

C. A. PETTERSON.
CARTON WRAPPING MACHINE.

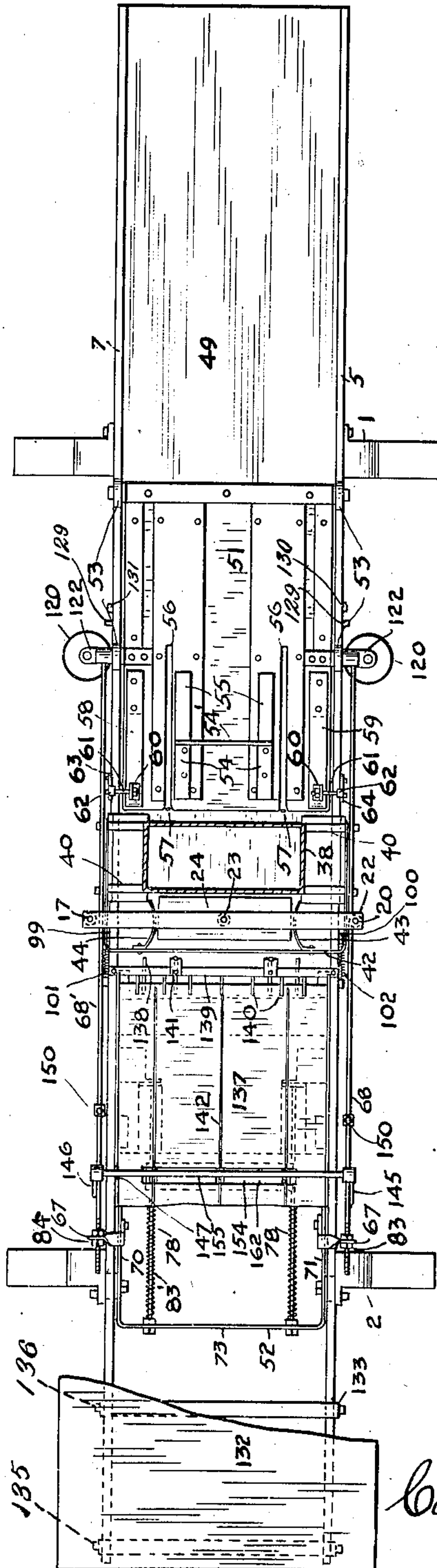
APPLICATION FILED JUNE 29, 1914. RENEWED NOV. 30, 1915.

1,166,782.

Patented Jan. 4, 1916.

5 SHEETS—SHEET 1.

FIG. 1



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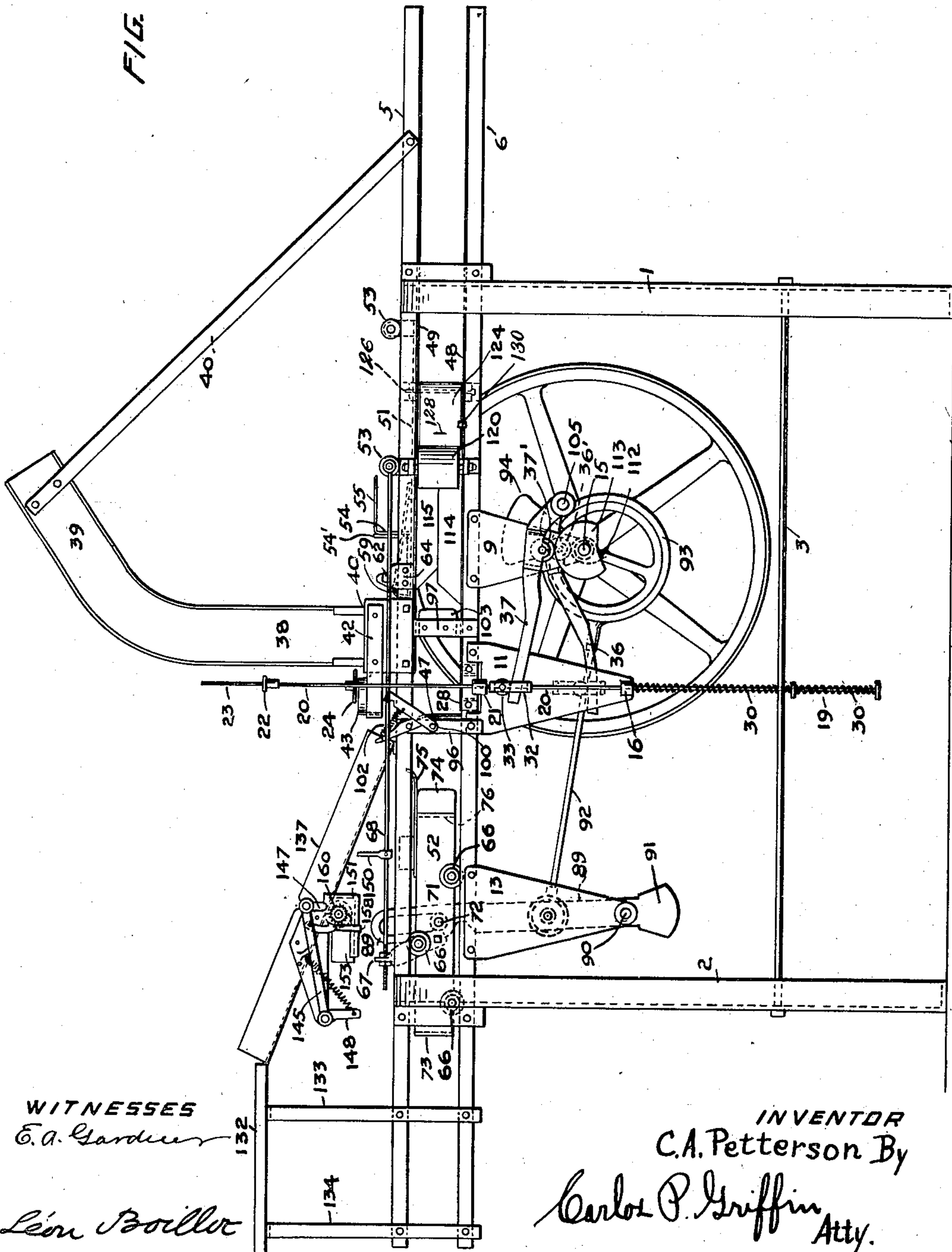
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5 SHEETS—SHEET 2.

FIG. 2



WITNESSES

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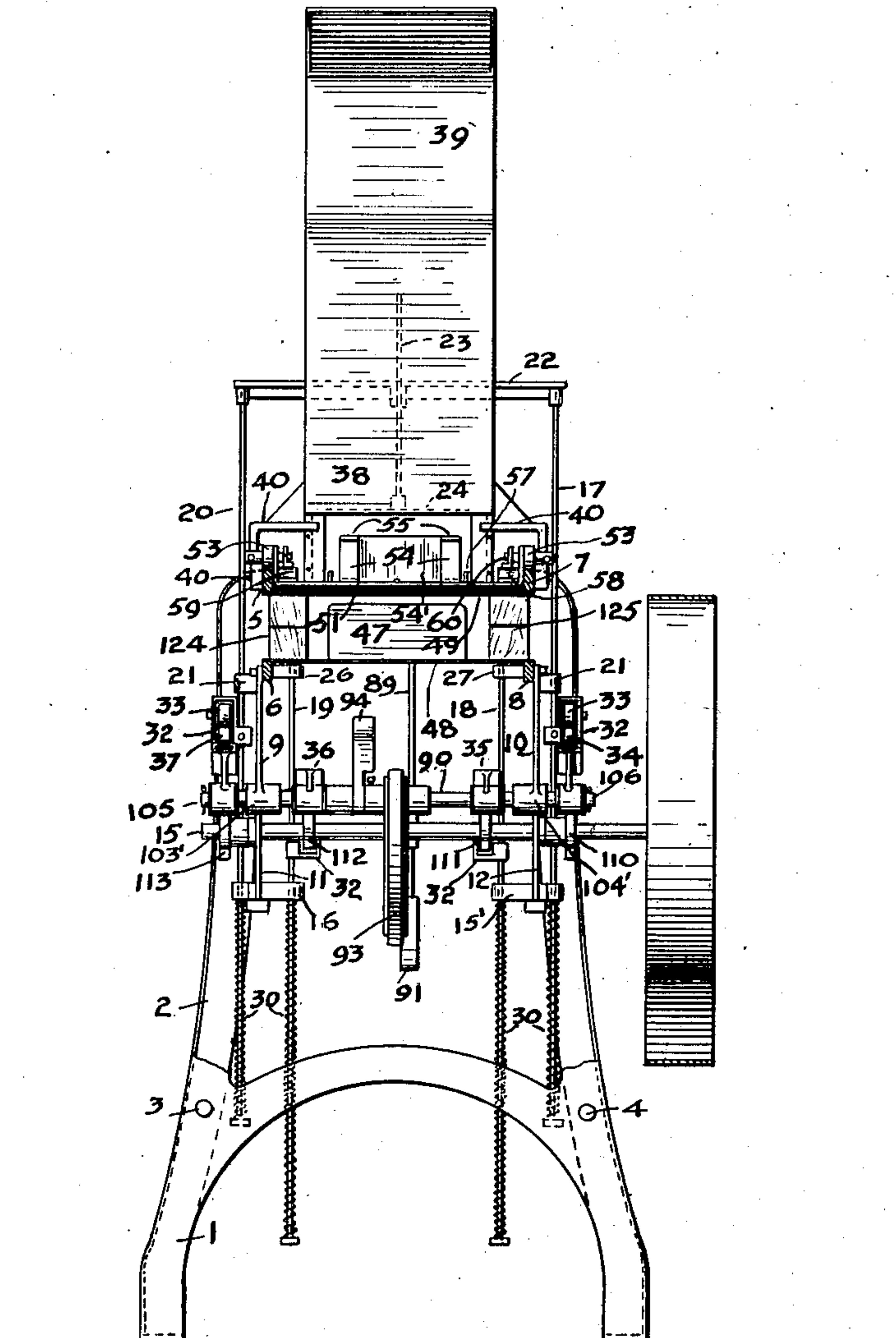
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5 SHEETS—SHEET 3.

FIG. 3



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5 SHEETS—SHEET 4.

FIG. 4

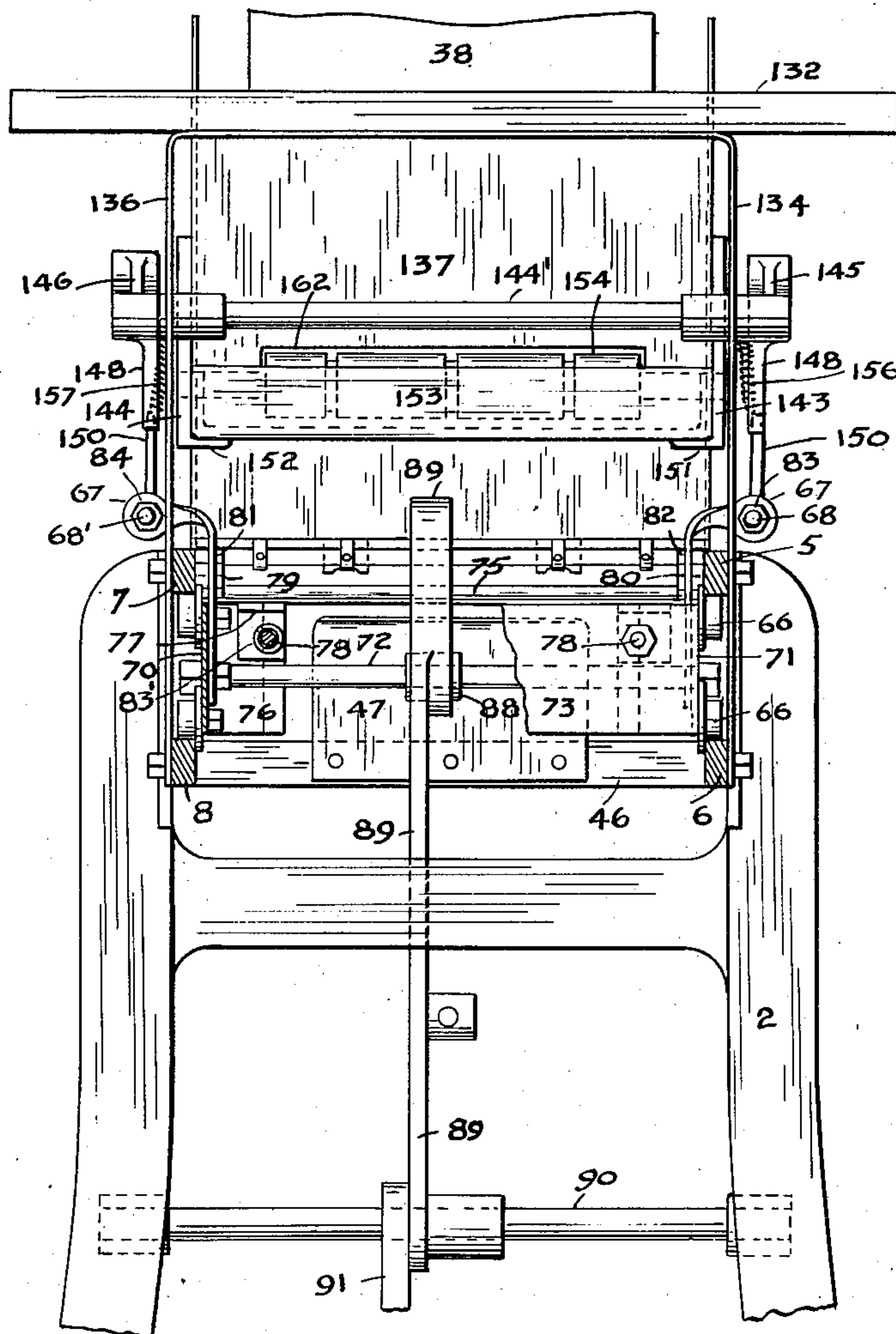


FIG. 5

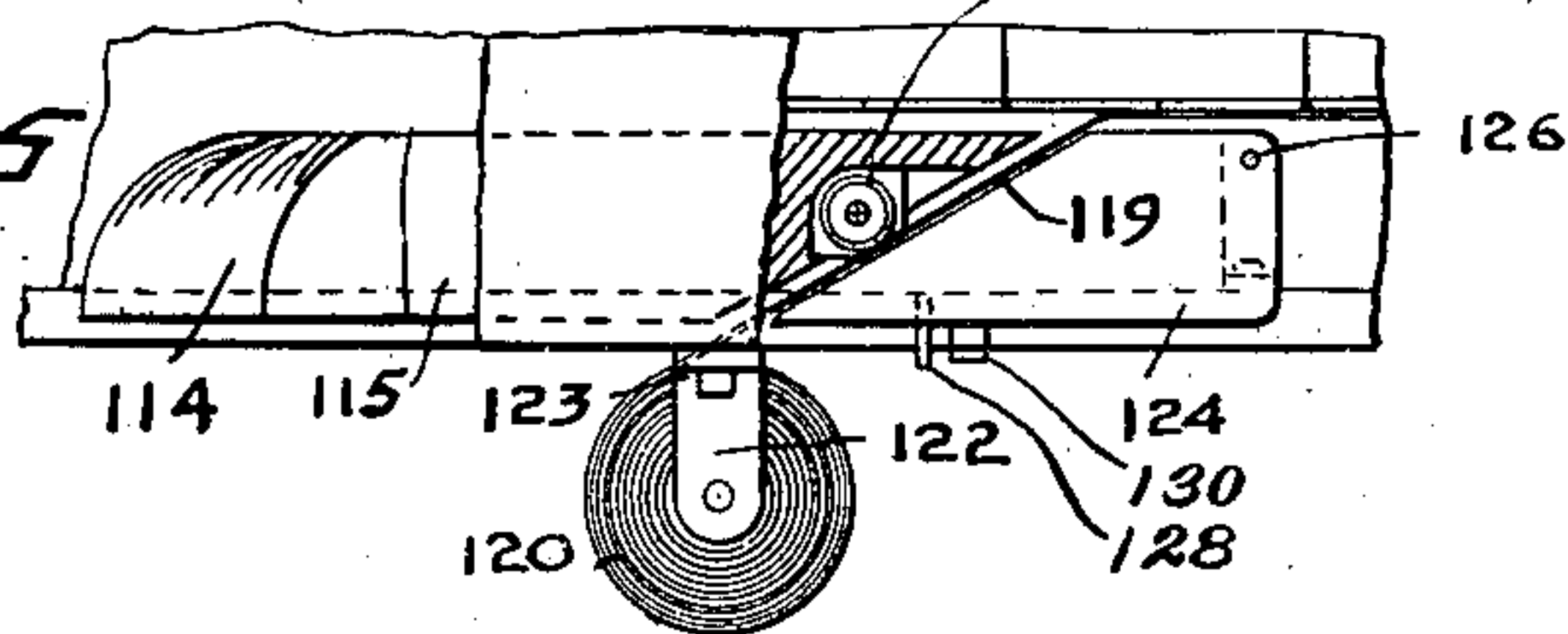


FIG. 6

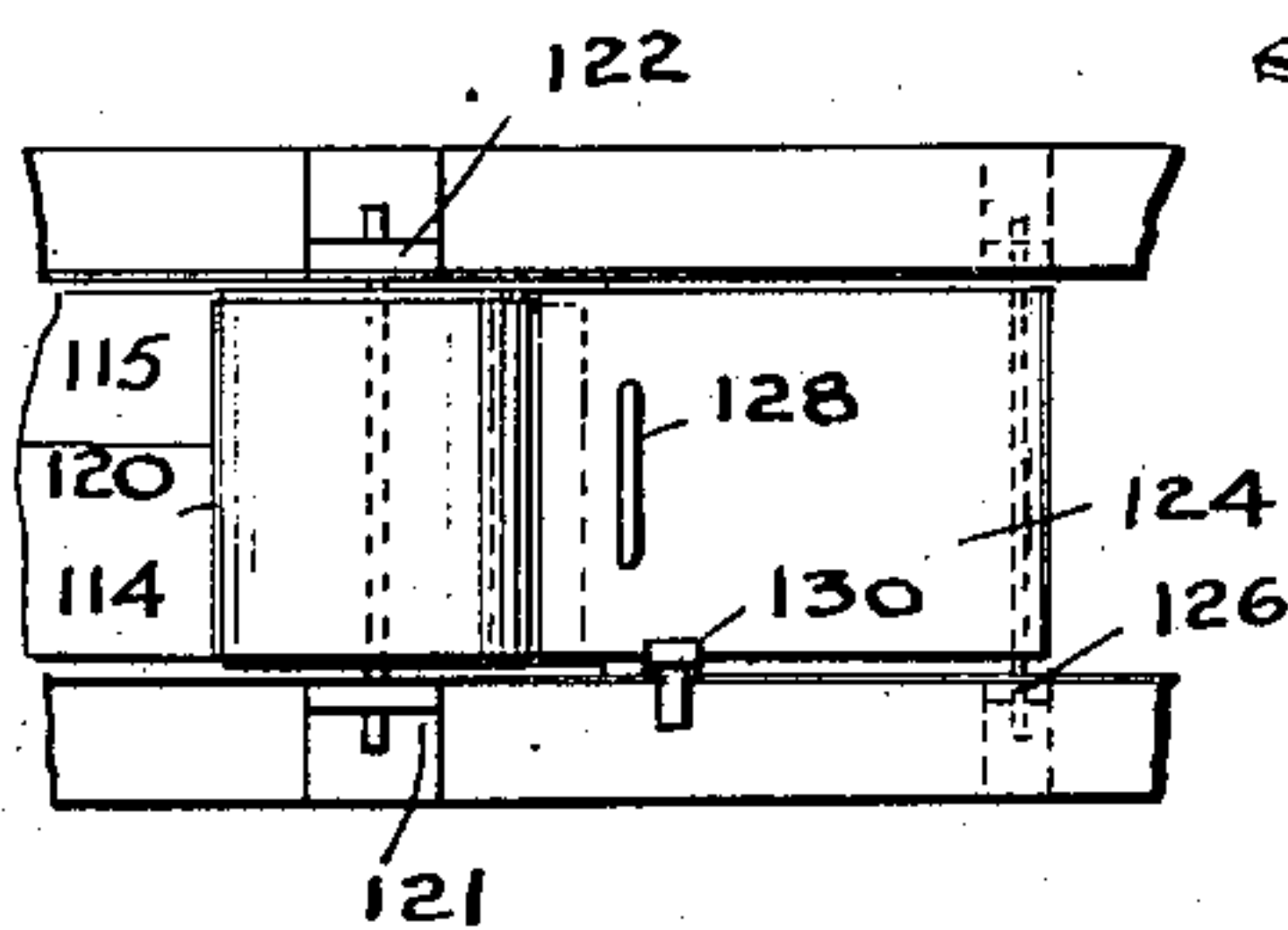
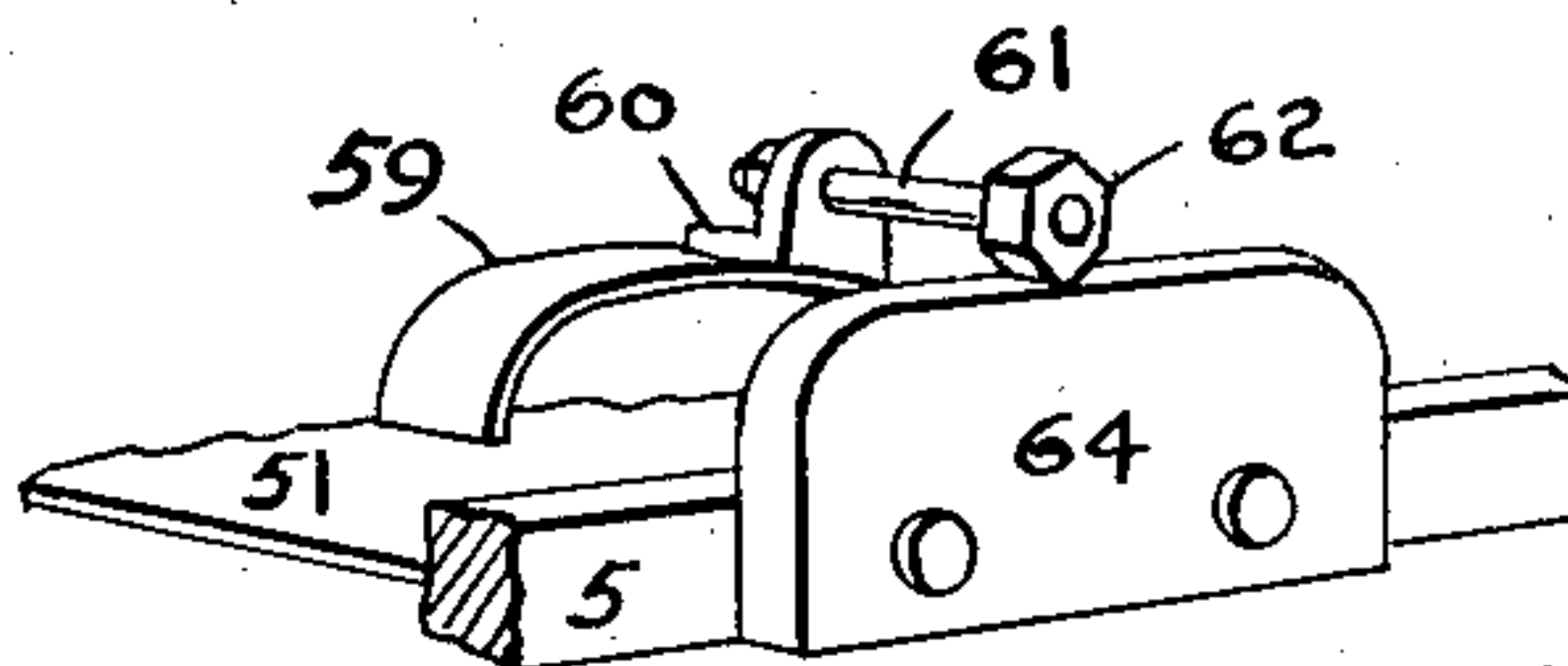


FIG. 7



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5 SHEETS—SHEET 5.

FIG. 9

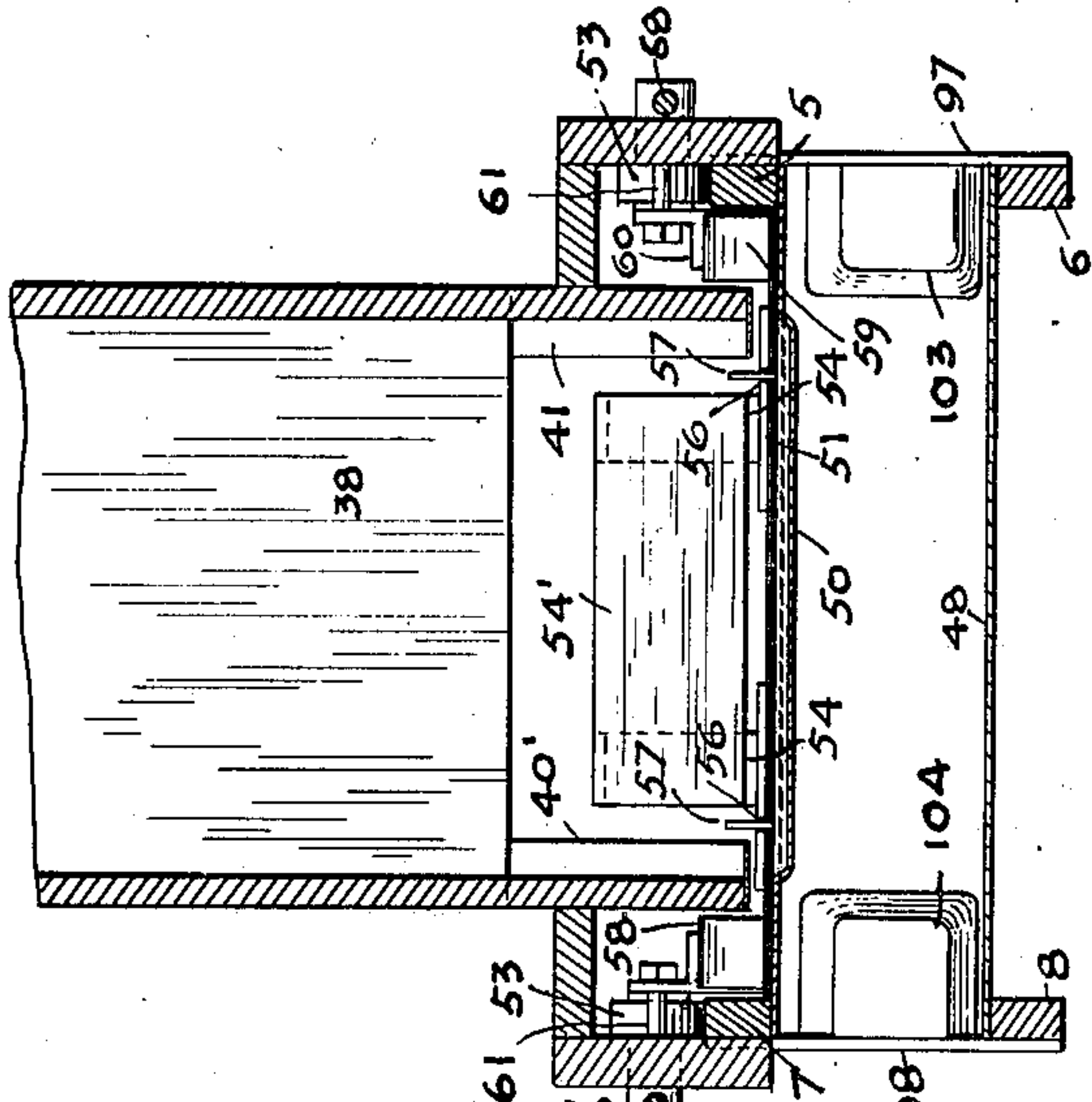
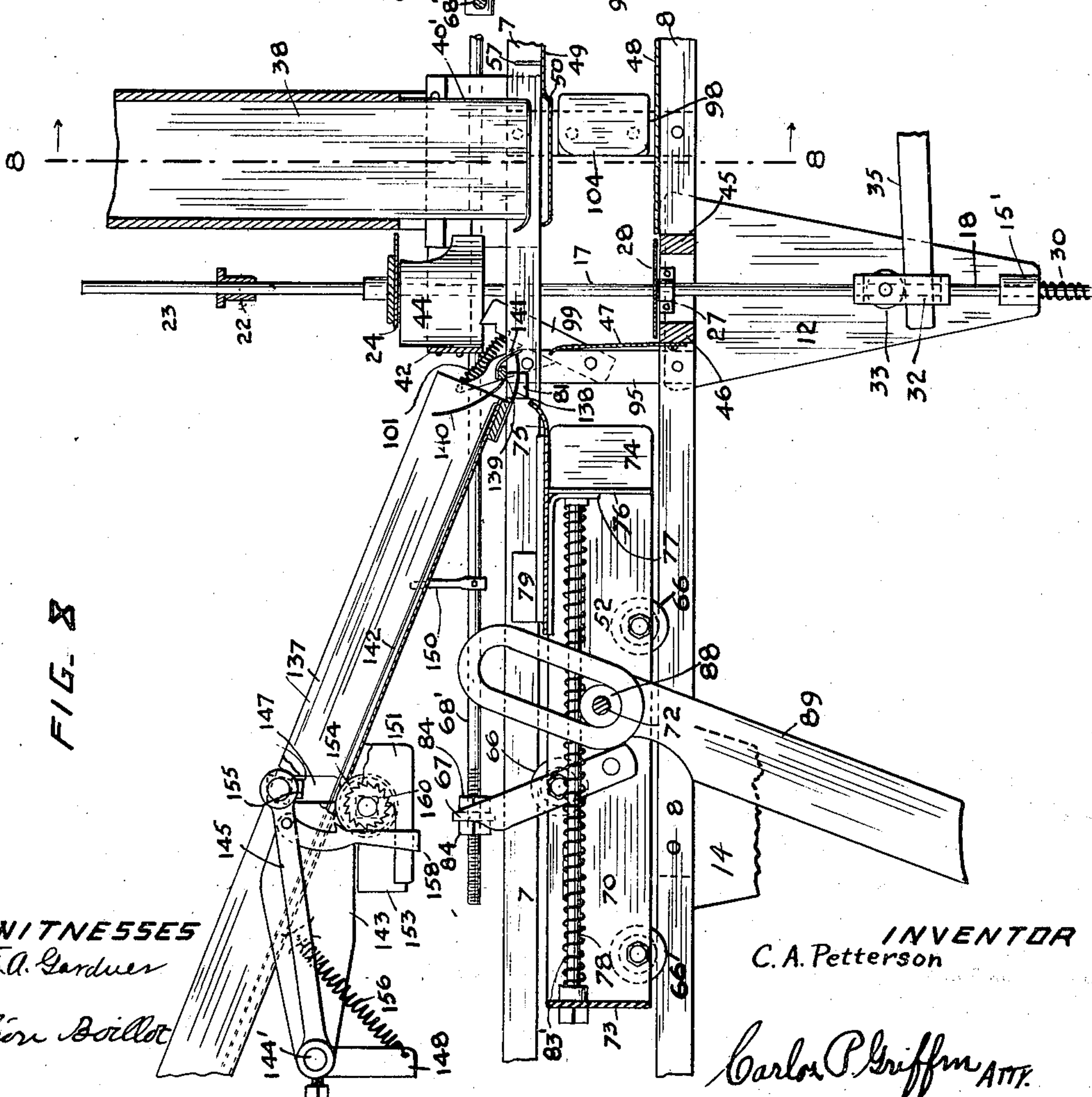


FIG. 8



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CARTON-WRAPPING MACHINE.

1,166,782.

Specification of Letters Patent.

Patented Jan. 4, 1916.

Application filed June 29, 1914, Serial No. 848,058. Renewed November 30, 1915. Serial No. 64,331.

To all whom it may concern:

Be it known that I, CLARENCE A. PETTERSON, a citizen of the United States, residing at San Anselmo, in the county of Marin, State of California, have invented a new and useful Carton-Wrapping Machine, of which the following is a specification in such full and clear terms as will enable those skilled in the art to construct and use the same.

This invention relates to a carton or package wrapping machine which places a wrapper around the carton, seals one edge thereof, folds the wrapper down flat on the ends of the carton and affixes an end seal over the folded wrapper ends.

An object of the invention is to provide a simple machine which will carry out the several operations in different places, thereby increasing the capacity of the machine since there are a number of cartons being acted on at the same time.

Other objects of the invention will appear as the description proceeds.

An embodiment of the invention is shown in the drawings in which the same reference numeral is applied to the same portion throughout, but I am aware that there are many modifications thereof.

Figure 1 is a plan view of the machine with the feed chute cut off and the label feed tray partly broken away for purposes of illustration, Fig. 2 is a side elevation of the complete machine, Fig. 3 is an elevation of the machine as it appears from the discharge end, one of the frames being broken away for purposes of illustration, Fig. 4 is a view in end elevation of the parts under the label feed tray, the plunger track being shown in section, Fig. 5 is a view of one of the end sealing attachments, Fig. 6 is a side elevation of one of the end sealing attachments, Fig. 7 is a perspective view showing the wrapper holding spring on the feed carriage, Fig. 8 is a longitudinal sectional view of the parts around the bottom of the feed chute, and Fig. 9 is a sectional view looking toward the discharge end of the machine.

The numeral 1 is applied to the end frame, 2 representing a like frame at the opposite end of the machine. The two frames are connected together by means of rods 3 and 4 as well as by four rods 5, 6, 7 and 8 forming a track at the top of the frames 1 and

2. The lower tracks 6 and 8 carry three pairs of depending plates 9, 10, 11, 12, 13 and 14. The plates 9 and 10 have a shaft 15 journaled therein. The plates 11 and 12 have bearings 15' and 16 at the lower ends thereof for two pairs of sliding rods 17, 18 and 19, 20. Near the top edge of the depending plates 11 there is a guide 21, one for each of the rods 17 and 20 carrying a cross head 22 which supports a rod 23 carrying a plunger 24. The guide rails 6 and 8 carry bearings 26 and 27, which bearings have openings therein in line with the openings in the bearings 15' and 16 through which the rods 18 and 19 pass, said rods supporting a plunger 28 which bears upon the underside of the carton while it is being folded.

Each of the rods 17, 18, 19 and 20 has a spring 30 surrounding its lower end and bearing upon the bottoms of the bearings 15' and 16, said springs being for the purpose of pulling the plunger down when they have been raised by the operating levers. Each of the rods 17 to 20 inclusive is provided with a small housing 32 carrying a roller 33, which roller bears upon the top of the operating levers 34, 35, 36 and 37 respectively, each of said brackets or housings and rollers being substantially the same as each other.

The carton feed chute 38 is rectangular in horizontal cross section and has an inclined portion 39 near the top thereof for convenience in feeding, said chute being held in position by means of two suitable braces 40 extending from the rods 5 and 7 to the top of the feed chute. At the bottom the feed chute is open save for two L shaped plates 40' and 41 at opposite sides of the chute, which plates serve to receive and hold the carton prior to its being placed in position for wrapping. Extending toward the label feed tray is a frame 42 which carries springs 43 and 44, which springs bear upon the ends of the carton and hold it when the carton has been pushed out of the bottom of the feed chute.

Connecting the rods 6 and 8 are two cross bars 45 and 46, the plunger 28 resting upon said cross bars when it has been returned to its normal position. The cross bar 46 carries a shield 47 which forms one side of the folding compartment into which the plungers push the carton, the opposite side

thereof being formed by one side of a carton that has been folded and pushed into the discharge channel formed by the floor 48 and the cover 49. The cover, it will be noted, is bent downwardly as indicated at 50 to provide the necessary pressure on the top of the boxes after the wrapper has been partially folded thereover.

Slidable on the upper bars 5 and 7 is a carriage 51, while at the other end of the machine there is a carriage 52 slidable on the lower bars 6 and 8. The carriage 51 has four supporting rollers 53, and it has two pusher bars 54, which bars have rest bars 55 connected thereto to hold the cartons in the chute up while the lowest carton is being pushed into the space between the two springs 43 and 44. The body of the carriage has two slots 56 therein to enable the carriage to move back and forth over the paper gage pins 57, which pins determine the precise point at which the label will be dropped when pulled under the carton to be wrapped. The carriage 51 carries two springs 58 and 59, each of which has an L shaped bracket 60 supporting a transversely extending pin 61. The pins 61 each carry a block 62, which blocks have inclined faces to ride up over low plates 63 and 64 to release the paper strip by raising the springs 58 and 59, said release being timed to coincide with the positioning of the label against the two stops 57. The plates 54 support a pusher plate 54' which pushes the carton out from under the feed chute.

The carriage 52 is supported on three pairs of rollers 66 and it has two upwardly and outwardly projecting arms 67 which arms are connected by means of two rods 68 and 68' to the projecting ends of the shafts of two of the rollers 53. The result of the foregoing construction is that the two carriages are compelled to move in unison and form with their connecting bolts a single two part carriage.

The carriage 52 has side bars 70 and 71 which are connected by means of the shaft 72, and the transversely extending bar 73. The front ends of each of the bars carry a block 74, which two blocks are spaced apart far enough to pass over the ends of the carton to fold the sides of the wrapper over the ends of the carton. Just in advance of the blocks 74 is the folding plate 75, the front end of which is turned upwardly to push the paper over the top of the carton.

Extending inwardly from each block 74 is a plate 76 connected with the carriage sides, said plates acting on the forward movement of the carriage to push the carton off the plunger 28 after the plate 75 has pushed the paper over the top of the carton. The plate 75 has two depending brackets 77 which are connected to rods 78 and it carries two stops 79 and 80, which on the for-

ward movement of the carriage contact with stops 81 and 82 on the inside of the top rails 5 and 7. Each rod 78 has a nut thereon on the back of the plate 73 and each rod has a spiral spring 83' thereon.

The plate 75 is slidable on the carriage 52 and is prevented from rising by the top rails. When the carriage moves forward the stops 79 and 80 contact with the stops 81 and 82, but the carriage moves farther by the width of one carton.

The position of the two carriages 51 and 52 with respect to each other is determined by the adjusting nuts 83 and 84 on each of the rods 68 and 68' connecting said carriages. The carriage 52 has a shaft 72 on which is a roller 88, said roller operating in a slotted driving lever 89. This lever 89 moves both of the carriages 51 and 52 and it is pivoted on a shaft 90, a balance weight 91 being used to make the parts run smoothly. The lever 89 is connected to a pitman 92, which pitman extends to the eccentric 93 on the shaft 15, said eccentric being balanced by the weight 94.

The four rails are connected together adjacent the feed chute by four plates 95, 96, 97 and 98, two of which plates have pawls 99, and 100 pivoted thereto, said pawls being held in a given position by means of the springs 101 and 102. These pawls serve to raise the springs 58 and 59 when another wrapper is to be gripped and permit the spring grippers to push them back out of the way when the carriage 51 is on its return travel. The plates 97 and 98 carry blocks 103 and 104 which are frusto-pyramidal to cause the front edge of the wrapper to be folded across the ends of the carton.

The two depending brackets 9 in addition to having bearings for the shaft 15 have rearwardly extending arms 103' and 104' forming journals for short shafts 105 and 106 on which the operating levers are mounted.

The operating levers 34, 35, 36 and 37 are provided with rollers 34', 35', 36' and 37', which rollers are vertically above the shaft 15 and ride on cams 110, 111, 112 and 113 carried by said shaft 15. These cams and levers operate in pairs to raise the plunger 28 and to raise the plunger 24, their ends resting in the stirrups 32 on the rods 17 to 20 inclusive, the springs acting to lower both plungers.

After the sides of the wrappers have been folded in at the ends by the blocks 103 and 104 the cartons are pushed between two oppositely placed pairs of blocks 114, 115, the lower pair being slightly in advance of the upper pair. Each block has an inclined face to cause the upper and lower points of the wrapper ends to be gradually folded in across the end of the carton.

Each pair of blocks aforesaid has a recess in which is mounted a moistening roll 118,

which rolls bear on the gummed sides of the two strips of end seals 119, said end seals being carried in rolls 120 supported in brackets 121 and 122 on the sides of the machine. It will be seen that the upper bracket 122 is pivoted at 123 to permit fresh rolls of end seals to be inserted.

The ends of the folding blocks 114 to 117 are cut on an incline to permit the end seal strip to pass, and pivoted blocks 124 and 125 hold the end seal strip in position for sealing as well as to hold it in place on the end of the carton until the glue thereon has dried sufficiently to hold the folded ends. The blocks 124 and 125 are pivoted at 126 to permit the fresh seal strip to be attached to the box on the discharge table, handles 128 and 129 being provided to move them with, while latches 130, 131 hold them up to the end seal strip.

At the feed end of the machine the rails 5 to 8 are suitably connected to legs 133, 134, 135 and 136 which support a table 132. From one end of said table an inclined chute 137 extends downwardly into proximity to the top of the plate 47, fingers 138 extending from the bottom of said chute over the top of said plate. Above the fingers 138 is a cross bar 139 which carries a plurality of upwardly projecting fingers 140, while it also carries two light springs 141 which bear on the fingers 138 and hold the wrapper in the proper position to be caught by the springs 58 and 59.

The bottom of the chute 137 is curved downwardly a small amount to allow the wires 142 to hold the wrappers of the bottom when they are being pulled down the chute by the carriage 51, thereby preventing the glue from accumulating in the bottom of the chute and thus affecting the operation of the machine. Extending rearwardly at the sides of the chute 137 there are the plates 143 and 144 which hold the shaft 144', said shaft having arms 145 and 146 which project into proximity to the slots 147 in the chute. The shaft 144 carries two downwardly projecting arms 148 against which the upwardly projecting posts 150 on the rods 68 and 68' strike on the return movement of the carriage. The plates 143 and 144 have depending portions 151 and 152 which support the glue trough 153. This trough is provided with a roller 154 having grooves therein to take the wires 142 when the bar 155 on the arms 145 and 146 presses the edge of the wrapper down into contact with the glue roller.

It is to be observed that the posts 150 of which there is one on each rod 68 and 68' merely strike the arms 148 and do not pass them, the springs 156 and 157 returning the arms and glue bar to their initial position. On the return movement of the carriage the stop 150 strikes the arm 148 which causes the

pawl 158 to engage the ratchet wheel 160 whereupon the glue roll is turned to present a fresh surface to the label slot 162, the spring pulling the arm 148 back when the stop 150 moves away.

In operation a plurality of cartons are placed in the feed chute 38, the lowest one resting on the edges at the bottom thereof. One carton is then placed by hand on the floor 48 just below the feed chute. The machine may then be started whereupon the carriage 51 will move forward pushing the lowest box out between the two springs 43 and 44. At the same time the column of cartons in the feed chute is held up by the plates 55 and the bar 155 pushes the wrapper placed in the bottom of the chute down against the glue roll. At this same time the plunger 28 rises up into contact with the wrapper under the bottom of the carton.

On the outward movement of the two carriages the wrapper is carried under the carton and is released as its forward edge touches the two gage pins 57. As soon as the wrapper reaches the gage pins the two plungers 24 and 28 push the carton down into the chamber formed by the carton placed by hand under the feed chute on the floor 48 and the plate 47. The result of this is that the wrapper is placed on three sides of the carton. The continued movement of the carriages drops the column of cartons in the feed chute, the plate 75 pushes one edge of the wrapper over the top of the carton and the further movement of that portion of the carriage 52 having the two blocks 74 thereon folds in one side of the wrapper on each end of the carton and at the same time pushes the carton under the plate 50, thereby pushing down the remaining edge of the wrapper on the top of the carton, said edge thereupon coming into contact with the glued portion of the wrapper and remaining in place. As the carriage 52 pushes the carton along the front edges of the wrapper are folded in at the ends by the blocks 103 and 104 and the further movement of said cartons along the discharge passage way serves to turn up the bottom and top edges of the wrapper across the ends of the carton. The cartons by this time have reached the end sealing device whereupon the end seal strips are properly glued by hand on each end of the first carton after which the end seal strips are pulled along step by step as the cartons are pushed through the machine. The machine is driven from a suitable pulley P on the shaft 15.

Having thus described my invention what I claim as new and desire to secure by Letters Patent of the United States, is as follows, modifications within the scope of the claims being expressly reserved:

1. In a carton wrapping machine, a feed chute, a carriage to push the cartons out of

the feed chute, means to support the carton by the ends after being pushed out of the feed chute, means on the carriage to draw a wrapper under the cartons, plungers to move a carton downwardly against said wrapper to fold the same across the bottom and two sides thereof, a plate on the carriage adapted to fold one edge of the wrapper across the top of the carton, means on the carriage to push the carton into the discharge chute thereby folding the remaining edge of the wrapper across the top of the carton, and means to fold the ends of the wrapper across the ends of the carton as the same is being pushed through the discharge chute.

2. A carton wrapping machine comprising two pairs of rails, a two part movable carriage mounted upon said rails, a feed chute, means whereby one part of said carriage will push the cartons out of the feed chute, and means whereby the other part of the carriage will push the carton into the discharge chute after the wrapper has been partially placed therearound.

3. In a carton wrapping machine, a carton feed chute, rails upon which said feed chute is mounted, a two part carriage movable on said rails, one part of said carriage having means to push the cartons out of the feed chute, and means to draw a wrapper under the carton and the other part of the carriage having a plate to push one edge of the wrapper across the top of the carton, blocks at opposite sides of that part of the carriage to push two edges of the wrapper across the ends of the carton and means to push said carton into the discharge chute.

4. A carton wrapping machine comprising a feed chute, means to fold a wrapper around the carton, a discharge chute through which said carton is pushed, means in the discharge chute to fold the ends of the wrapper across the ends of the carton, rolls carrying end seals adjacent each end of the carton passing through said discharge chute, and means to cause said strips of end seals to adhere to the folded wrapper ends on the ends of the cartons as successive cartons are pushed through the discharge chute.

5. In a carton wrapping machine, a feed chute, means to remove the cartons therefrom one at a time, means to fold a wrapper around said carton, a discharge chute into which said cartons are forced, means to fold the ends of the wrappers across the ends of the cartons, rolls carrying strips of end seals at each end of the cartons passing through said chute, and means to cause the strips of end seals to adhere to the end of the cartons as they are pushed through said discharge chute.

6. A carton wrapping machine comprising means to fold a wrapper around the

sides of a carton, two movable blocks for pushing the end edges of the wrapper across the ends of the carton, two frusto-pyramidal blocks fixed to the frame of the machine between which the carton is pushed to fold in two additional end edges of the wrapper, two pairs of fixed blocks having inclined faces for folding the remaining edges of the wrapper, and rolls carrying strips of end seals for attachment to each end of the carton as it passes through the discharge chute of the machine to secure the folded ends of the wrapper.

7. A carton wrapping machine comprising means to wrap the sides and two end edges of a wrapper around a carton, two pairs of blocks, each pair having oppositely placed inclined faces to fold four end edges of the wrapper across the ends of the carton, two rolls carrying strips of end seals, means to present said strips of end seals to the ends of the cartons, and means to cause said end seals to adhere to said cartons to secure the folded wrapper ends.

8. A carton wrapping machine comprising means to wrap the sides and two end edges of a wrapper around a carton, two pairs of blocks, each pair having oppositely placed inclined faces to fold four end edges of the wrapper across the ends of the carton, two rolls carrying strips of end seals, pivoted blocks having inclined faces to press the end seals into contact with the ends of the cartons as they pass between said blocks, and means to cause said end seals to adhere to said cartons to secure the folded wrapper ends.

9. A carton wrapping machine comprising a carton feed chute, a two part longitudinally movable carriage having means on one side of the feed chute to push the cartons therefrom and means on the other side of the carriage to push the cartons in the reverse direction, means on the carriage to draw a wrapper under the feed chute, and a pair of vertically movable plungers to grip the carton to move it downwardly and partially fold the same.

10. A carton wrapping machine comprising a carton feed chute, a two part carriage having an abutment on one side of the feed chute to push the cartons therefrom and having an abutment on the other side of the feed chute at a lower level to push the cartons into a discharge chute, means on the carriage to draw a wrapper under the carton feed chute, and a pair of plungers to grip the wrapper and carton to move the carton downwardly and partially fold the wrapper around the carton.

11. A carton wrapping machine comprising a carton feed chute, a discharge chute having folding mechanism therein, a carriage having an abutment on one side of the carton feed chute to push the carton there-

from and having an abutment on the other side of the feed chute to push the carton into the discharge chute, means carried by the carriage to pull a wrapper under the carton feed chute, and a pair of plungers to grip the wrapper and carton to move the carton downwardly and partially fold the wrapper around the same.

12. A carton wrapping machine comprising a carton feed chute, a discharge chute thereunder having folding mechanism at the side thereof, a two part carriage, one part on one side of the carton feed chute to push the cartons therefrom and the other part on the other side of the carton feed chute to push the cartons into the discharge chute, means on the carriage to draw a wrapper under the carton feed chute, and a pair of vertically movable plungers adapted to grip the carton and wrapper to partially fold the wrapper around the carton after the carton has been pushed out of its feed chute.

13. A carton wrapping machine comprising a carton feed chute, a two part carriage having one part on one side of the feed chute to push the cartons out of said chute and to support the remaining column of cartons, spring arms to hold the carton suspended after being pushed out of the chute, means on the carriage to pull a wrapper under the carton, a pair of plungers to move the carton and wrapper downwardly to partially fold the wrapper around the carton, and another portion of the carriage on the

opposite side of the carton feed chute from the first mentioned portion of said carriage to push the carton and wrapper into the discharge chute to effect the final folding at the ends of the carton.

14. A carton wrapping machine comprising a carton feed chute, a two part carriage having one part on one side of the feed chute to push the cartons out of said chute one at a time and to support the remaining cartons therein during the time the carton is being pushed out of the chute, means on that portion of the carriage to pick up the edge of a wrapper and carry the same under the carton, fixed springs to suspend the carton when the carriage is drawing the wrapper thereunder, vertically movable spring operated plungers adapted to contact with the wrapper and carton for moving said carton and wrapper downwardly to hold the wrapper across two sides of the carton, a discharge chute having folding mechanism at the sides thereof, and a second portion of the carriage on the opposite side of the feed chute for pushing the partially folded carton and wrapper into the discharge chute.

In testimony whereof I have hereunto set my hand this 23d day of June A. D. 1914, in the presence of the two subscribed witnesses.

CLARENCE A. PETTERSON.

Witnesses:

C. P. GRIFFIN,

HENRY B. LISTER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."