

No. 859,865.

PATENTED JULY 9, 1907.

G. A. AICHER.
BAG MAKING MACHINE.
APPLICATION FILED MAY 3, 1904.

5 SHEETS—SHEET 1.

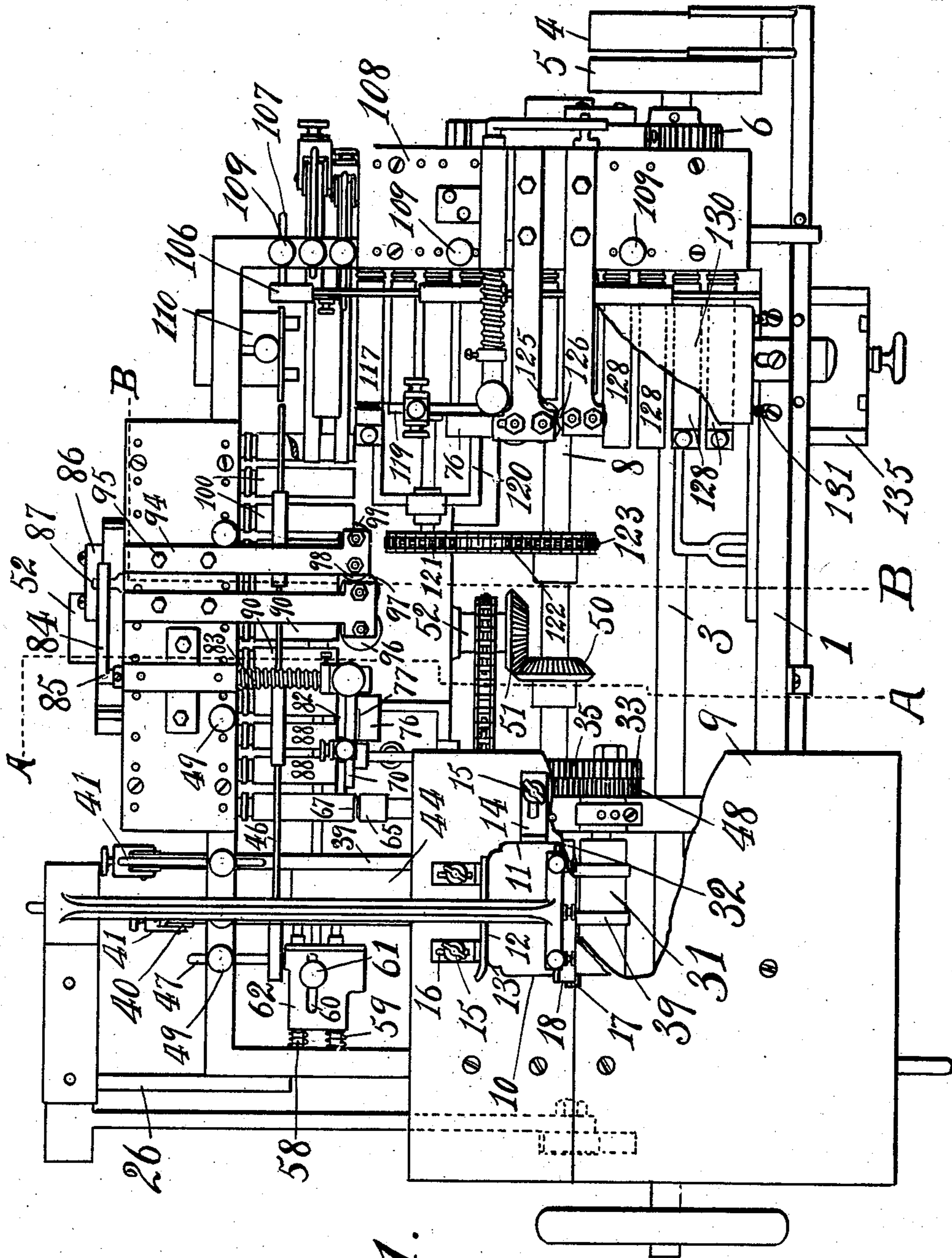


Fig. 1.

Witnesses

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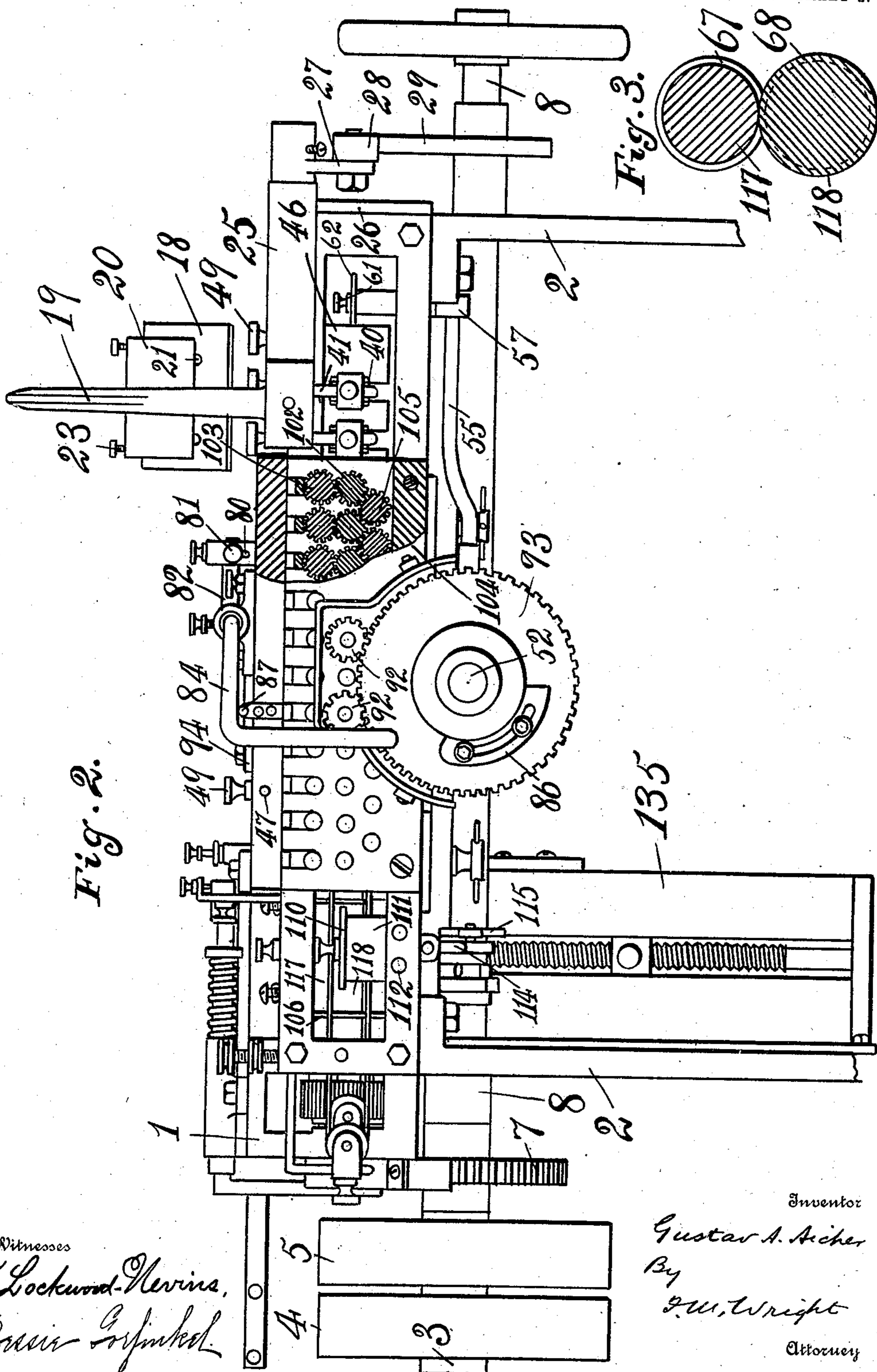


Fig. 2.

Fig. 3.

Witnesses
H. Lockwood-Merrins,
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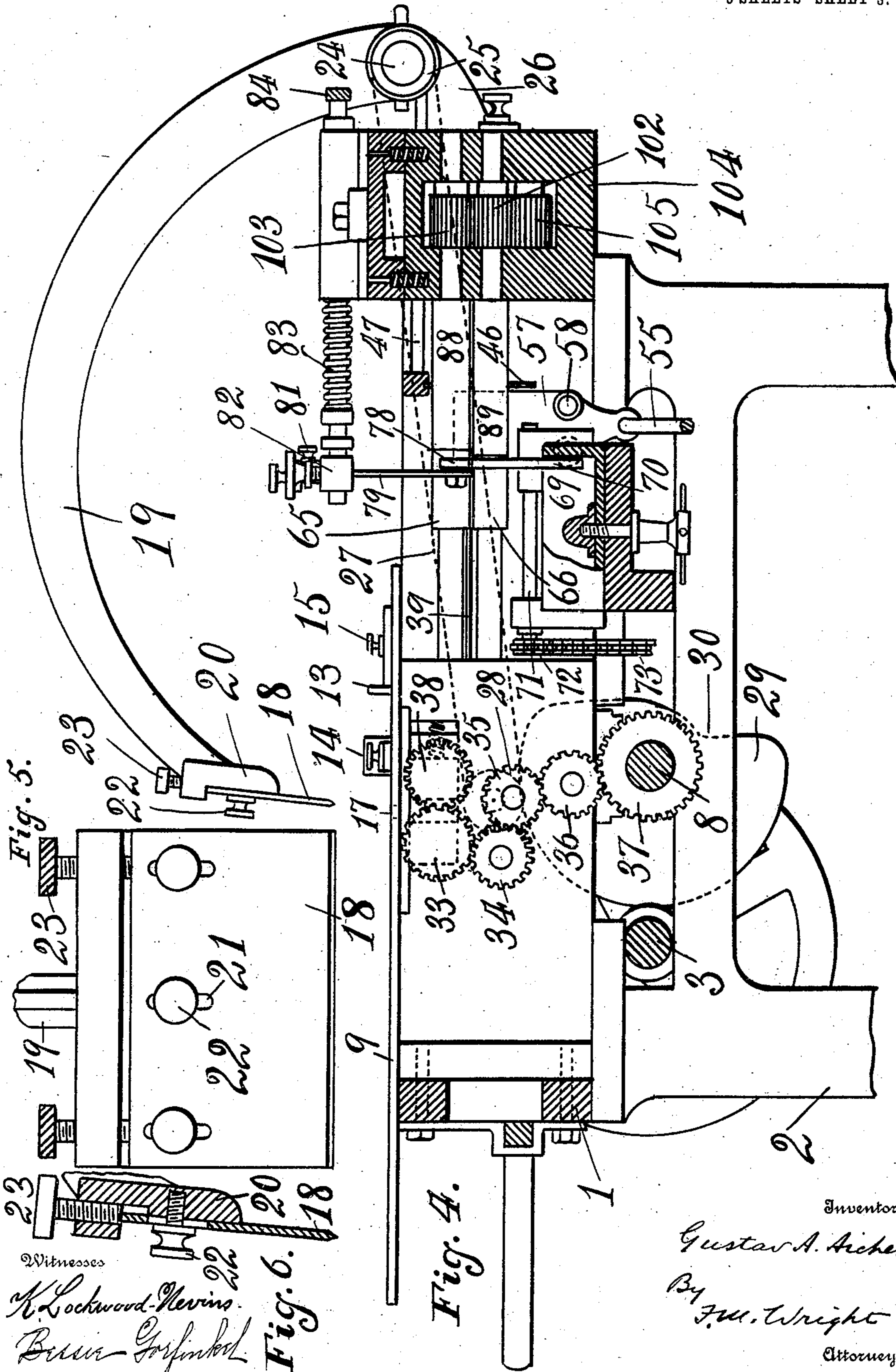
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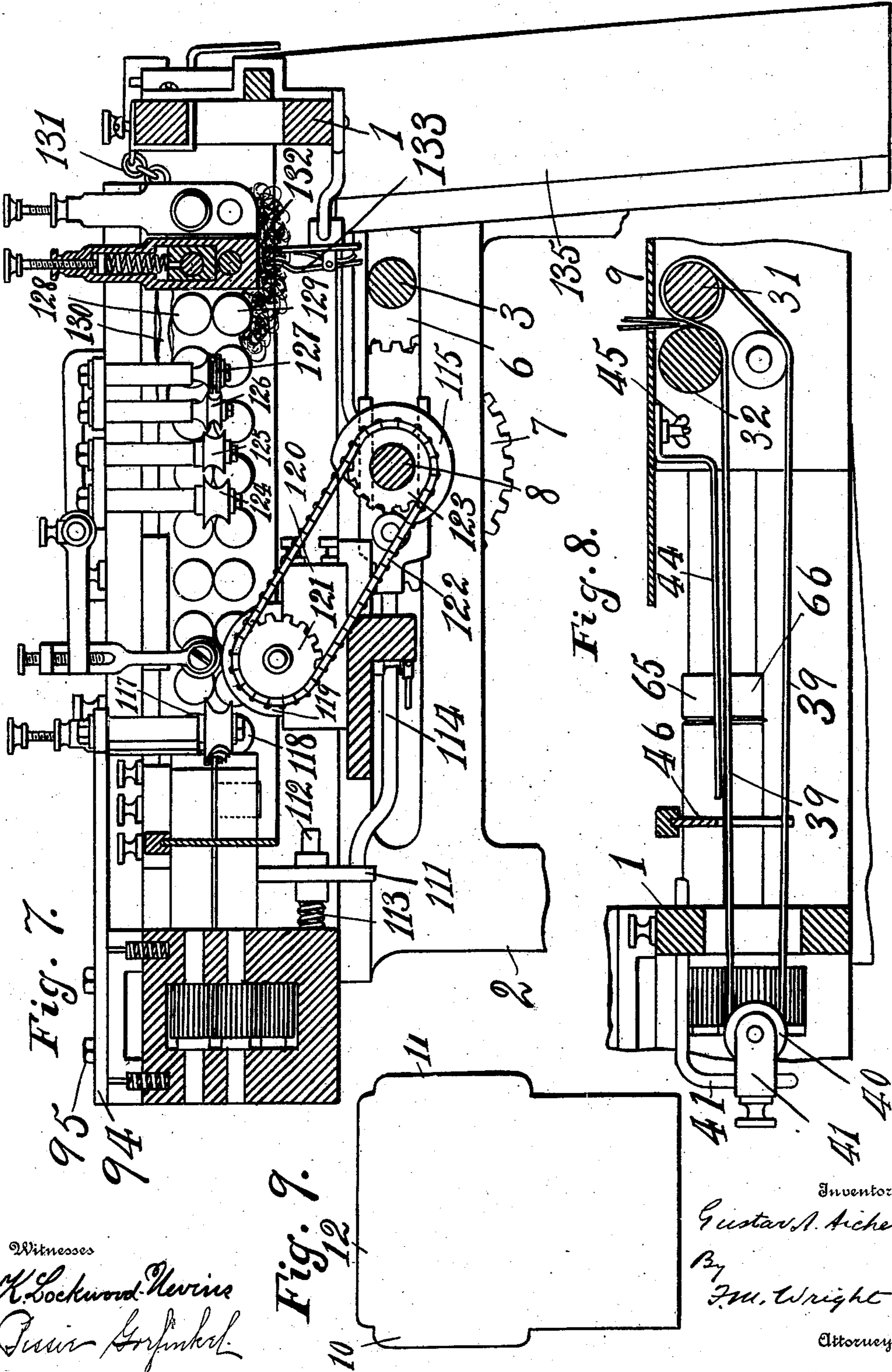
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5 SHEETS—SHEET 4.



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Fig. 9.

Fig. 8.

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5 SHEETS—SHEET 5.

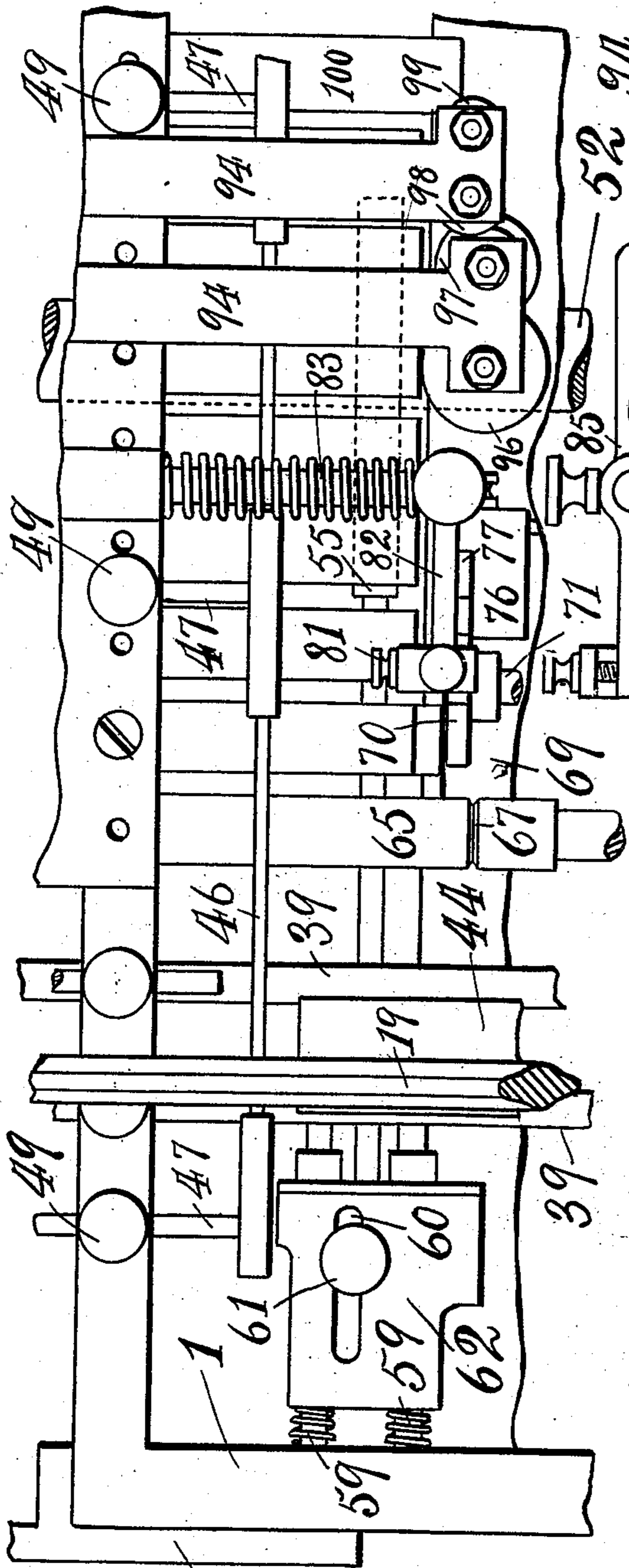


Fig. 10.

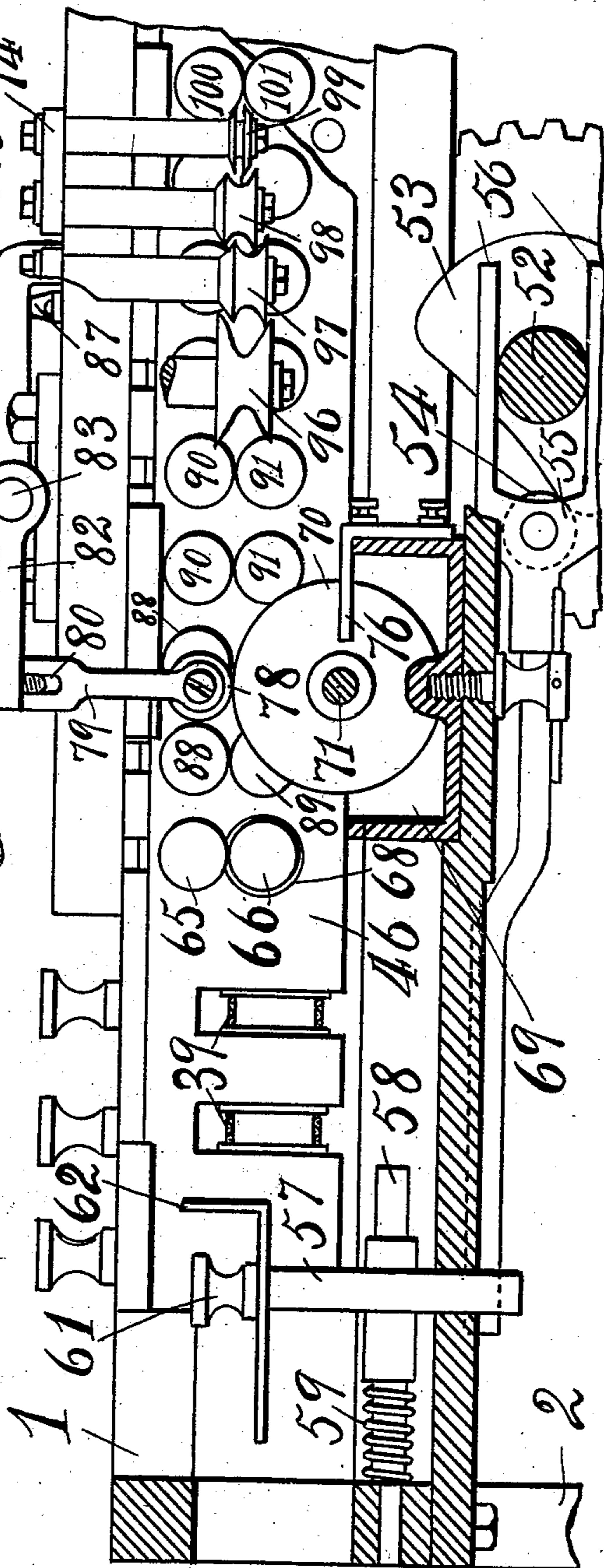


Fig. 11.

Witnesses
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UNITED STATES PATENT OFFICE.

GUSTAV A. AICHER, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO WEBBER & AICHER, OF
SAN FRANCISCO, CALIFORNIA, A FIRM.

BAG-MAKING MACHINE.

No. 859,865.

Specification of Letters Patent.

Patented July 9, 1907.

Application filed May 3, 1904. Serial No. 206,141.

To all whom it may concern:

Be it known that I, GUSTAV A. AICHER, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have
5 invented certain new and useful Improvements in Bag-Making Machines, of which the following is a specification.

My invention relates to an improved machine for making paper bags or envelops, the object of my invention being to provide a machine of this character which will turn out a large quantity of work in a given time and which shall require as few stoppages or interruptions of work as possible for the purpose of cleaning and adjusting the machine.

15 In the accompanying drawing, Figure 1 is a plan view of my improved apparatus, certain parts being broken away; Fig. 2 is a rear view thereof on a somewhat larger scale; Fig. 3 is an enlarged detail sectional view, showing the creasing rollers; Fig. 4 is a vertical
20 cross section on the line A—A of Fig. 1; Fig. 5 is a detail front view of the folding plate; Fig. 6 is a vertical section of the same; Fig. 7 is a vertical cross section on the line B—B of Fig. 1; Fig. 8 is a detail vertical section showing the conveying mechanism for
25 the folded blank; Fig. 9 is a plan of the blank before folding; Fig. 10 is an enlarged plan view of the main portion of the machine; Fig. 11 is a vertical section of the same.

The machine comprises three main parts; a part for
30 folding the blank; a part for joining the longitudinal edges of the blank; and a part for joining one of the transverse edges. With the latter part is also contained mechanism for dampening the bags after they have been pasted.

35 The frame 1 of the machine is supported upon standards 2, and in suitable bearings in said frame is a main shaft 3 having fast and loose pulleys 4, 5 thereon, and carrying a pinion 6 meshing with a gear wheel 7 on a counter shaft 8. 9 represents a feed plate on which
40 the blanks for making the bags are fed into the machine. These blanks are shown in Fig. 9 and are of a general oblong or rectangular form, except that they have two side flaps 10, 11 for forming the top and bottom of the bag and an end flap 12 for forming the side
45 of the bag. Upon said feed plate 9 are secured a stop 13 against which the front edges of the blanks are placed, and a side guide 14 for the sides of the blank. Said stop and guide are adjustable upon the feed plate by means of set screws 15 in slots 16 therethrough. The
50 feed plate has a feeding slot 17 down which the blanks are passed when folded, and into said slot descends the folding plate 18 secured upon an arched swinging arm 19. Said plate is adjustably secured on a broad extension 20 of the arched arm by means of slots 21

therethrough, and set screws 22 through said slots. 55 Vertical adjusting screws 23 are provided for adjusting the level of the lower edge of the folding plate. Said arched arm 19, carrying the folding plate is secured to a rock shaft 24 in a bearing 25 supported by an extension 26 of the frame, the other end of said rock shaft 60 having secured thereon an arm 27, (see Figs. 2 and 4) carrying a roller 28 engaged by a cam 29 upon the counter shaft 8. As said counter shaft revolves, the cam 29 raises the end of the arm 19 to permit the operator to feed the blanks upon the feed plate over the
65 feeding slot, and when the cam has revolved to such a point that the roller 28 comes to the drop 30 in the cam, said roller drops causing the folding plate to drop upon the blank which has been fed in the proper position, folding said blank and passing it through
70 the folding slot. It will be observed that with this construction there is no danger of the operator receiving any injury by leaving his fingers underneath the folding plate as it descends, for said folding plate descends by gravity alone; that is, when the roller
75 arrives at the drop in the cam, the roller and the arched arm and the folding plate drop by gravity.

The blank is folded so that the upper portion projects beyond the lower portion, forming a flap. The blank so folded passes down between rollers 31, 32 of
80 which the roller 31 is driven by means of a gear wheel 33 and a train of gears 34, 35, 36 from a gear wheel 37 on the counter shaft 8. The roller 32 is driven by a gear wheel 38 meshing with another gear wheel 48 on the shaft of the roller 31. Endless bands 39 pass around the
85 roller 31 and underneath the roller 32 and the folded blank also passes upon said bands and underneath said roller 32. The bands 39 at the other end of their path pass around grooved rollers 40 supported by hangers
90 41 adjustably secured upon the frame of the machine.

44 represents a flat spring, adjusted by means of a screw 45 from the feed plate, which serves as an upper guide for the blank, maintaining it in position upon the traveling bands. The blanks so carried by the traveling bands are brought up against the face of a vertical
95 guide plate 46. Said guide plate is adjustably secured by means of three guide bars 47 passing through holes in the frame of the machine and secured at any desired point by means of set screws 49. By this means the guide plate 46 may be moved forwards or back-
100 wards in the path of the blank, and secured at any desired position. The blank is now conveyed to the second part of the machine which is that for folding and pasting the longitudinal flap 12. This is effected as follows:—Upon the counter shaft 8 is secured a miter
105 wheel 50 which meshes with a miter wheel 51 upon a transverse shaft 52. Said transverse shaft has secured thereon a cam 53 which bears upon a roller 54 carried

by a bar 55 which is forked at one end, as shown at 56, to straddle the transverse shaft 52. The other end of said bar is attached to a slide piece 57 which slides upon two horizontal guide bars 58 and is projected by coiled springs 59 around said guide bars. Said slide has adjustably secured thereon, by means of a slot 60 and screw 61, a pusher plate 62 arranged to engage the edge of the folded blank. The form of the cam 53 is such that, when the blank has been brought up against the vertical guide plate 46, said cam permits the springs 59 to press the push plate forward and cause the folded blank to move in a direction transverse to its former movement and between the rollers 65, 66 of the second portion of the mechanism. The lower roller 65 has formed thereon a circular rib 67 and the upper roller 66 has formed therein a corresponding circular groove 68, so that, as the blank is fed between said rollers, a crease is scored in the longitudinal direction of the blank in the line on which the longitudinal flap is to be folded.

The next operation is that of applying paste or other mucilage to the edge of the blank. A novel feature of this invention resides in the fact that this paste is not now applied, as formerly, directly to the surface of the flap, but is applied to the edge of the lower portion of the blank to which the flap is to be caused to adhere. The advantage of this construction is, that thereby the mechanism for turning over the flap does not come in contact with the adhesive material, and the machine runs better and with less tension. The paste or other adhesive material is contained in a box 69 secured upon a transverse plate of the frame of the machine, and in said box revolves the lower portion of a pasting wheel 70, said wheel being on a shaft 71, having thereon a sprocket wheel 72 driven by a chain 73 from a sprocket wheel upon the transverse shaft 52. The plate 76 is provided with a slit 77 through which the pasting wheel revolves, the function of said slit being to remove any excess of paste from the pasting wheel. Above said pasting wheel is a small idle roller 78 carried by a standard 79 adjustably secured by means of a slot 80 and set screw 81 upon the end of an arm 82. Said arm is carried by a horizontal rock shaft 83 having at the other end an arm 84 which is bent at right angles as shown, and is engaged by a cam 86 upon the transverse shaft 52, the effect of which is to raise said arm 84 and press down the roller 78 upon the blank at the time that the paste is to be applied thereon, pressing it down on the pasting wheel 70. A stop 87 holds up said arm 84 in position to be engaged by said cam 86.

The blank, while paste is being applied thereto, passes between the upper set of feed rollers 88, and the lower set 89, the upper feed rollers being shorter than the lower to admit of the small roller 78 engaging the edge of the blank. Said blank now passes between a series of pairs of upper and lower feed rollers 90, 91. After passing between the first two pairs of these rollers it is brought into position to have the longitudinal flap folded over on to the pasted edge. For this purpose said flap passes into contact with a series of grooved folding wheels, of which there are here shown four, each wheel being supported at the lower end of a hanger bar, said hanger bars being secured in pairs at the ends of plates 94 secured upon the frame of the machine as shown at 95. The grooves of these wheels successively decrease

in the angle of opening. The effect of passing the flap in contact with the first grooved wheel 96 is to turn the flap downwards; with the next one 97, it is to turn it sharply at about a right angle, the fold taking place on the crease already made. The effect of the next grooved wheel 98 is to turn the flap obliquely inwards; and the effect of the fourth 99 is to turn it completely inwards. The folded blank now passes between feed rollers 100, 101, which complete the adhesion of the edges. It may here be observed that the guide plate 46 along which the side of the blank moves in its passage between the rollers is formed with suitable holes to allow the rollers to pass therethrough without interfering with the action of said guide plate. All of said feed rollers are driven by means of a series of small gears 102, 103, contained in a housing 104 secured upon the frame of the machine, each lower gear wheel 102 driving an upper gear wheel 103 in the opposite direction, and driving, or being driven from the adjacent lower gear wheel 102 by means of an intermediate gear 105. Two of these lower gears 102 are on the same shafts as gears 92 meshing with and being driven by a gear 93 on the transverse shaft 52. Precisely in like manner as before, the blank is now brought up against a stop and guide plate 106 adjustably secured by means of three bars 107 passing through the housing 108 and set at any desired point by means of set screws 109 screwed into the top of said housing. The construction of the third part of the machine is similar to that of the second part, suitable changes being made in the driving mechanism to conform to the different position of this part of the machine. In like manner as before, the folded blank is now moved in a direction transverse to its former movement by means of a pusher plate 110 upon a slide piece 111 sliding upon horizontal guide-bars 112 and pressed forwards by means of coiled springs 113, said slide piece being pressed back at the proper time by means of a bent bar 114 operated by a cam 115 on the counter shaft 8. By this means the folded blank is passed between the creasing rollers 117, 118, the upper one 117 having a groove and the lower 118 a rib, forming a crease in the short side of the folded sheet along the line of the fold of the end flap. In like manner as before the side of the lower portion of the blank adjacent to said end flap is pasted by means of a pasting wheel 119 revolving in a box 120 holding paste or other adhesive material, said pasting wheel being revolved by means of a sprocket wheel 121 on the shaft of said pasting wheel, a sprocket chain 122, and a sprocket wheel 123 on the counter shaft. In like manner as before the folded blank is passed forward by means of feed rollers, and the end flap of said blank is folded under by a series of grooved rollers 124, 125, 126, 127 carried by hanger bars supported in pairs by plates at the top of the housing. Thus in like manner as before the end flap is folded over and caused to adhere. The housing for the feed rollers is similar to the former housing and the gear wheels for driving said rollers are also similar and similarly situated. The bags pass between moistening rollers 129, 128 which are kept moist, the upper rollers 128 by contact with a wet pad 130 held by chains 131 and the lower rollers 129 by contact with a sponge 132 held in a clamp 133. By uniformly dampening the bags after they are pasted the tendency to curl upon drying is avoided. The bags, having their

edges joined along one side and their ends, are discharged into a vertical chute 135, falling upon a table in said chute, which is gradually lowered by means of a vertical screw in the manner common in the art.

5 I claim:—

1. In an apparatus of the character described, the combination of a feeding plate having a feeding slot, means for folding blanks through said slot, rollers beneath said slot between which said blank passes, a shaft operatively
10 connected with said rollers to rotate the same, means for conveying said blank from said rollers, a second pair of rollers revolving about axes at right angles to those of the first rollers, means for arresting the blank when opposite to said second pair of rollers and a plate the face of
15 which engages an edge of the blank opposite to the second pair of rollers, and means for moving said plate, to push the opposite edge of the blank into engagement with said second rollers, substantially as described.

2. In an apparatus of the character described, the combination of a feeding plate having a feeding slot, means for folding blanks through said slot, rollers beneath said slot between which said blank passes, a shaft operatively
20 connected with said rollers to rotate the same, means for conveying said blank from said rollers, a guide plate by which said blank is arrested, a pusher plate the face of which is arranged to engage a lateral edge of the folded blank, a slide piece carrying said pusher plate, a cam suitably connected with the driving mechanism of the machine and controlling the movement of said slide piece,
25 and a second pair of rollers at right angles to the first pair into engagement with which is carried the edge of the blank opposite to that engaged by the pusher plate, substantially as described.

3. In an apparatus of the character described, the combination of endless bands for conveying a blank, a stop
35 plate by which said blank is arrested, a pair of rollers on one side of said bands, a pusher plate on the opposite side of said bands, a cam controlling the motion of said pusher plate, and an operative connection between said cam and the driving mechanism of the machine, whereby, at a suit-

able stage in the operation of the machine, the blank is pushed across the bands into engagement with the rollers, substantially as described.

4. In an apparatus of the character described, the combination of means for folding a blank, means for conveying said blank from said folding means, a stop arresting
45 said blank, rollers having their axes parallel with the motion of said blank, a main shaft, means driven by said main shaft for rotating said rollers, and means operatively connected with said main shaft for moving said
50 blank at right angles to its former direction of movement to cause it to engage said rollers to be moved therebetween, said means comprising a pusher plate the face of which is arranged to engage the edge of the blank, springs actuating the same, and a cam pressing said pusher plate
55 back against said springs, substantially as described.

5. In an apparatus of the character described, the combination of means for folding a blank, rollers between which the blank is passed in a direction parallel to said fold, one pair of said rollers having the one a rib and the
60 other a corresponding groove to form a crease in the blank, means applied to the blank as it is being conveyed by the rollers for pasting an edge thereof, and means operated as the blank passes between the rollers for joining said pasted edge to another edge, said means comprising a
65 series of grooved folding wheels, the grooves of said wheels successively decreasing in the angle of opening, substantially as described.

6. In an apparatus of the character described, the combination of means for folding a blank, means for applying
70 paste to an edge of the blank, and means for folding an edge of the blank, comprising a series of grooved folding wheels, the grooves of said wheels successively decreasing in the angle of opening, substantially as described.

In witness whereof I have hereunto set my hand in the
75 presence of two subscribing witnesses.

GUSTAV A. AICHER.

Witnesses:

FRANCIS M. WRIGHT,
BESSIE GORFINKEL.