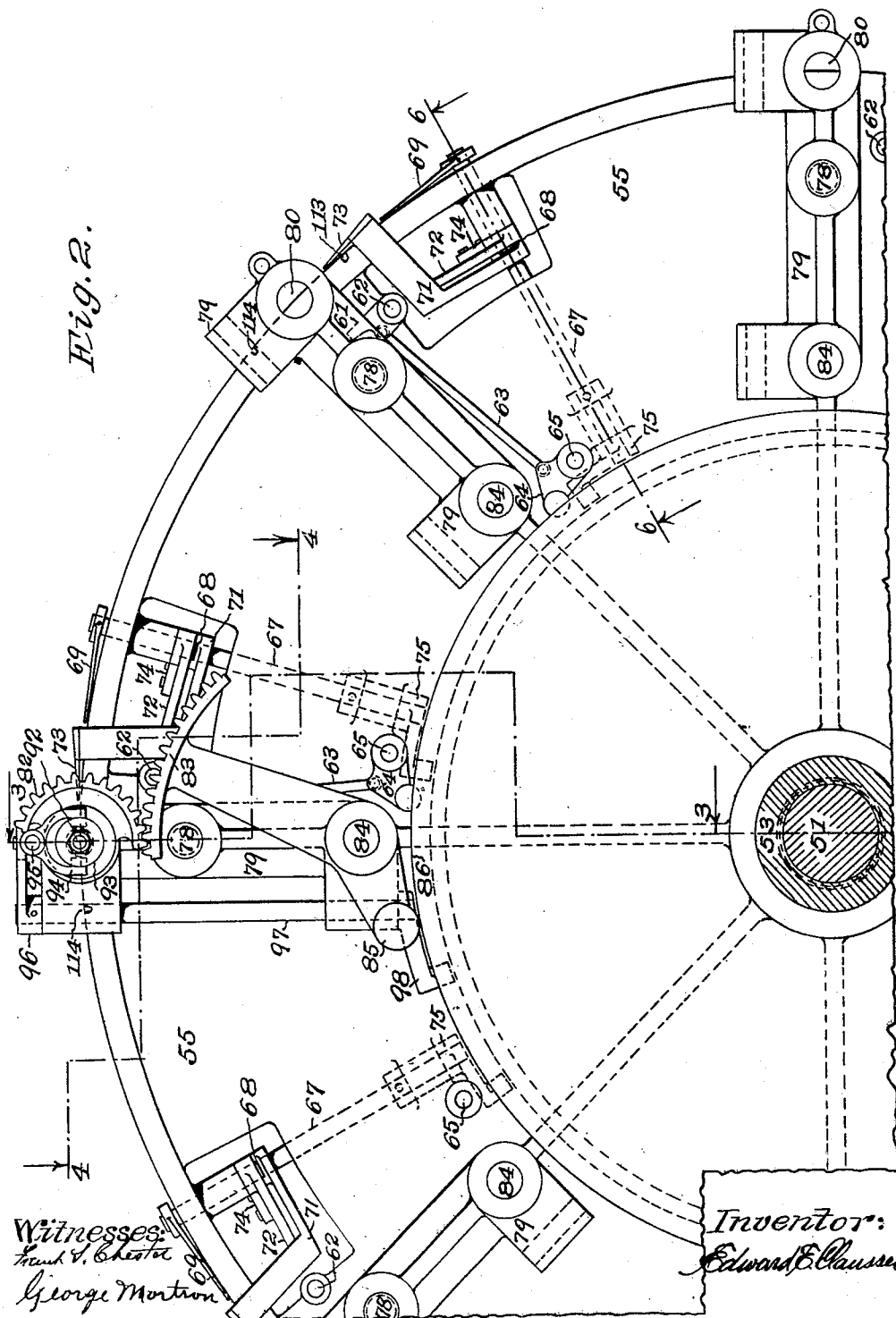
925,296.

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Patented June 15, 1909.

12 SHEETS—SHEET 2.

Fig. 2.



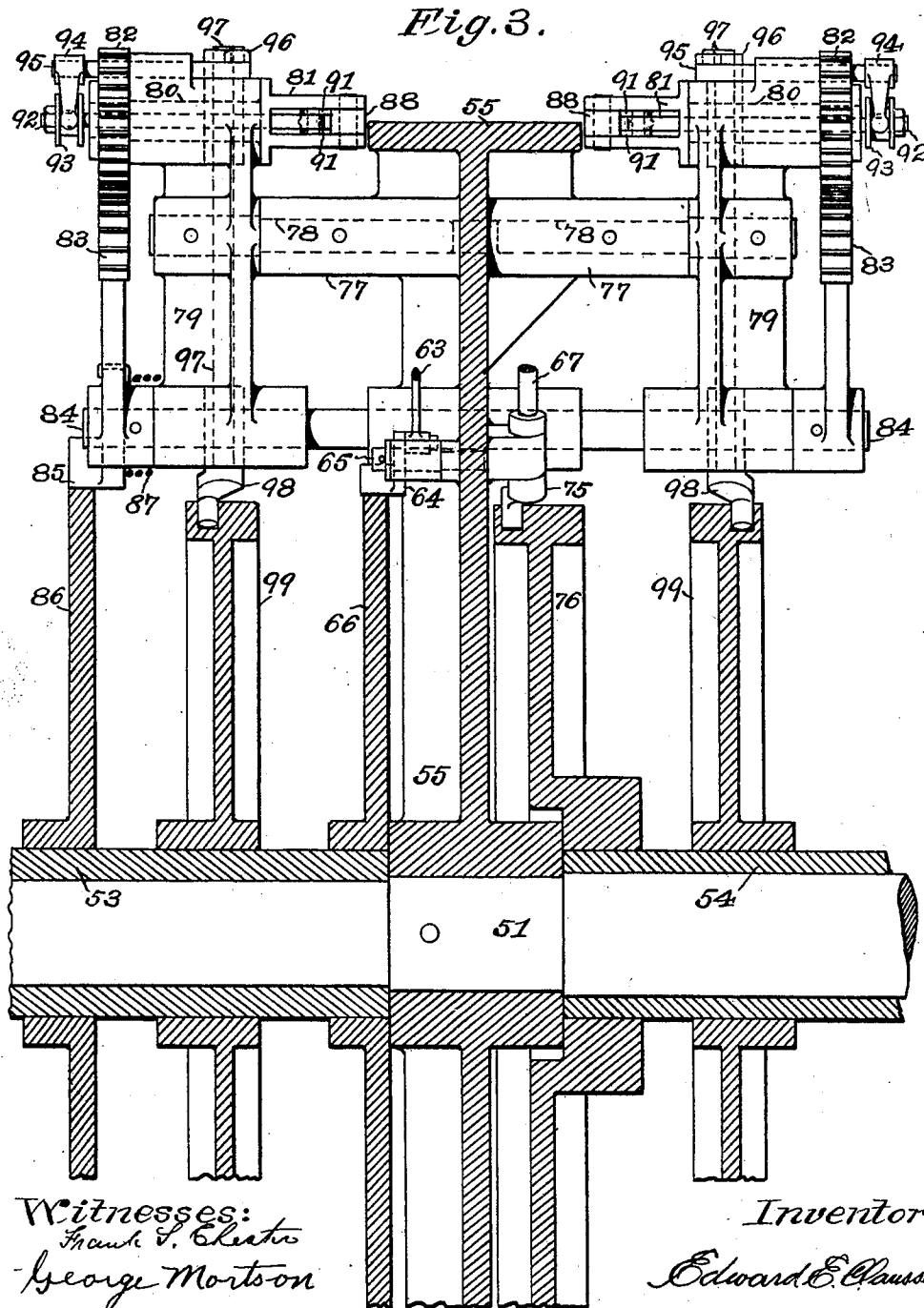
Witnesses:
Frank V. Chester
George Morton

Inventor:
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925,296.

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12 SHEETS—SHEET 3.

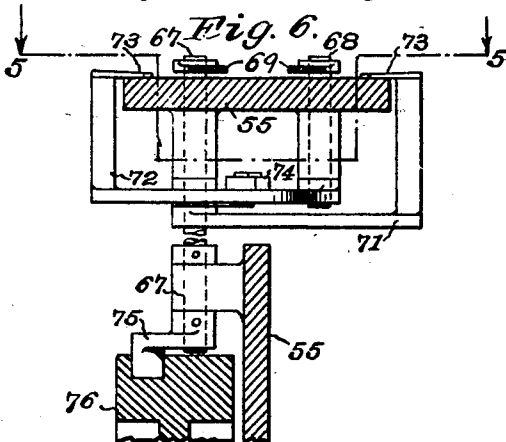
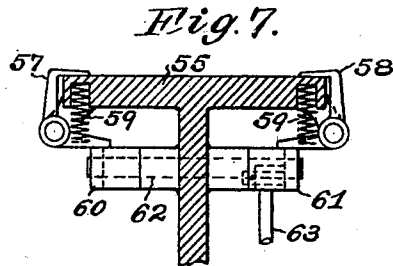
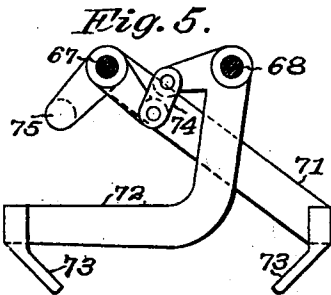
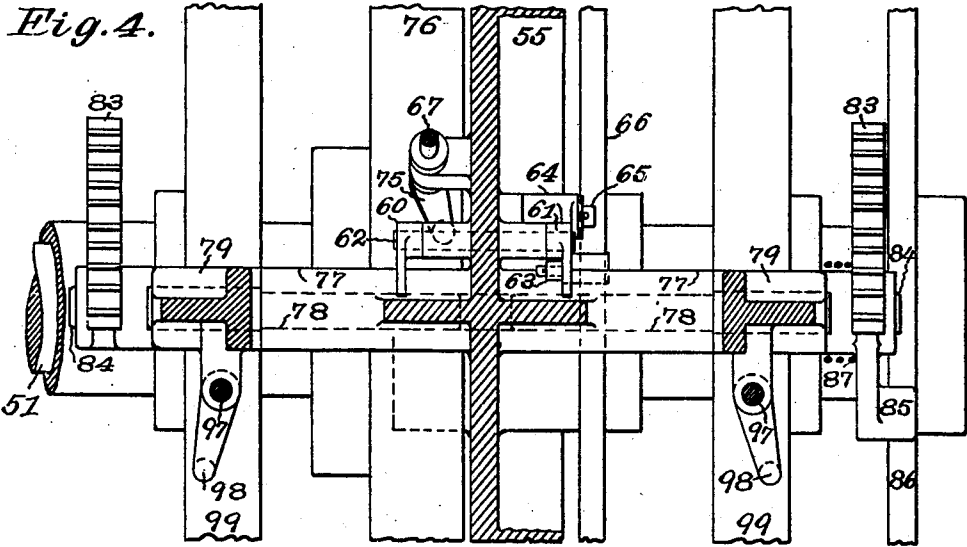


E. E. CLAUSSEN.
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Patented June 15, 1909.

12 SHEETS—SHEET 4.

925,296.



Witnesses:
Frank S. Christie
George Morton

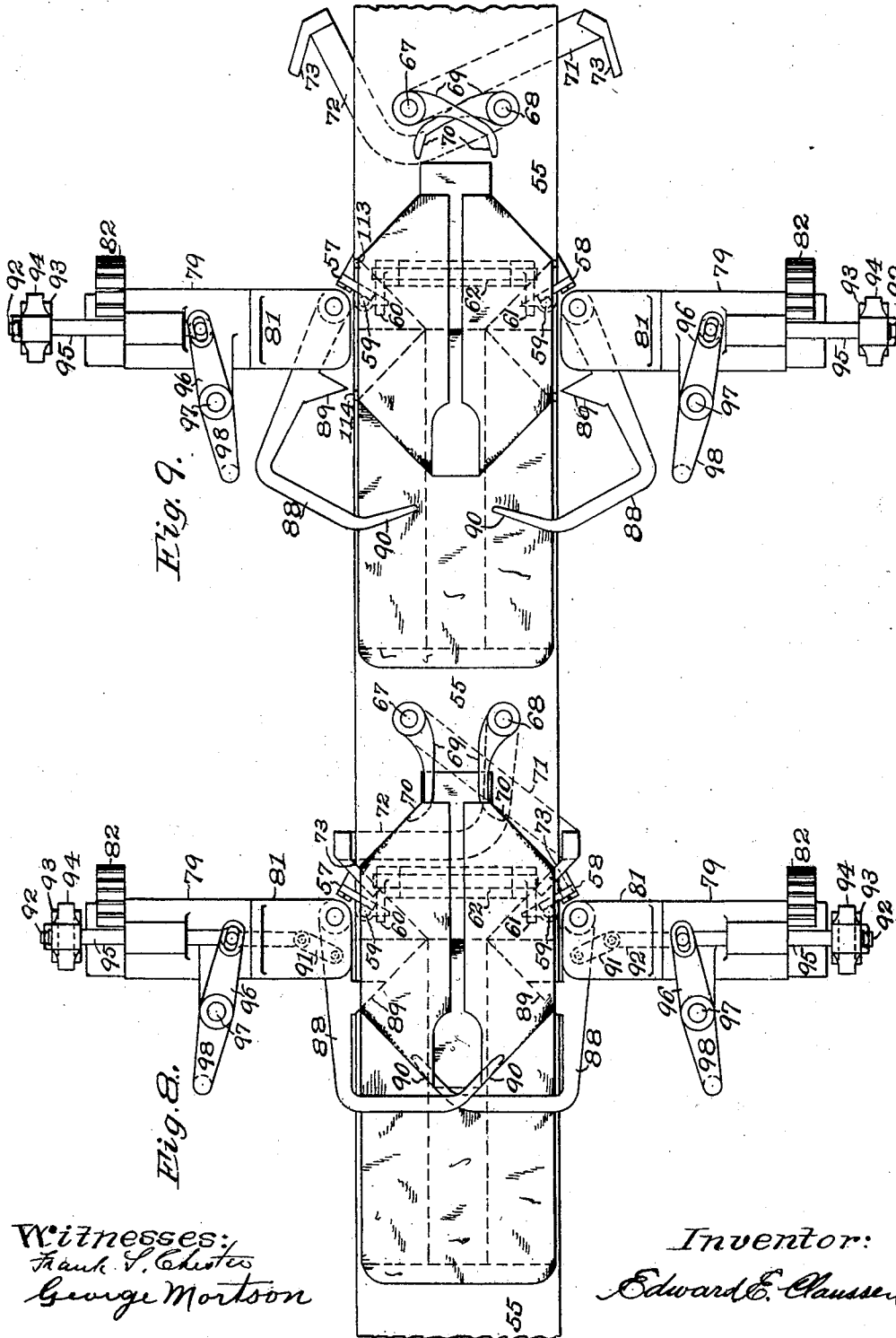
Inventor:
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PAPER BAG MACHINE.
APPLICATION FILED NOV. 27, 1906.

Patented June 15, 1909.

12 SHEETS—SHEET 5.

925,296.



Witnesses:
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Inventor:
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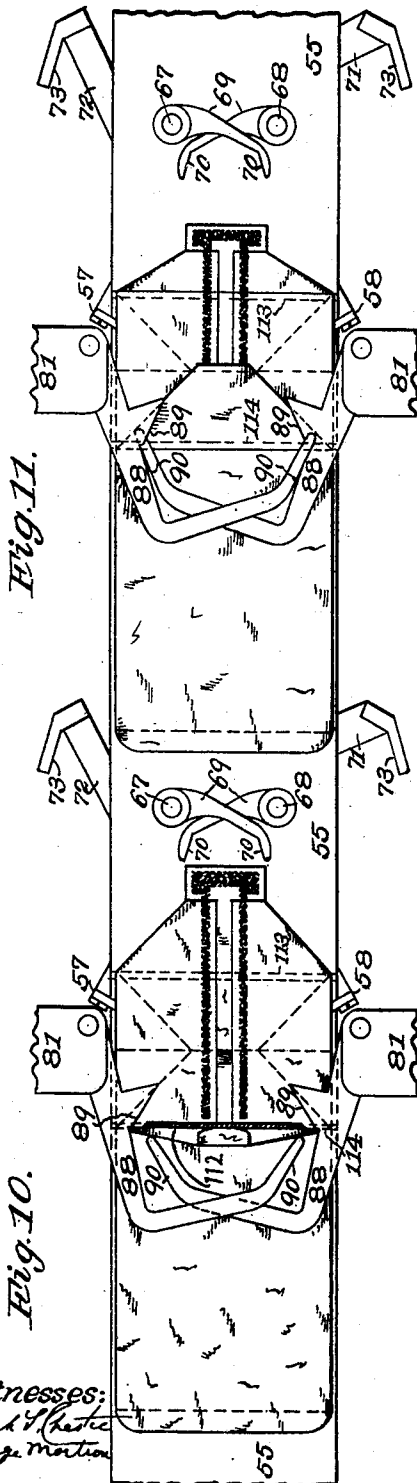
E. E. CLAUSSEN.
PAPER BAG MACHINE.

APPLICATION FILED NOV. 27, 1906.

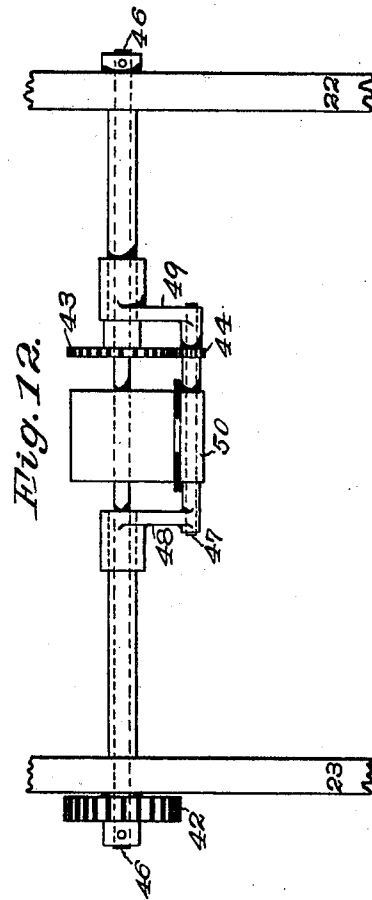
925,296.

Patented June 15, 1909.

12 SHEETS—SHEET 6.



Witnesses:
Frank J. Hestie
George Morton



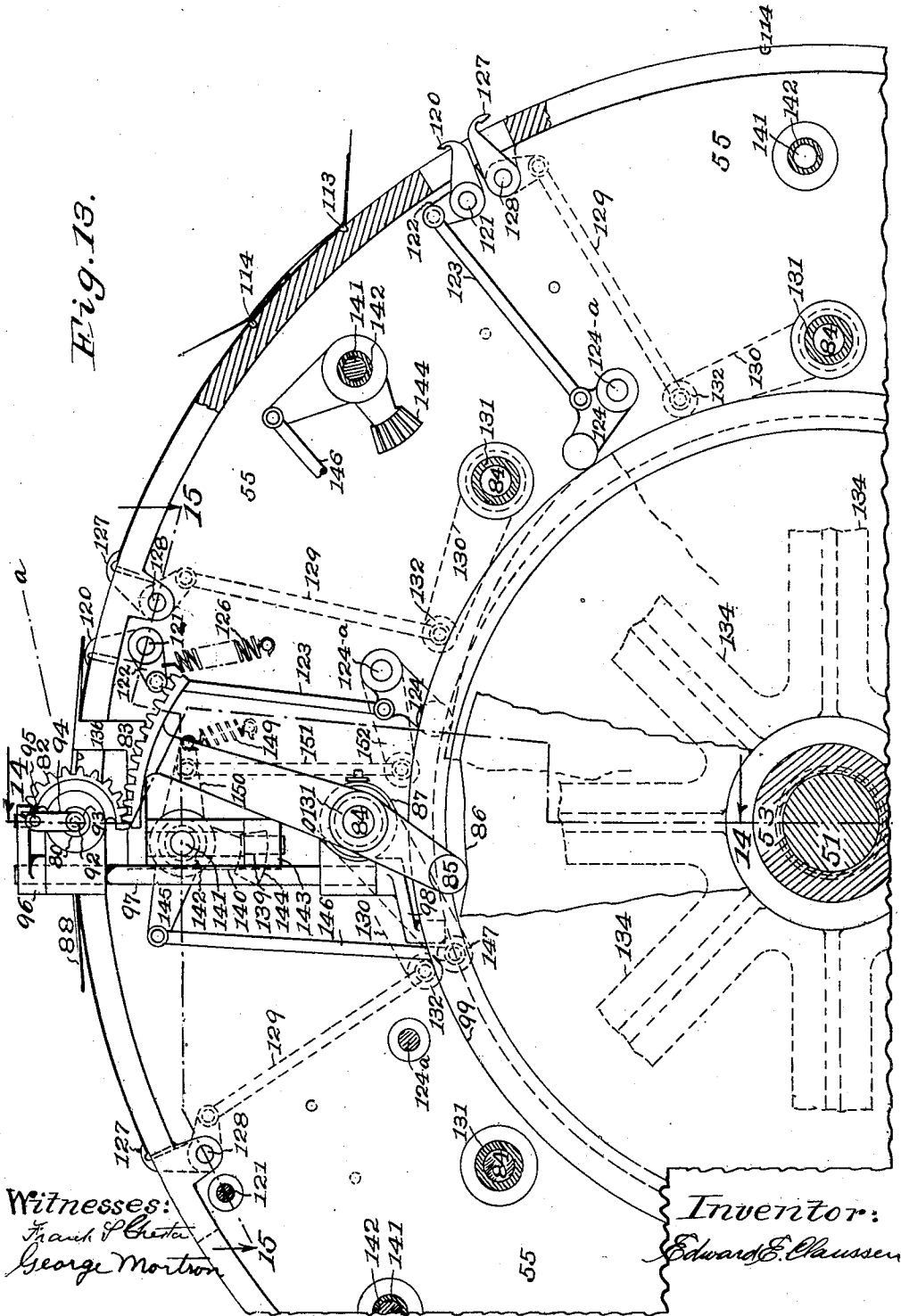
Inventor:
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Patented June 15, 1909.

12 SHEETS—SHEET 7.



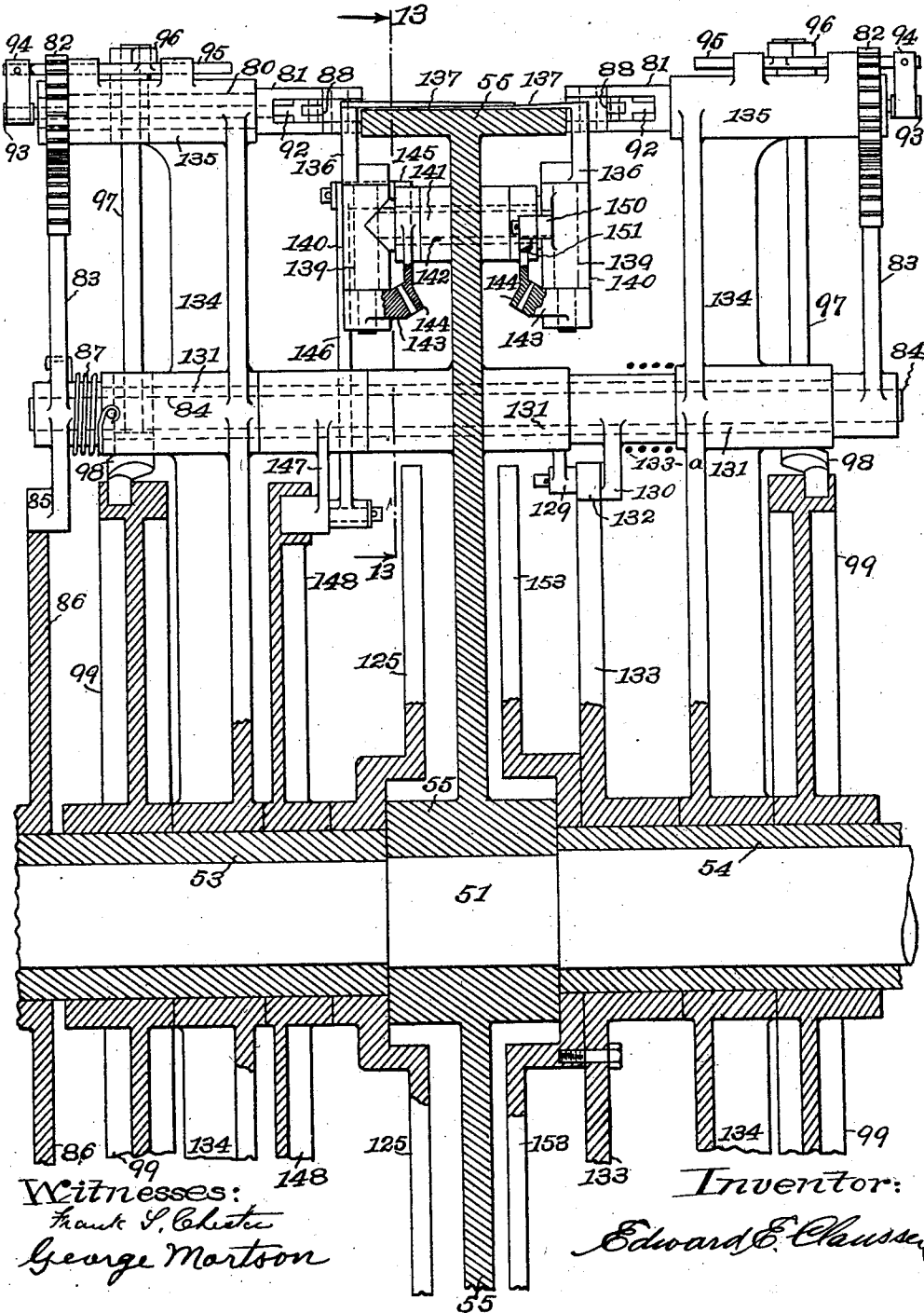
E. E. CLAUSSEN,
PAPER BAG MACHINE.
APPLICATION FILED NOV. 27, 1906.

925,296.

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12 SHEETS—SHEET 8.

Fig. 14.



Witnesses:
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George Martson

Inventor:
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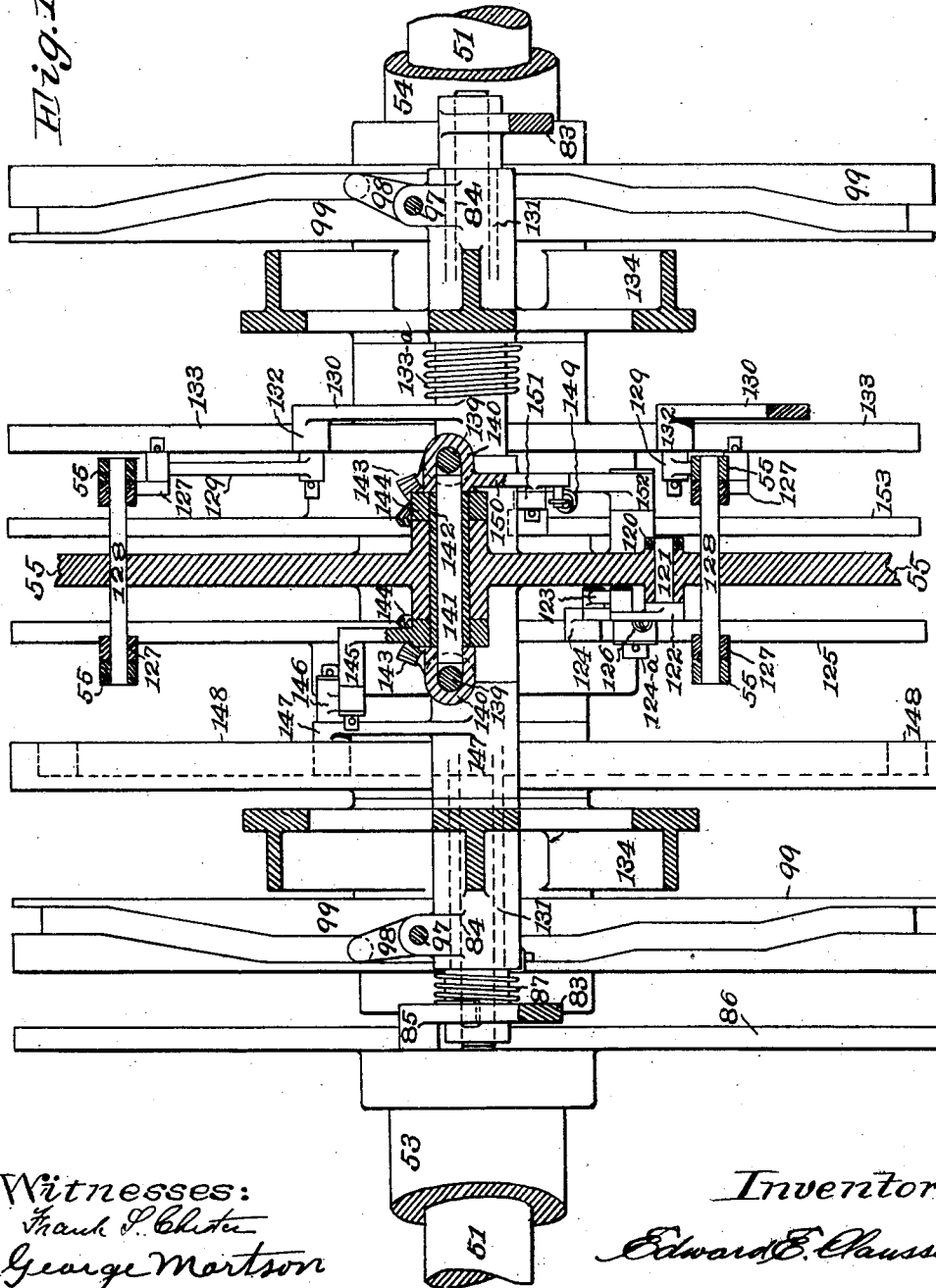
E. E. CLAUSSEN.
PAPER BAG MACHINE.
APPLICATION FILED NOV. 27, 1908.

Patented June 15, 1909.

12 SHEETS—SHEET 9.

925,296.

Fig. 15.



Witnesses:
Frank P. Chute
George Mortson

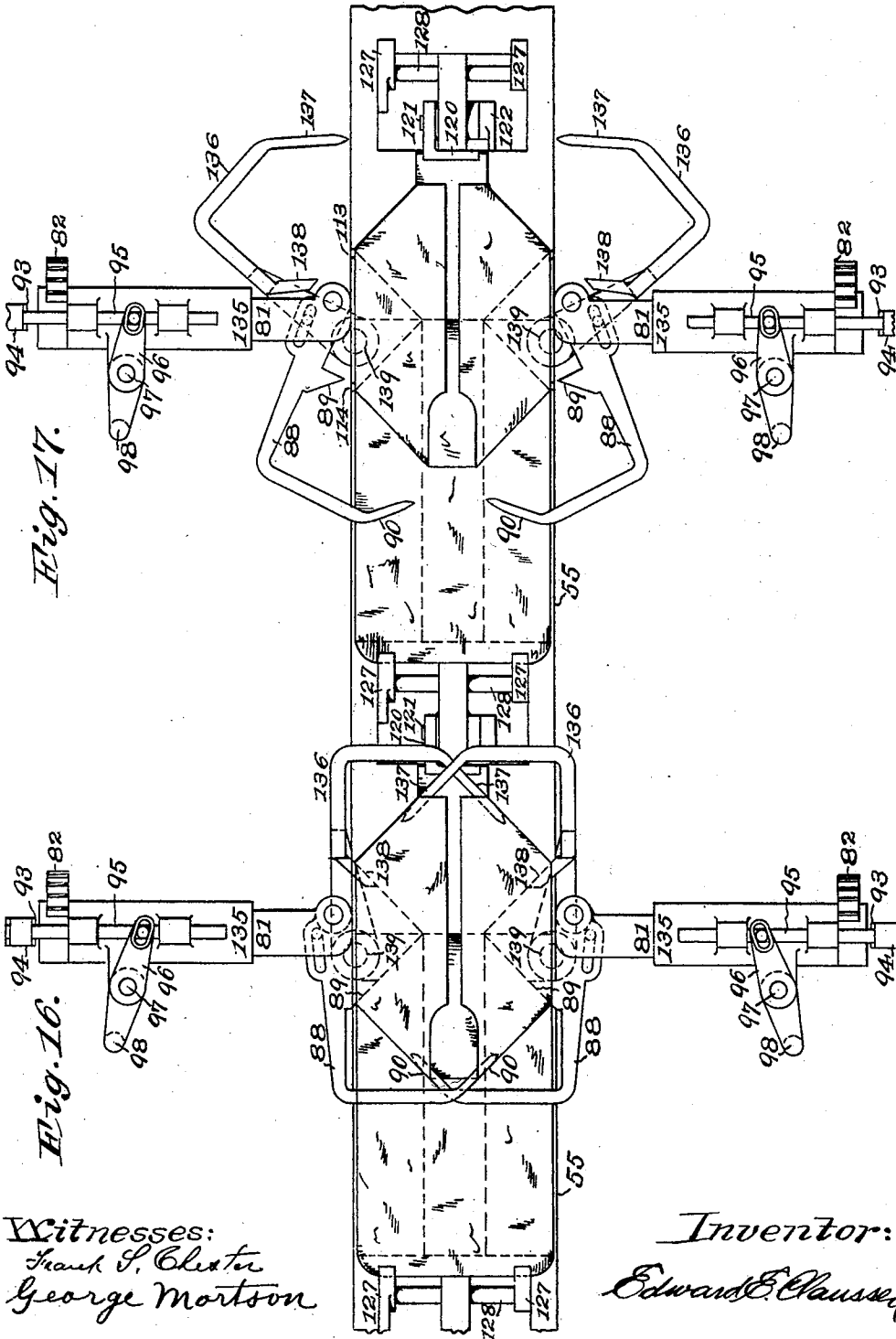
Inventor:
Edward E. Claussen.

E. E. CLAUSSEN.
PAPER BAG MACHINE.
APPLICATION FILED NOV. 27, 1908.

Patented June 15, 1909.

12 SHEETS—SHEET 10.

925,296.



Witnesses:
Frank S. Chester
George Morton

Inventor:
Edward E. Clausen

925,296.

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12 SHEETS—SHEET 11.

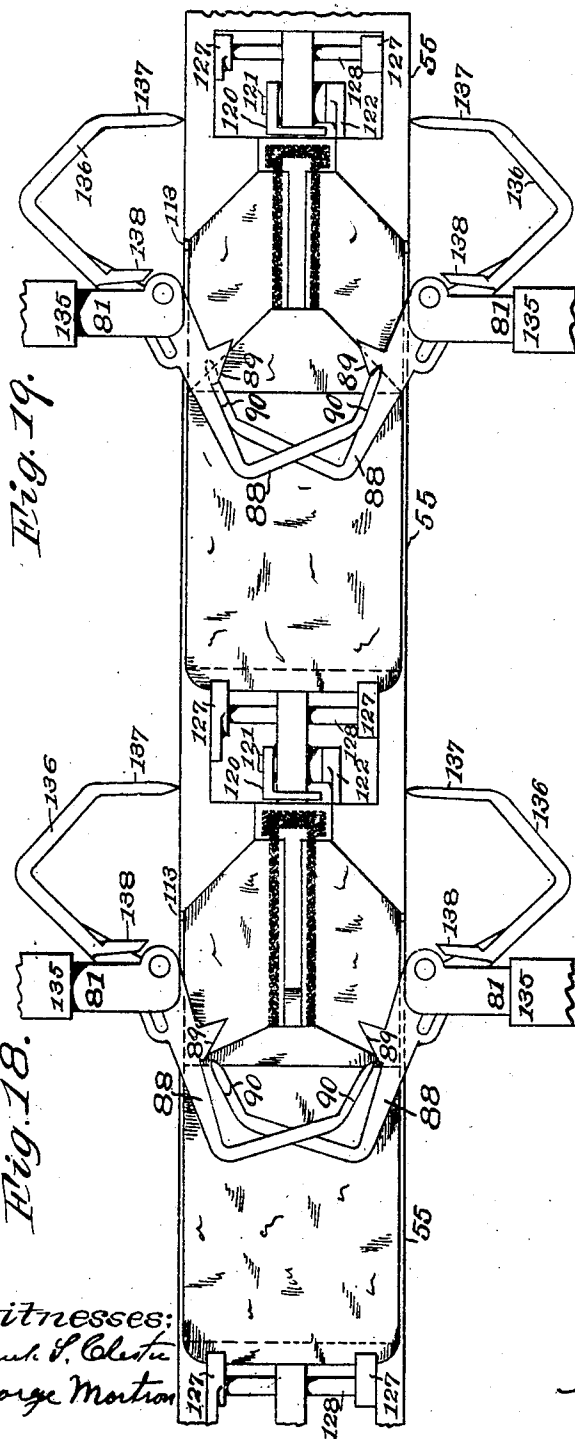


Fig. 19.

Fig. 18.

Witnesses:
 Frank S. Clute
 George Morton

Inventor:
 Edward E. Claussen

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PAPER BAG MACHINE.

APPLICATION FILED NOV. 27, 1908.

925,296.

Patented June 15, 1909.

12 SHEETS—SHEET 12.

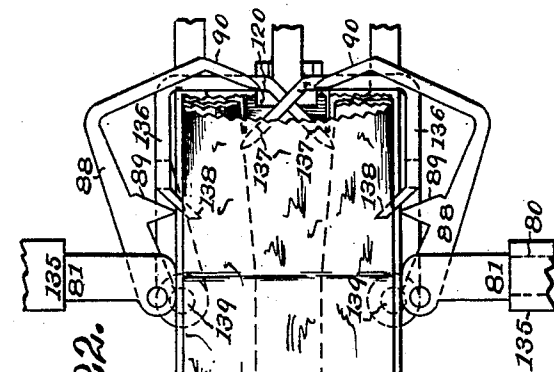


Fig. 22.

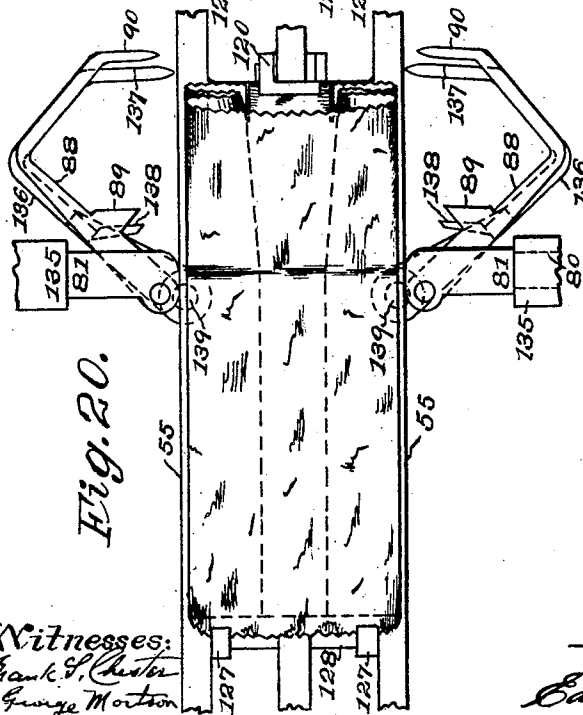
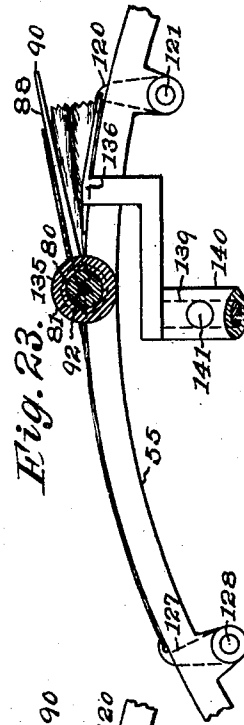


Fig. 20.

Witnesses:
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George Morton



UNITED STATES PATENT OFFICE.

EDWARD EMIL CLAUSSEN, OF HARTFORD, CONNECTICUT, ASSIGNOR TO UNION PAPER BAG MACHINE COMPANY, OF PHILADELPHIA, PENNSYLVANIA.

PAPER-BAG MACHINE.

No. 925,296.

Specification of Letters Patent.

Patented June 15, 1909.

Application filed November 27, 1906. Serial No. 345,291.

To all whom it may concern:

Be it known that I, EDWARD EMIL CLAUSSEN, a citizen of the United States of America, and a resident of Hartford, in the county of Hartford and State of Connecticut, with a post-office address in the above place, have invented certain new and useful Improvements in Paper-Bag Machines, of which the following is a specification.

This invention relates to machinery for automatically manufacturing paper bags from tucked paper tubes, and, as herein shown and described, is especially adapted for manufacturing the bags known in commerce as square bottom paper bags.

The object of this invention is to provide a machine that is reliable in its action for forming the most intricate part in the manufacture of square bottomed paper bags, which is, the forming of the well known diamond preparatory to pasting, folding, and closing the two end flaps and thus completing the bag.

The embodiment of the invention shown has a series of oscillating arms each provided with two thin straight or folding edges which oscillate into operative position in such a manner that the four lines of the right angled inwardly projecting folds and the four edges of the diamond are accurately formed. The arms are oscillated into the bottom forming end of the blank, in such a manner that one straight edge of each of the four arms enter between the tucks of the tube and the other straight edge of each arm enters into the mouth end of the tube, the upper arms are then rotated and the diamond completed. The arms are then withdrawn, paste applied and then the arms are slightly raised from the surface of the carrier and again oscillated toward each other whereby the rear end flap is folded.

In the accompanying drawings:—Figure 1 represents a side elevation drawn on a reduced scale, of my improved paper bag machine, the mechanism which form the tube being omitted as they are well known in the art. Fig. 2. is a side view of the blank carrier showing the mechanisms which convert the bellows-sided tube into the diamond. Fig. 3 is a sectional end elevation taken on the dash and dotted line 3—3 and looking in the direction indicated by the arrows on Fig. 2. Fig. 4 is a sectional plan view on the line

4—4 on Fig. 2. Fig. 5 is a plan view on the broken line 5—5 on Fig. 6. Fig. 6 is a front sectional end elevation on line 6—6 on Fig. 2. Fig. 7 is a cross sectional end view of the blank carrier showing the pincers whereby the paper blank is held to the carrier. Figs. 8 and 9 are plan views of the top of the carrier showing the completed diamond formed blank clamped thereto. In Fig. 8 the diamond forming instrumentalities are inserted, whereas in Fig. 9 these instrumentalities are withdrawn from the blank. Figs. 10 and 11 are similar plan views but showing the diamond forming instrumentalities turning over the rear end flap, Fig. 10 showing the partially turned flap whereas in Fig. 11 the flap is completely folded over. Fig. 12 is a transverse sectional view on line 12—12 looking in the direction of the arrows on Fig. 1, showing the gearing of the conveyer. In Figs. 13 to 19 I have shown a modification of my improved paper bag machine, Fig. 13 being a side elevation of the carrier, part of which is an outside view and the balance a section on line 13—13 on Fig. 14. Fig. 14 is a transverse sectional elevation taken on the broken line 14—14 on Fig. 13. Fig. 15 is a sectional elevation taken on line 15—15 on Fig. 13. Figs. 16 and 17 are plan views of the top of the carrier with the diamond folded blank in position, 16 showing the diamond folding instrumentalities inserted, and 17 showing the same withdrawn from the blank. Figs. 18 and 19 are plan views of the top of the carrier showing the diamond folding instrumentalities turning over the rear flap. Figs. 20 and 21 are respectively a plan and a side view of the carrier with the paper blank clamped thereto and representing the diamond instrumentalities in the forward position ready to enter into the blank, whereas in Figs. 22 and 23 the arms have entered into their inner position of adjustment and the arms are just about to enter into the blank.

The directions of the movements of parts are shown by adjacent arrows, and the positions of the different folding instrumentalities are shown irrespective of the relations of the positions to the cams which move these instrumentalities, it being sufficient for the purpose of this description to say that the cams are properly laid out and cut to pro-

duce the operations of the folding instrumentalities at the proper time and to the required extent.

Referring to the drawings my improved paper bag machine consists of two side frames 22 and 23, suitably supported on a bed of well known construction, not shown, in which are cross wise journaled the pulley shaft 24, upon which is mounted the hand wheel 25, the gear 26 and the driving pulley 27, and whereby power is communicated to the machine in the direction of the arrow 28. The gear 26 meshes into the gear 29 and sets the train of gearing 30, 31, 32, 33, 34 and 35 into motion. The gears 31, 35, 33 and 34 are mounted on shafts 36, 37, 38 and 39 respectively upon which are mounted the cutting off and drawing rolls of well known construction. The gear 29 also engages the gear 40 whereby the train of gearing 41, 42, 43 and 44 (see Figs. 1 and 12) is rotated and those gears are respectively mounted on the shafts 45, 46 and 47. Clamped upon inwardly projecting hubs of the side frames 25 and surrounding the shafts 46 are the arms 48, 49 journaled in which is the shaft 47 carrying the conveyer roll 50.

For the sake of clearness I have shown the gears 26, 29, 30, 31, 32, 33, 34, 35, 40, 41, 42, 43, 44, 101, 102 and 103 in dash and dotted lines but they are to be understood as having teeth cut around their peripheries.

The gear 29 is mounted on the shaft 51 which is journaled for rotation in the direction of the arrow 52 in the stationary bushings 53 and 54 and carries securely fastened thereto the blank carrier 55 which is of cylindrical shape and arranged to support eight folding mechanisms all identical in construction, but a smaller or larger number of folding mechanisms can be provided if desired. As the bottom forming end of the paper blank advances toward the blank carrier the adjustable presser foot 56 carried on the shaft 45, forces the lower ply of the tube to the carrier and permits the pincers 57 and 58 to enter between the tucks of the blank and clasp the blank to the carrier. The pincers are pivoted on studs and have inwardly projecting arms upon which the springs 59 press and keep the same in a closed position. To open the same I have arranged the arms 60 and 61 on the shaft 62 journaled in the central web of the carrier and the arm 61 is jointed to the connecting rod 63 which engages at its lower end the cam arm 64, pivoted on the stud 65, and carries a cam roll which engages the cam 66 securely supported to the bushings 53, and as the carrier is rotated by its shaft 51 the pincers are opened and closed at predetermined intervals.

The mechanisms that operate on the paper blank to fold the diamond will now be described. They consist of two parallel shafts

67 and 68, journaled radially in the carrier, each of which carries an arm 69 provided with a finger 70, which I prefer to call a straight edge, as the finger has a fold defining edge which is substantially straight, though it will be understood that this edge need not be absolutely straight. Below the surface of the carrier these shafts carry the arms 71 and 72 which are linked together by the link 74. Supported above the surface of the carrier by these arms are the straight edges 73. The shaft 67 carries at its lower end the cam arm 75 provided with a cam roll which engages the groove of the cam 76 which is held on the bushing 54. As the carrier is rotated the arms 69, 71 and 72 with their straight edges 70 and 73 are oscillated in and out of operative positions as shown in Figs. 8 and 9. It will be observed that the fold defining edges of the fingers or straight edges 70 and 73 which are attached to the same shaft are parallel to each other and when in their operative position are 45 degrees with the central median line of the cylinder and form respectively the folding edges for edges of the diamond and the edges against which the inside triangular folds are formed.

Extending laterally to each side from the central web of the carrier are the hubs 77, into which are pinned the studs 78, supporting the brackets 79. Journaled at the outer ends in the brackets 79, are the shafts 80, having heads 81 on their inner ends and sector pinions 82 on their outer ends, meshing into the sectors 83, held on the shaft 84, journaled in the brackets 79 and also a hub of the carrier. On one side of the machine the sector 83 is provided with a cam roll 85 which engages the cam 86 and whereby the shafts 80 with their heads 81 are oscillated, the spring 87 always keeping the cam roll upon the cam.

In the head 81 is pivoted the arm 88, provided with the two straight edges 89 and 90, which arm is reciprocated into and out of operation by the link 91, attached to the sliding rod 92, having on the outer end the collar 93, engaged by the yoke 94, held on the rod 95, engaged by the arm 96, on the shaft 97, journaled in a projecting hub of the bracket 79 and carrying on the lower end the cam arm 98 having a cam roll engaging the groove of the cam 99 fixed on the stationary bushings 53 and 54.

The fold defining edges of the fingers or straight edges 89 as well as the fold defining edges of the fingers or straight edges 90 are at angles of substantially 90 degrees with one another when in their inoperative positions. The vertical distance between the fold defining edges of the fingers 89 and 90 is determined as follows: The elongation of the fold defining edge of the finger or straight edge 89 passes through the intersection of the

primary transverse folding line and the inner line of the tuck on one side of the paper bag blank, and the elongation of the fold defining edge of the finger or straight edge 90 passes through a point in the extension of the primary transverse folding line at a distance equal to the depth of the tuck beyond the edge of the paper tube on the other side of the blank. On the shaft 45 (see Fig. 1) I have also arranged the creaser blade 100, which creases the blank at the primary transverse folding line, which line coincides with the axial alinement of the shafts 80 upon which are supported the heads that carry the pivots of the oscillating straight edge arms 88, previously described. The gear 29 also sets in motion the intermeshing gear (see Fig. 1) 101, 102 and 103, which are held on the shafts 104, 105 and 106 and carry the paster 107, the paste sector 108 and the paste wheel 109 respectively, and whereby paste is delivered from the paste box 110, to the blank in the well known manner. On the paster 107 are fastened the two creaser blades 111 and 112 which cooperate with transversely cut grooves 113 and 114 in the carrier, whereby the end flaps are raised to enable the arms 88 to turn the same over upon the bottom of the bag as shown in Figs. 10 and 11. The front flap is then folded by the folder blade 115 and the bag delivered into the delivery section at the rear end of the machine in the usual manner.

In Figs. 13 to 19 I have shown a modification in locating the pivots of oscillation at a different place and also substituting for the pincers front and rear clips, as will be fully described hereinafter. As the advance end of the bag blank is delivered onto the carrier the same is clipped by the front clip 120 pivoted on the stud 121 to which is fastened the arm 122, to which is jointed the connecting rod 123, that engages at its lower end the cam arm 124, on the stud 124^a. The cam arm is also provided with a cam roll that engages the cam 125 whereby the front clip is opened at predetermined intervals, the spring 126 keeping the roll always in engagement with the cam. As a means for clamping the blank more securely to the carrier I have also provided the two rear clips 127 which are both fastened to the shaft 128. One of said clips is provided with an arm to which is jointed the connecting rod 129, that engages at its lower end the cam arm 130, pivoted to a shell 131 and has a cam roll 132, engaging the cam 133, whereby the rear clip is oscillated to close upon the rear end of the blank at regular intervals, the spring 133^a tending to keep the roll upon the face of the cam. Mounted on each side of the carrier, I may arrange carrier frames 134, mounted so as to rotate on the bushings 53 and 54, with the carrier. These frames are provided on the outer ends with the hubs 135 in which the

shafts 80 are journaled. The carrier frames are pinned to the shells 131 which are rigidly supported in the carrier 55 and therefore the carrier frames revolve with the carrier.

The mechanisms that perform the operation of folding the front end of the diamond in the modification shown are as follows; The arms 136 are provided with two folding or straight edges 137 and 138 and are pivoted on the two parallel radial shafts 139, in the heads 140, held on the shaft 141 which is journaled in the sleeve 142. At the lower end of the shaft 139 is fastened the sector pinion 143, meshing into the sector 144, fastened on the sleeve 142. On one side the sector 144 has a projecting arm 145, jointed to the connecting rod 146 that engages a cam arm 147, pivoted on the shell 131, and provided with a cam projection which rolls in a groove of the cam 148 and whereby the arms 136 are oscillated in and out of operating positions. On one side of the machine the head 140 is supplied with an arm 150 engaging the connecting rod 151, jointed to the cam arm 152 provided with a cam roll engaging a cam 153, whereby the arms 136 are raised or lowered onto the surface of the carrier thereby clamping the tube to the carrier with the straight edges 138, the spring 149 supplying the required pressure.

The operation of the machine as shown in its preferred construction in Figs. 13 to 23 inclusive is as follows; The roll of paper of proper width which is to be made up into square-bottomed paper bags, is mounted at the front end of the machine. The web of paper is then threaded around the die and guide roll has paste applied and is folded around the former and converted into a continuous tucked paper tube in any common manner and is guided into the bite of the drawing-roll which feeds the tube to the mechanism of the present invention. The tube is then cut into blanks of sufficient length to form a completed square bottom paper bag and delivered into the bite of the conveyer roll and conveyer sector, which delivers the blank onto the carrier. As the advancing bottom forming end of the blank moves toward the carrier, the front end of the lower ply is pressed by the presser foot 56, to the carrier and at this instant the front clip 120 by action of its cam 125 and spring 126 is closed upon the carrier, clamping the front end of the tube thereto. As the blank continues the creaser blade 100 creases the blank at the primary transverse folding line, the arms 136 with their edges 137 and 138 are slightly raised from the surface of the carrier and oscillated into operative position in such a manner that the edges 137 go inside the mouth and over the lower ply of the tube, and the edges 138 go in between the tucks. The arms 136 are then caused to be lowered toward the carrier by the action of the cam

153 and heads 140 so as to clamp the tube to the carrier. The arms 88 are at this period in the position indicated by the line *a* (see Fig. 13) and also Figs. 20 to 23 inclusive and then they are oscillated into operative position so that the edges 90 are thrust into the mouth end below the upper ply of the blank and the edges 89 go between the tucks by the action of the cams 99, rods 95 and 92. The heads 81 are then rotated by the sectors 82, 83 and 86 and the diamond is formed as shown in Fig. 16. Previously the two rear clips 127 have been closed on the blank by the action of the cam 133 and its spring 133^a. When the diamond form is completed the arms 136 and 88 are withdrawn to the positions shown in Fig. 17. Paste is then applied to the blank, and simultaneously the front clip 120 is opened and the blank creased by the creaser blades 111 and 112 and the co-acting grooves 113 and 114 in the carrier. By this time the arms 88 are again slightly raised from the surface of the blank and at the instant that the creaser blade 112 creases the blank against its co-operating groove 114, the rear flap is thrown upward allowing the arms 88 with their edges 90 to get back of the flaps (see Figs. 10 and 18) and turn the same down upon the bag. The diamond folding is then completed by the turning over of the front flap by the folder 115 and delivering the bag into the delivery rolls of usual construction as above described.

From the foregoing description, the operation of the machine as illustrated in Figs. 1 to 12 inclusive, will be readily understood. It will be sufficient to note, that after the paper bag blank has been delivered onto the carrier, it is clasped and held to the carrier by the pincers 57 and 58 entering between the tucks and which are caused to be opened and closed by the arms 60 and 61, rod 63, cam arm 64, cam 66 and springs 59, the arms 69 having been previously thrust forward to enter into the mouth of the bag and above the lower ply of the tube. The straight edges 73 are simultaneously carried into operative position entering between the tucks of the blank. As the carrier continues to rotate the arms 88 with their straight edges 89 and 90 are in their forward position and are thrust into the bottom forming end in such a manner that the straight edges 89 enter between the tucks and the straight edges 90 enter into the mouth and below the upper ply of the blank, and when these arms have entered to the proper position they are rotated by the sectors 82, 83 and cam 86 thereby forming the diamond as clearly shown in Fig. 8. The diamond folding instrumentalities are then withdrawn and the rear flap folded as previously described, and then the front flap is folded over by the folder 115 or by any

other well known mechanism which form no part of this invention.

What I claim as my invention is:—

1. A machine for diamond folding tucked bag blanks, including in combination a folding bed, a pair of folding devices each provided with a pair of spaced apart fold defining straight edges, pivotal supports for the devices, means for turning said devices on said supports into and out of the blank engaging position in which one straight edge of one device enters one side tuck of the blank and the corresponding straight edge of the other device enters the other side tuck of the blank, and the other straight edges extend into the open mouth of the blank, and mechanism coöperating with said devices to form the diamond fold.

2. A machine for diamond folding tucked bag blanks including in combination a folding bed, a pair of folding devices each provided with a pair of spaced apart fold defining straight edges, pivotal supports for the devices and means for turning said devices on said supports into and out of the blank engaging position in which one straight edge of one device enters one side tuck of the blank and the corresponding straight edge of the other device enters the other side tuck of the blank, and the other straight edges extend into the open mouth of the blank, means for oscillating said folding devices and their pivotal supports bodily about an axis substantially coincident with the primary transverse fold line of the blank, and mechanism coöperating with said devices to form the diamond fold.

3. A machine for diamond folding tucked bag blanks, including in combination a folding bed, two pairs of folding devices, each folding device having a pair of spaced apart fold defining straight edges, pivotal supports for the devices and means for turning said devices on said supports into and out of the blank engaging position in which one straight edge of one device of each pair enters one side tuck of the blank and the corresponding straight edges of the other devices enter the other side tuck of the blank and the remaining straight edges of each pair of devices extend into the open mouth of the blank, and means for oscillating one pair of said folding devices and their pivotal supports bodily about an axis substantially coincident with the primary transverse cross fold line of the blank.

4. A machine for diamond folding tucked bag blanks, including in combination a folding bed, means for securing a bag blank thereon, heads, one at each side of the folding bed, journaled for oscillation about an axis coincident with the primary transverse fold line of the blank, a pair of straight edges pivotally connected to each head and adapted to turn relatively thereto into and out of the

position in which the straight edges connected to each head project, one, into the adjacent side tuck of the blank and the other into the far side of the mouth of the blank, means for turning said straight edges relatively to said heads into engagement with the blank at the beginning of the folding operation and out at the end of the folding operation, and means for turning said heads during the folding operation.

5. A machine for diamond folding tucked bag blanks, including in combination a folding bed, two pairs of straight edges pivotally connected to the folding bed and adapted, one pair, to swing into the opposite side tucks of the blank, the other pair to swing into the mouth of the bag blank in position to engage the blank along the front oblique margin lines of the diamond fold, means for so swinging said straight edges about their pivotal connections, and means for engaging and turning back the upper ply of the blank.

6. A machine for diamond folding tucked bag blanks, including in combination a rotary blank carrier, four pairs of straight edges pivotally connected to the blank carrier and arranged, two pairs to be swung into and out of the side tucks of the blank and two pairs into and out of the open mouth of the blank, means for so swinging said straight edges, and means for turning one pair of the straight edges entering the side tucks of the blank and one pair of the straight edges entering the mouth of the blank bodily about an axis substantially coincident with the primary transverse fold line of the blank.

7. A machine for forming bags from tucked bag blanks, including in combination a folding bed, means for securing a bag blank thereon, a pair of oppositely disposed folding devices, each having a pair of straight edges, one adapted to project into the adjacent side tuck of the blank while the other projects into the far side of the open end of the blank, means for oscillating said devices about an axis substantially coincident with the primary transverse fold line of the blank to turn back the upper ply of the blank into the diamond fold, and means for moving the folding devices into engagement with the blank beginning with the folding operation and out of engagement with the blank at the end of the diamond folding operation and then back into engagement with the blank to engage and turn forward the rear flap of the diamond folded blank end.

8. A bag machine, including in combination a folding bed, means for securing a bag blank thereon, heads located at opposite sides of the folding bed, folding devices, one pivotally connected to each head and formed each with a straight edge adapted to project into the adjacent side tuck of the blank and a second straight edge adapted to project into

the far side of the mouth of the blank, means for oscillating said heads to cause said straight edges to turn back the upper ply of the blank and form the diamond fold, and means for turning said folding devices about their pivotal connections with the heads to move the folding devices toward one another and into engagement with the blank at the beginning of the folding operation, out of engagement with the blank at the end of the diamond folding operation, and thereafter back over the blank to engage and turn forward the back flap end of the folded end of the blank, and means for creasing the bag flap fold line prior to the last mentioned movement of the folding devices.

9. A machine for diamond folding a tucked bag blank, including in combination a folding bed, means for defining the fold lines in the front end of the diamond, comprising a pair of oppositely disposed folding devices, each having a pair of straight edges, one adapted to project into the bag at one side of the blank while the other projects into the far side of the open end of the blank, means for moving the folding device into and out of engagement with the blank, and means for moving the folding device toward and away from the face of the folding bed to thereby clamp the blank against the bed or to release it, and mechanism cooperating with said devices to form the diamond fold.

10. A machine for diamond folding tucked bag blanks, including in combination a rotary blank carrier, four pairs of straight edges pivotally connected to the blank carrier and arranged, two pairs, to be swung into and out of the side tucks of a blank and two pairs into and out of the open mouths of the blanks, stationary cams and intermediate mechanism for swinging said straight edges and for turning one pair of the straight edges entering the side tucks of the blank and one pair of the straight edges entering the mouth of the blank bodily about an axis substantially coincident with the primary transverse fold line of the blank.

11. A machine for diamond folding tucked bag blanks, including in combination a revolving blank carrier having a folding bed, a pair of heads located one on each side of the folding bed and journaled in the blank carrier to turn about an axis substantially coincident with the primary transverse cross line of the blank, a folding device pivotally connected to each head, a second pair of folding devices, one at each side of the bed, each having a portion extending below the head at that side of the bed and pivotally connected to the folding bed, each of the folding devices having two straight edges adapted when the devices are turned on their pivotal connections to swing into and out of the position in which one straight edge projects into the adjacent side tuck of the blank and the other

into the far side of the mouth of the blank, means for turning said devices on their pivotal connections, and means for turning said heads about their axes to turn back the upper ply of the blank.

12. A machine for diamond folding tucked bag blanks, including in combination a revolving blank carrier having a folding bed, a pair of heads located one at each side of the folding bed and journaled in the blank carrier to turn about an axis substantially coincident with the primary transverse cross fold line of the blank, a second head at each side of the folding bed located below the first mentioned heads and journaled in the blank carrier to turn about an axis parallel to the axis of movement of the first mentioned heads, folding devices, one pivotally connected to each head, each folding device having two straight edges adapted when the folding device is turned relative to its head to enter, one, the adjacent side tuck of the blank, and the other the far side of the mouth of the blank, means for turning said folding devices relatively to their heads, means for turning the first mentioned heads about their axis to turn back the upper ply of the blank, and means for turning said second heads about their axis to carry the straight edges of the folding devices connected to them toward and away from the surface of the folding bed.

13. A machine for diamond folding tucked bag blanks, including in combination a revolving blank carrier having a folding bed, a pair of heads located one at each side of the folding bed and journaled in the blank carrier to turn about an axis substantially coincident with the primary transverse cross fold line of the blank, a second head at each side of the folding bed located below the first mentioned heads and journaled in the blank carrier to turn about an axis parallel to the axis of movement of the first

mentioned heads, folding devices, one pivotally connected to each head, each folding device having two straight edges adapted when the folding device is turned relative to its head to enter, one, the adjacent side tuck of the blank, and the other the far side of the mouth of the blank, stationary cams and intermediate connections for turning each folding device relatively to its supporting head, for turning the first mentioned heads about their axis of movement to turn back the upper ply of the blank, and for turning the second heads to carry the folding devices pivotally connected thereto toward and away from the surface of the bed.

14. A machine for diamond folding tucked bag blanks, including in combination a folding bed, means for securing a blank to the folding bed consisting of a front clip for acting on the extreme forward end of the blank and rear clips acting on the extreme rear end of the blank, and mechanism cooperating therewith to open the forward end of the blank and form the diamond fold therein.

15. A machine for diamond folding tucked bag blanks, including in combination a rotating folding bed, means for securing a blank to the folding bed consisting of a front clip for acting on the extreme forward end of the blank and rear clips acting on the extreme rear end of the blank, mechanism cooperating with the bed and clips to open the forward end of the blank and form the diamond fold, and operating mechanism for opening and closing said clips at predetermined intervals comprising springs for moving the clips in one direction and stationary cams and intermediate mechanism for operating the clips in the other direction.

EDWARD EMIL CLAUSSEN.

Witnesses:

GEORGE MORTSON,
H. W. SEIDE.