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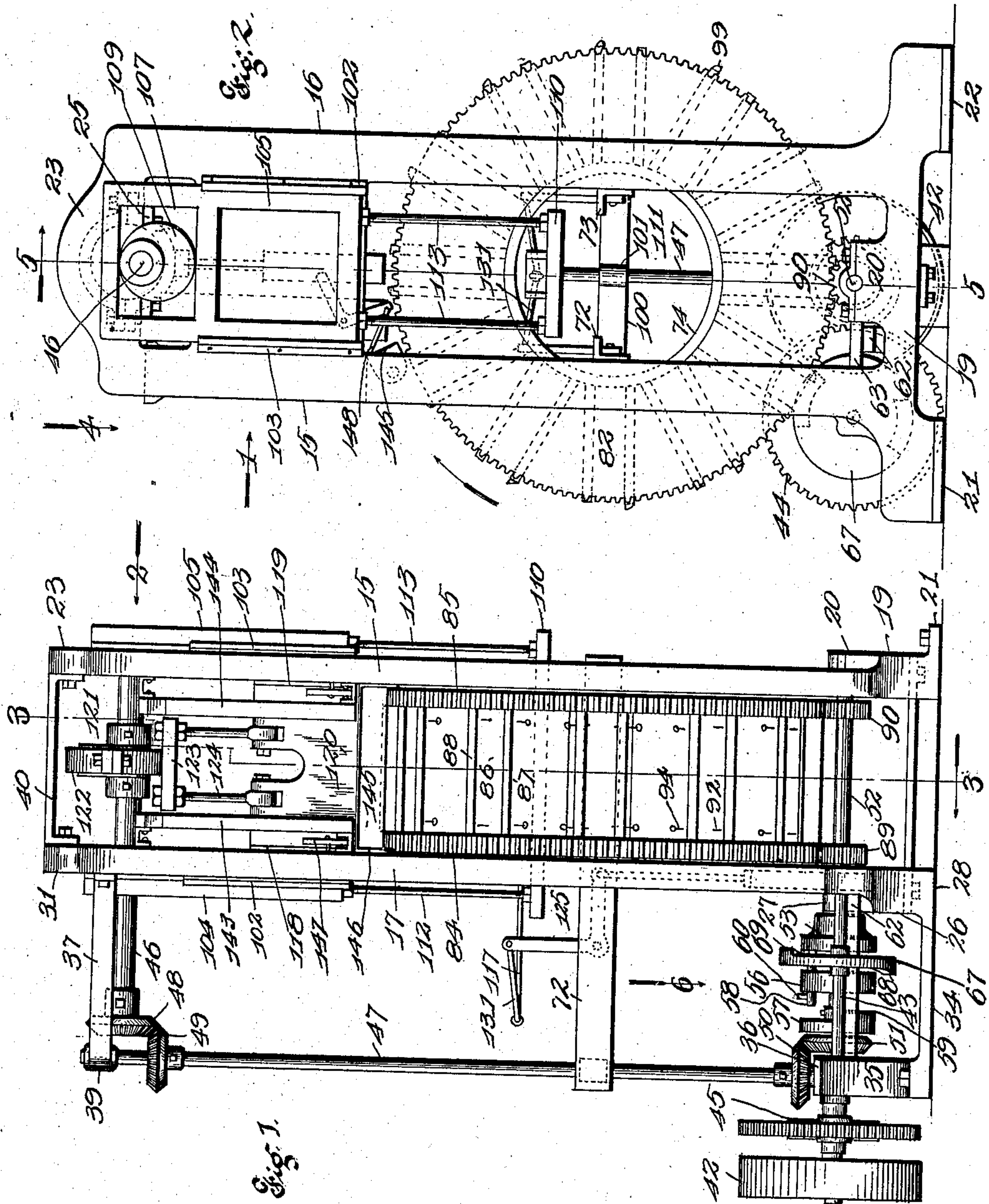
PATENTED MAR. 20, 1906.

F. A. BONROE.

TOBACCO PRESS.

APPLICATION FILED JAN. 16, 1905.

4 SHEETS—SHEET 1.



Witnesses
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Edw. M. Huntington

Inventor
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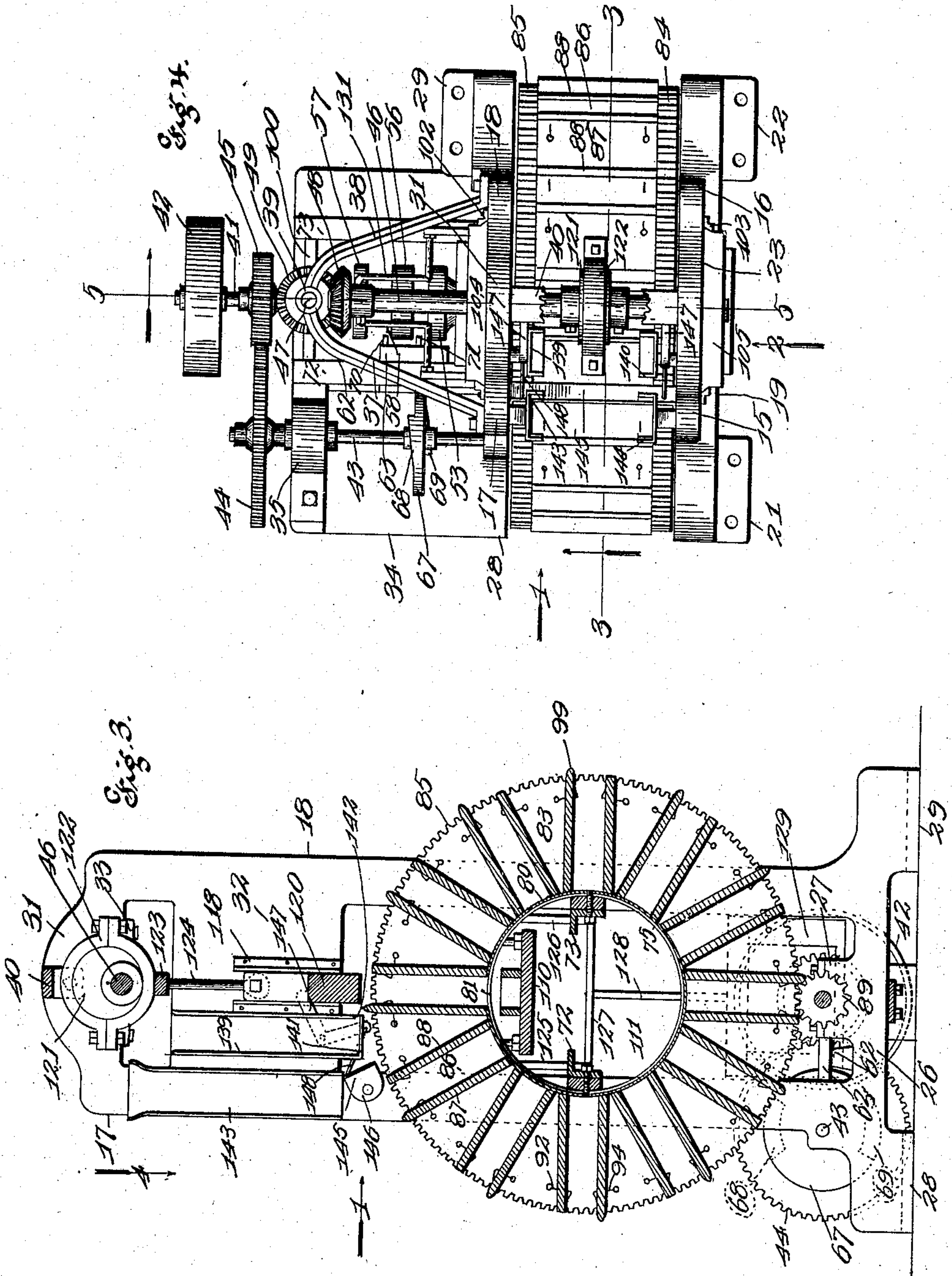
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4 SHEETS—SHEET 2.



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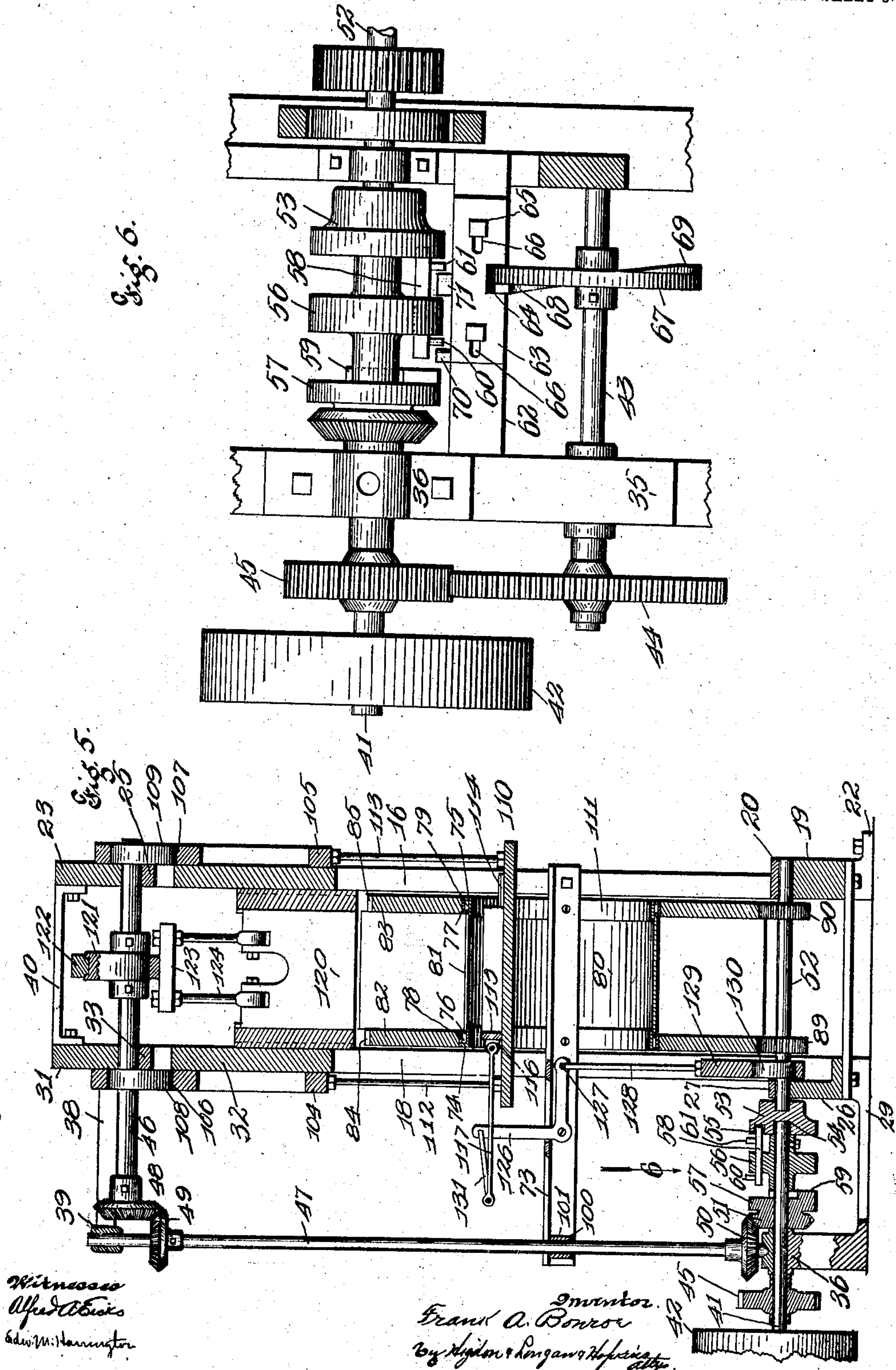
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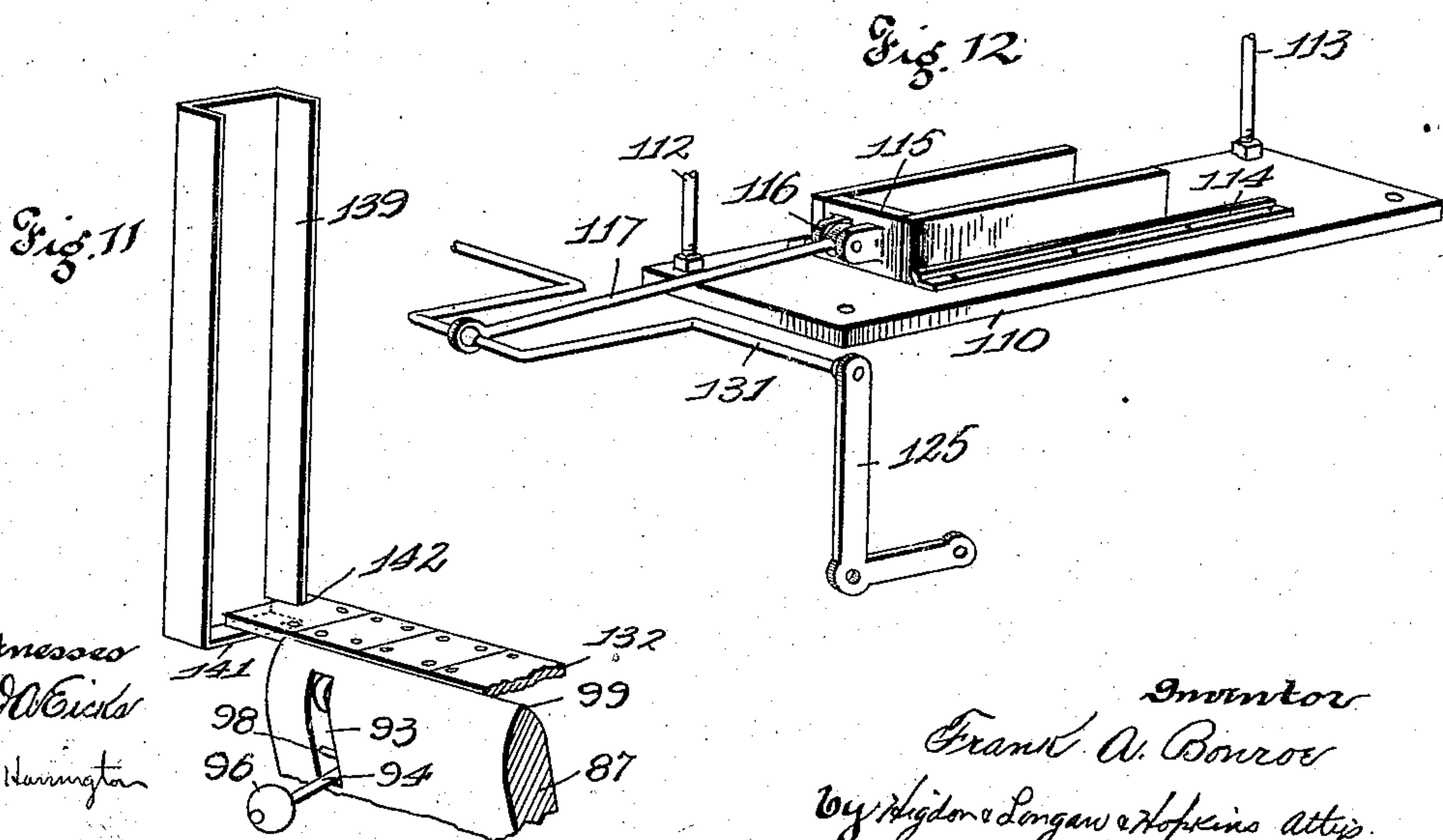
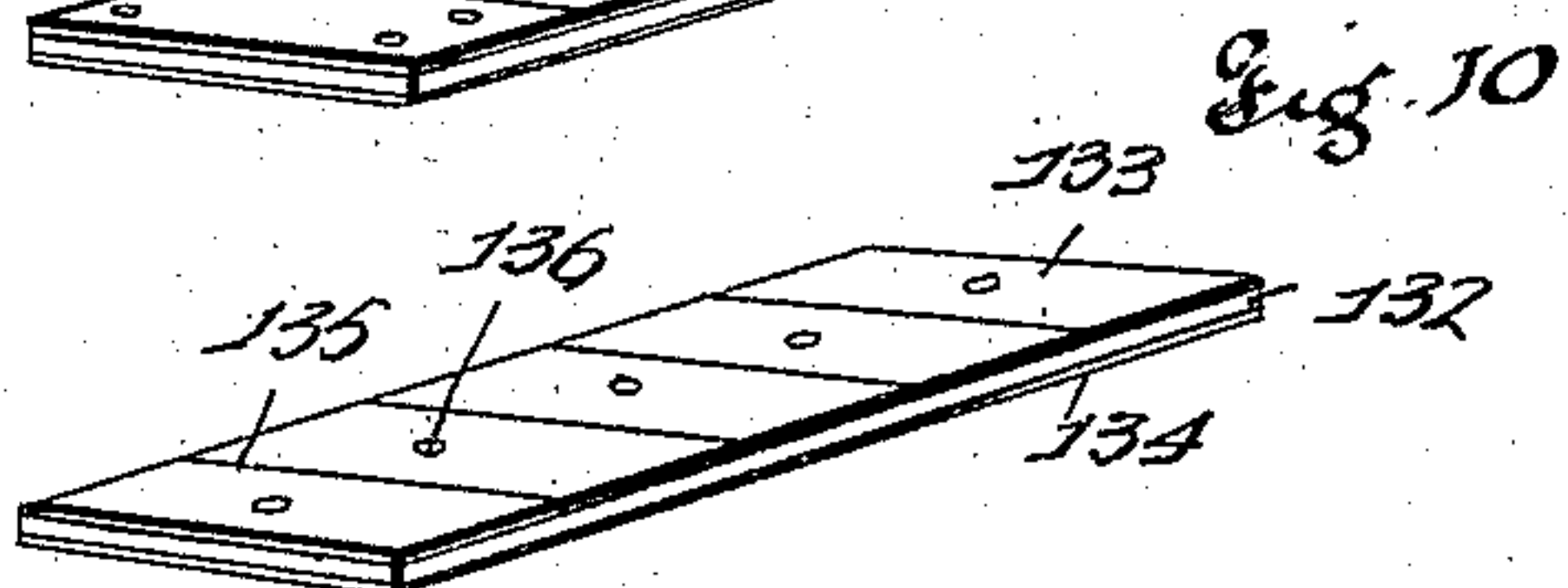
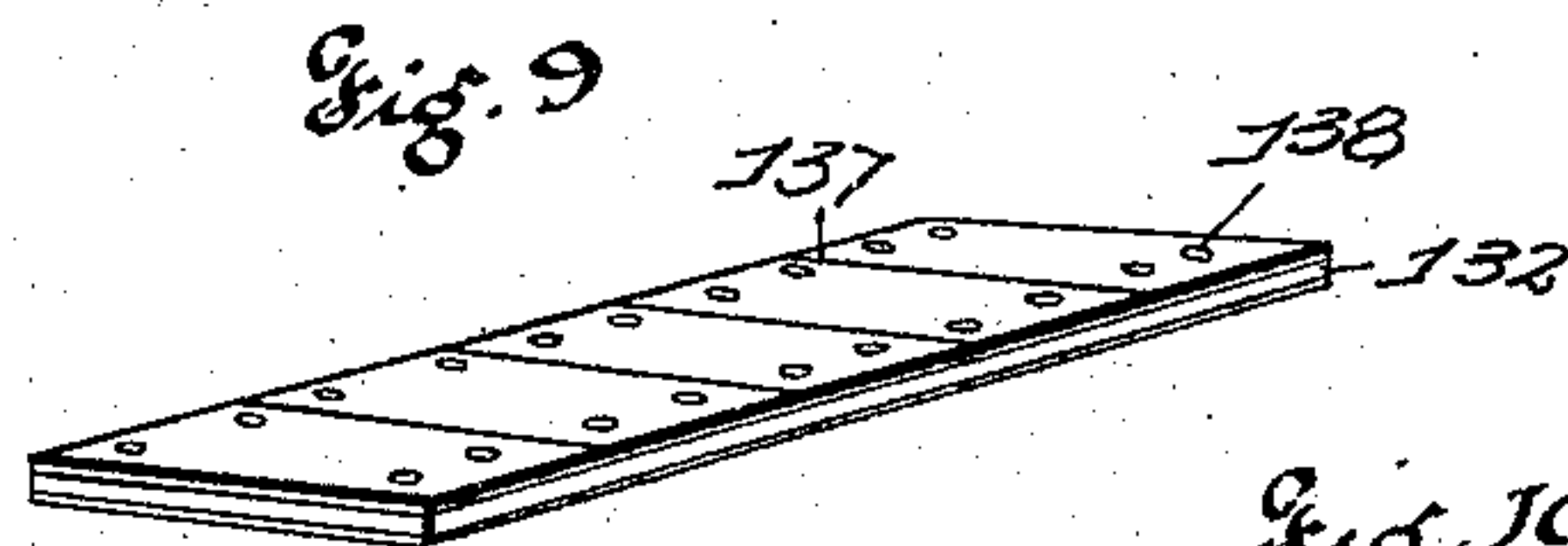
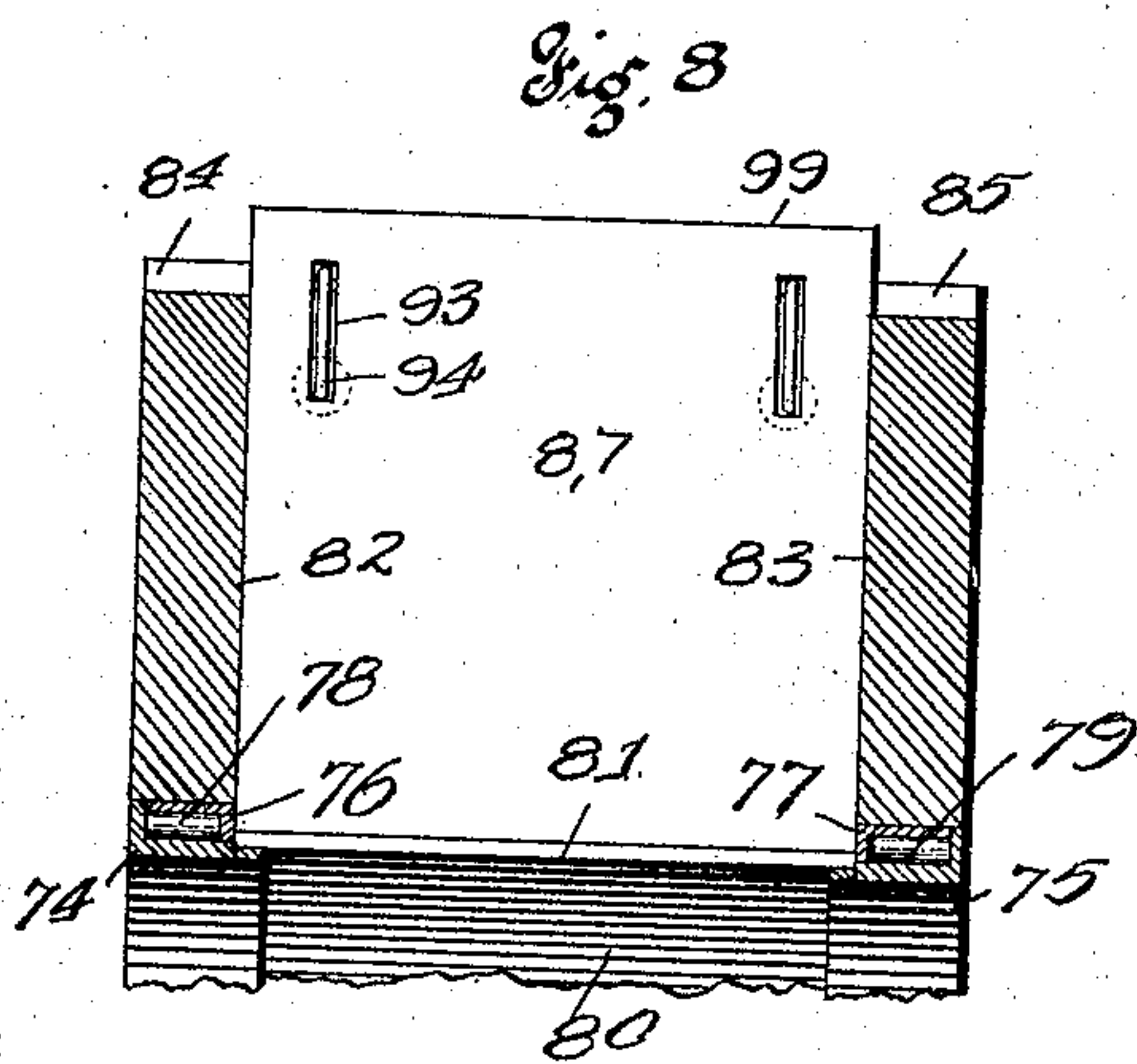
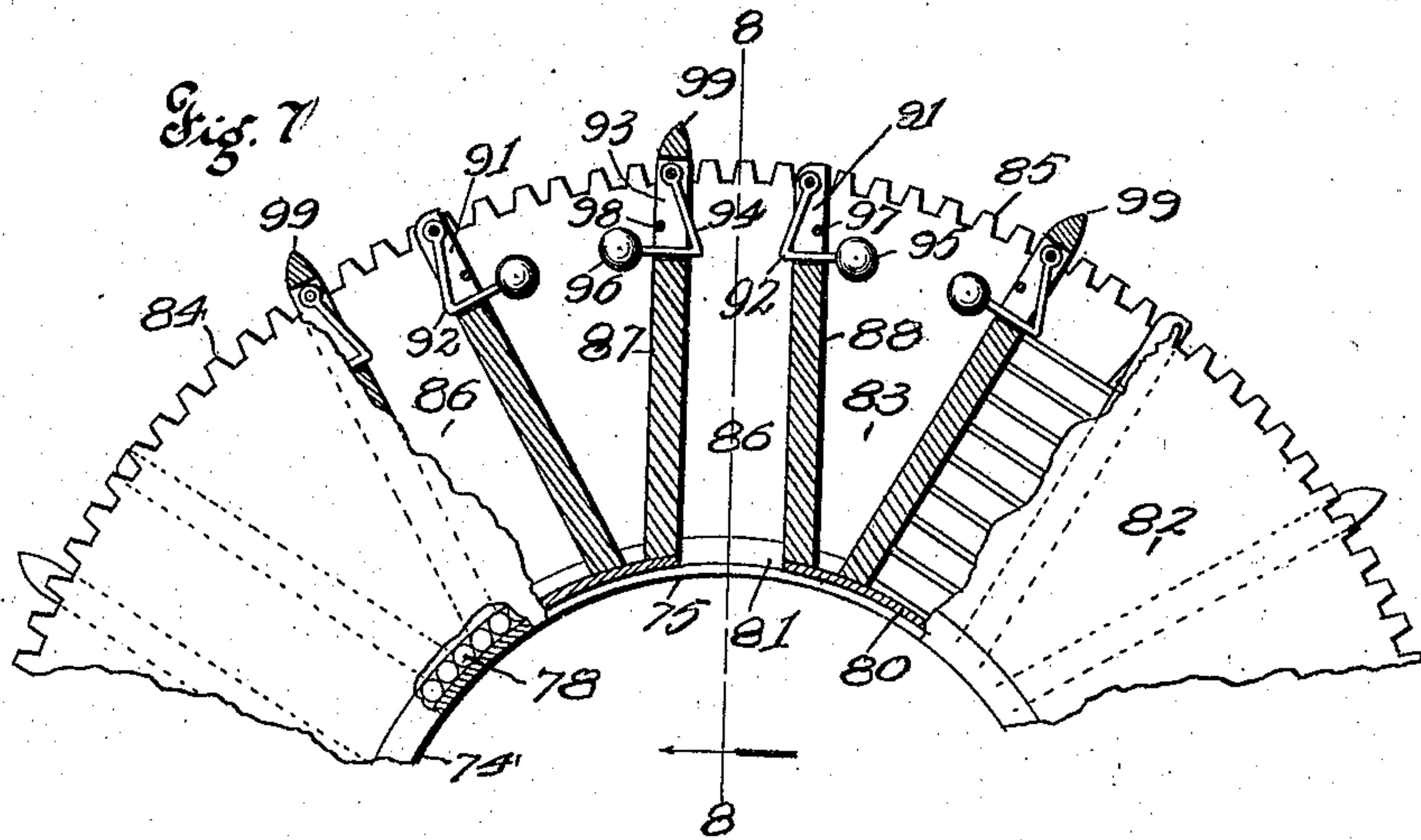
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

FRANK A. BONROE, OF ST. LOUIS, MISSOURI.

TOBACCO-PRESS.

No. 815,790.

Specification of Letters Patent.

Patented March 20, 1906.

Application filed January 16, 1905. Serial No. 241,279.

To all whom it may concern:

Be it known that I, FRANK A. BONROE, a citizen of the United States, and a resident of St. Louis, Missouri, have invented certain new and useful Improvements in Tobacco-Presses, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings; forming a part hereof.

My invention relates to improvements in tobacco-presses; and it consists of the novel features herein shown, described, and claimed.

In the drawings, Figure 1 is a front elevation of a tobacco-press embodying the principles of my invention as seen looking in the direction indicated by the arrows 1 in Figs. 2, 3, and 4. Fig. 2 is a side elevation as seen looking in the direction indicated by the arrows 2 in Figs. 1 and 4. Fig. 3 is a sectional elevation on a plane parallel with Fig. 2 and taken on the lines 3-3 of Figs. 1 and 4 and looking in the direction indicated by the arrows. Fig. 4 is a top plan view as seen looking in the direction indicated by the arrows 4 in Figs. 2 and 3. Fig. 5 is a sectional elevation on a plane parallel with Fig. 1 and taken on the lines 5-5 of Figs. 2 and 4 and looking in the direction indicated by the arrows. Fig. 6 is an enlarged detail plan of the clutch mechanism as seen looking downwardly, as indicated by the arrow 6 in Figs. 1 and 5. Fig. 7 is an enlarged detail of the compression-chambers, parts being broken away to economize space. Fig. 8 is a cross-section on the line 8-8 of Fig. 7. Fig. 9 is a perspective of one of the parting-plates. Fig. 10 is a perspective of the reverse side of the plate shown in Fig. 9. Fig. 11 is a perspective detail showing the operation of feeding the parting-plates to the compression-chambers. Fig. 12 is a perspective detail of the means of discharging the compressed tobacco.

Referring to the drawings in detail, the main frame comprises the posts 15, 16, 17, and 18, mounted in vertical parallel positions in the form of a rectangle when seen in plan, the brace 19 connecting the lower ends of the posts 15 and 16, the bearing-block 20 upon the center of the brace 19, the feet 21 and 22 supporting the posts 15 and 16, the brace 23 connecting the upper ends of the posts 15 and 16 near their upper ends, the bearing-block 25 upon the brace 23, the brace 26 connecting the lower ends of the posts 17 and 18, the bearing-block 27 upon the brace 26, the feet 28 and 29 supporting the post 17, the

bearing-block 30 upon the brace 26, the brace 31 connecting the upper ends of the posts 17 and 18, the web 32 connecting the posts 17 and 18 near their upper ends, the bearing-block 33 upon the brace 31, the base-plate 34 extending laterally from the feet 28 and 29, the bearing-block 35 upon the outer end of the base-plate in line with the bearing-block 30, the bearing-block 36 upon the outer end of the base-plate in line with the bearings 27 and 20, the arms 37 and 38 extending laterally from the upper ends of the posts 17 and 18, the bearing-block 39 connecting the outer ends of said arms in vertical alinement with the bearing-block 36, and the brace 40 connecting the braces 23 and 31.

The driving-shaft 41 is mounted horizontally through the bearing-block 36, there being a driving-pulley 42 upon the outer end of said shaft. The clutch-shifting shaft 43 is mounted in the bearing-blocks 30 and 35, parallel with the driving-shaft 41, and the spur-gear 44 upon the outer end of the shaft 43 meshes with the spur-gear 45, said spur-gear 44 being twice as large as the spur-gear 45, so that when the driving-shaft makes one revolution the clutch-shifting shaft will make one-half of the revolution. The eccentric-shaft 46 is mounted in the bearing-blocks 25 and 33. A connecting-shaft 47 is mounted vertically in the bearing-blocks 36 and 39. Bevel-gears 48 and 49 connect the eccentric-shaft 46 to the connecting-shaft 47, and a bevel-gear 50 connects the shaft 47 to a bevel-gear 51, loosely mounted upon the driving-shaft 41. A counter-shaft 52 is mounted in the bearing-blocks 20 and 27 in line with the driving-shaft 41. A clutch-block 53 is fixed upon the outer end of the shaft 52, there being a bearing-opening 54 in the outer face of said clutch-block to receive the inner end of the driving-shaft 41 and there being a clutch-pin opening 55 in the outer face of said block. The second clutch-block 56 is fixed upon the driving-shaft and the third clutch-block 57 is rigid with the bevel-gear 51. The shifting-bar 58 is slidingly mounted through the second clutch-block 56 in position to move into and out of the opening 55, so as to connect and disconnect the clutch-block 53 and the clutch-block 56. A tooth 59 extends from the third clutch-block 57 in position to engage the sliding bar 58, so as to connect the third clutch-block to the second clutch-block, bevel-teeth 60 and 61 extending outwardly from the sliding bar 58. A support-

ing-bar 62 is mounted upon the frame between the shafts 41 and 43, and the plate 63 is slidingly mounted upon this bar, there being a notch 64 in the front edge of said plate.

5 The plate is mounted by inserting cap-screws 65 through slots 66 into the supporting-plate. A cam-wheel 67 is fixed upon the shaft 43 with its edge extending into the slot 64, and a cam 68 extends from one side of the

10 cam-wheel to throw the plate 63 in one direction, and a similar cam 69 extends from the other side of the wheel to throw the plate in the other direction, said cams 68 and 69 being directly opposite each other. The oppositely-beveled pins 70 and 71 extend from the

15 plate 63 in position to engage the pins 60 and 61, so that when the cam 68 moves the plate 63 to the left the pin 60 will engage the beveled pin 70 and move the bar 58 into the

20 opening 55 and connect the shaft 52 to the driving-shaft 41 and so that when the cam 69 moves the plate 63 in the opposite direction the pin 61 will engage and pass on the opposite sides of the pin 71, move the bar 58 to

25 disconnect the shaft 52, and engage the tooth 59, thereby connecting the eccentric-shaft 46 to the driving-shaft.

The angular bar 72 is connected to the posts 15 and 17, and the angular bar 73 is

30 connected to the posts 16 and 18. The inner bearing-rings 74 and 75 are mounted upon the angular bar 72 and 73, said rings being formed of angle-iron, with the transverse flanges at their outer sides. The outer

35 bearing-rings 76 and 77 are mounted around the inner bearing-rings, there being a continuous series of rollers 78 and 79 between said inner and said outer bearing-rings. The outer bearing-rings are formed of angle-iron,

40 with the transverse flanges at their inner sides, so that the ends of the rollers fit between the transverse flanges of the outer rings and the transverse flanges of the inner rings. A sheet-metal plate 80 connects the

45 inner bearing-rings, said plate being circular to correspond with the form of the rings and there being a discharge-opening 81 through said plate at its upper side and in vertical alinement with its center.

50 The annular webs 82 and 83 are attached to the outer bearing-rings 76 and 77, there being gear-teeth 84 and 85 upon the outer edges of said webs. A series of compression-chambers 86 are formed by arranging the

55 walls 87 and 88 in bars between the webs 82 and 83, said webs being rigidly connected by said walls. Spur-pinions 89 and 90 are mounted upon the shaft 52 in mesh with the teeth 84 and 85, so as to drive the drum containing the compression-chambers, said pinions being proportioned to move the drum the distance from the one compression-chamber to the next at one revolution of the shaft.

60 Pawl-openings 91 are formed through the outer ends of the wall 88 and gravity-pawls 92

are pivotally mounted in said openings. Pawl-openings 93 are formed through the outer ends of the walls 87, and gravity-pawls 92 and 94 consist of wire bent near their centers to form pawl shoulders or teeth, the upper ends of the wires being pivoted and the lower ends of the wires carrying the weights 95 and 96, said weights serving to hold the pawl-shoulders yieldingly in the compression-chambers, so that when the blocks or the like

75 pass downwardly into the compression-chambers the shoulders will swing inwardly and hold the blocks or the like in the compression-chambers. Stops 97 and 98 are inserted in the openings 91 and 93 to limit the outward motion of the pawls. The beveled

80 cams 99 extend outwardly from the walls 87.

The angle-bars 72 and 73 extend to the left and the outer ends of said bars are connected by a brace 100, there being a bearing 101 at

85 the center of said brace through which the shaft 47 extends. A pair of Z-bars 102 is secured to the outer face of the web 32 in vertical parallel positions, and a similar pair of Z-bars 103 is secured to the outer face of the

90 web 24. A sliding frame 104 is mounted in the way formed by Z-bars 102, and a similar frame 105 is mounted in the way formed by the Z-bars 103. Eccentric openings 106 and 107 are formed through the upper ends of the

95 frames 104 and 105, and eccentrics 108 and 109 are fixed upon the shaft 46 to operate in the openings 106 and 107, so as to reciprocate the frames 104 and 105 up and down as the shaft 46 rotates.

100

A reciprocating table 110 is mounted through the opening 111 in the compression-chamber drum, and connecting-rods 112 connect one end of the table to the frame 104 and similar rods 113 connect the other end of

105 the table to the frame 105, so that as the shaft 46 rotates the table 110 will move up and down. Guide-bars 114 are mounted upon the table 110, and the discharge-plunger 115 is mounted between the guide-bars to

110 slide to and fro endwise. Ears 116 extend from the end of the plunger, and a connecting-rod 117 extends from the ears.

Guide-bars 118 are secured to the inner face of the web 32. Similar guide-bars 119

115 are secured to the inner face of the web 24, and the compression-plunger 120 is mounted to slide vertically in the way formed by the guide-bars 118 at one end and the guide-bars 119 at the other end. An eccentric 121 is

120 mounted upon the shaft 46. An eccentric-ring 122 is mounted upon the eccentric. A block 123 extends longitudinally both ways from the lower side of the eccentric-ring, and the rods 124 connect the block 123 to the plunger 120, so that as the shaft 46 rotates the compression-plunger 120 will slide up and down.

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The bell-crank levers 125 and 126 are pivotally connected to the vertical flanges of the

130

angle-bars 72 and 73 and extend upwardly through slots in the flanges. The lower ends of the levers are connected by a bar 127, and a rod 128 connects the bar to the eccentric-ring 129 upon the eccentric 130, fixed upon the shaft 52, so that as the shaft 52 rotates the bell-crank levers are operated. A crank-shaft rod 131 connects the upper ends of the bell-crank levers 125 and 126, and the rod 117 is connected to the center of this rod 131, so that the discharging-plunger 115 is reciprocated when the shaft 52 rotates.

The parting-plates comprise a central body 132 of sheet metal and embossed dies 133 and 134 upon the central body. The dies 133 are embossed to make lines 135 for dividing the plug of tobacco crosswise into five or ten cent cuts, and marks 136 to indicate the location of the brand for distinguishing the tobacco. The dies 134 have embossed lines 137 and brand-marks 138. The die 133 makes its impression upon one side of the plug, and the die 134 makes its impression upon the other side of the same plug. The channel-bars 139 and 140 are mounted upon the inner faces of the webs 32 and 24 to form a reservoir to receive a stock of the parting-plates, the lower ends of said channel-bars being closed by the stops 141 and there being a discharge-opening 142 above each stop, and said channel-bars are located so that as the compression-chamber drum rotates a cam 99 will engage the bottom one of the parting-plates, and move it out of the reservoir through the slot 142, as shown in Fig. 11. The channel-bars 143 and 144 are mounted upon the inner faces of the posts 15 and 17 behind the channel-bars 139 and 140 to form a magazine to receive a supply of the soft tobacco blocks.

A plate 145 has ears 146 at its ends, and said ears are pivotally connected to the posts 15 and 17, so that the plate may rock back and forth below the discharge end of the tobacco-magazine. Bell-crank levers 147 are pivotally mounted upon the inner faces of the webs 24 and 32, the upper ends of said levers engaging in openings in the plunger 120, and connecting-rods 148 connect the lower ends of the bell-crank levers to the plate 145, so that as the plunger 120 moves up and down the plate 145 is operated to feed the tobacco blocks one at a time to the compression-chamber.

The tobacco-magazine is filled with soft plugs of tobacco, said plugs being supported in the magazine by the plate 145. As previously stated, the plate 145 is pivotally mounted to rock back and forth below the discharge end of the tobacco-magazine; but the soft plugs of tobacco are normally supported in the tobacco-magazine by the said plate 145 and cannot make their exit until said plate has been rocked. The parting-plate reservoir is filled with parting-plates, and each

of the compression-chambers is filled with wooden blocks, each block being of the thickness of a compressed tobacco plug and parting-plate. These blocks are laid one upon the other to a height permitting the top of the outermost block to be held in position under the gravity-pawls 92. The drum is placed in operation and during the elevation of the plunger 120 a soft tobacco plug is permitted to fall within the compression-chamber located immediately below the tobacco-magazine. As the drum is advanced one step forward the beveled cam 99 comes in contact with the edge of the lowest parting-plate and discharges the same through the passages 142 formed in the lower end of the reservoir, and said plate is permitted to lodge upon the top of the tobacco plug in the compression-chamber. At this juncture one of the compression-chambers is immediately under the plunger 120. The plunger then begins to lower and comes in contact with the parting-plate upon the tobacco plug and presses the same downwardly, together with all of the wooden blocks. At this period the table 110 rises and the lowest block in the compression-chamber is permitted to pass within the discharge-plunger 115 and remain therein. The table 110 is then lowered and the plunger 120 elevated. The discharge-plunger 115 is then advanced upon the table and discharges the wooden blocks located therein. The remainder of the wooden blocks, together with the compressed tobacco plug, remain within the compression-chamber. This operation is repeated until all of the compression-chambers are filled with tobacco and all the wooden blocks discharged in the manner mentioned. After each of the compression-chambers has been filled with tobacco the plugs which were first installed will have had sufficient time to dry sufficiently to retain their form. As the machine continues in operation the lower tobacco plug is discharged in the same manner as the wooden blocks. The wooden blocks and tobacco plugs are retained in position between the walls of the compression-chamber by friction, the upper cake being held in position by means of the gravity-pawls, and as each compression-chamber passes over the discharge-opening 87 the innermost block or plug is prevented from becoming discharged from the compression-chamber by means of the sheet-metal plate 80.

I claim—

1. In a tobacco-press, a drum formed with opposite webs having gear-teeth on their peripheries, and walls between said webs forming a plurality of radial compression-chambers adapted to retain the compressed tobacco blocks, and means for moving said drum step by step.

2. In a tobacco-press, a drum formed with opposite webs having gear-teeth on their pe-

ripheries and walls between said webs forming a series of radial compression-chambers, means for moving the compression-chambers step by step, and means for inserting and
5 compressing the block and discharging a previously-formed block at each step.

3. In a tobacco-press: a drum rotatably mounted and having a central opening longitudinally of its axis; and having a series of
10 compression-chambers arranged radially; means for inserting the tobacco plugs into the outer ends of the compression-chambers; and means for discharging the tobacco plugs from the inner ends of the compression-cham-
15 bers successively.

4. In a tobacco-press: a series of compression-chambers; a magazine for the soft tobacco; a reservoir for the parting-plates; parting-plates in the reservoir; a reciprocating plunger; means for feeding the soft tobacco plugs to the compression-chambers successively; means for feeding the parting-plates to the compression-chambers; means
20 for operating the plunger in the compression-chambers; and means for discharging the compressed tobacco and parting-plates from the compression-chambers.

5. In a tobacco-press: a drum having a central opening longitudinally of its axis and
30 rotatably mounted; and having compression-chambers arranged radially; said chambers being open at their outer and inner ends; a plunger mounted and operated to pass into said compression-chambers successively; a
35 discharging-table mounted in opposition to the plunger; means for operating the drum step by step to move the compression-chambers successively; means for feeding tobacco to the compression-chambers; and means for
40 feeding parting-plates to the compression-chambers.

6. In a tobacco-press: a drum having a central opening longitudinally of its axis and rotatably mounted and having compression-
45 chambers arranged radially; said chambers

being open at their outer and inner ends; and said chambers being adapted to receive and retain a plurality of tobacco plugs under compression; a plunger mounted and operated to pass into said compression-chambers successively; a discharging-table mounted in opposition to the plunger; means for operating the drum step by step to move the compression-chambers successively into opposition to the plunger; means for feeding the tobacco to the
50 compression-chamber; and means for feeding parting-plates to the compression-chamber; so that a new plug of tobacco will be inserted into the compression-chamber and the oldest plug discharged at each operation of the
55 plunger.

7. In a tobacco-press: a drum having a central opening longitudinally of its axis and rotatably mounted; and having compression-chambers arranged radially; said chambers
60 being open at their outer and inner ends; a series of blocks for initially filling said compression-chambers; a plunger mounted and operated to pass into the compression-chambers successively; a discharging-table mounted
65 in opposition to the plunger; and means for operating the drum step by step to move the compression-chambers successively into opposition to the plunger; means for feeding tobacco to the compression-chamber; and
70 means for feeding parting-plates to the compression-chamber; so that as the compression-chambers are filled with tobacco, the blocks of wood are discharged and so that as the machine continues to operate, a new plug of tobacco is placed in the compression-chamber and the oldest plug discharged at each operation of the plunger.

In testimony whereof I have signed my name to this specification in presence of two
85 subscribing witnesses.

FRANK A. BONROE.

Witnesses:

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JOHN C. HIGDON.