

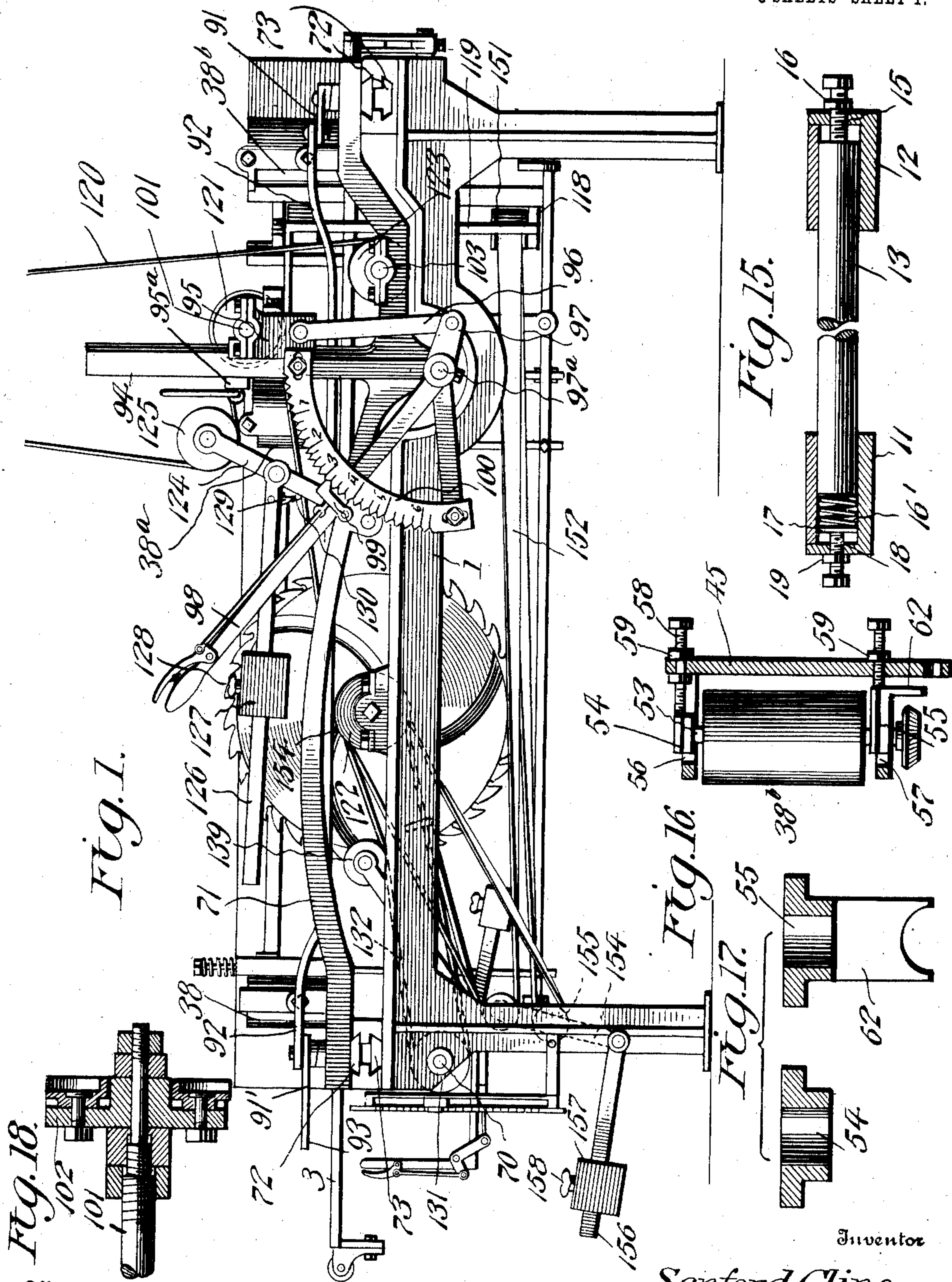
No. 864,612.

PATENTED AUG. 27, 1907.

S. CLINE.
PLANING AND MATCHING MACHINE.

APPLICATION FILED SEPT. 21, 1906.

8 SHEETS—SHEET 1.



Witnesses
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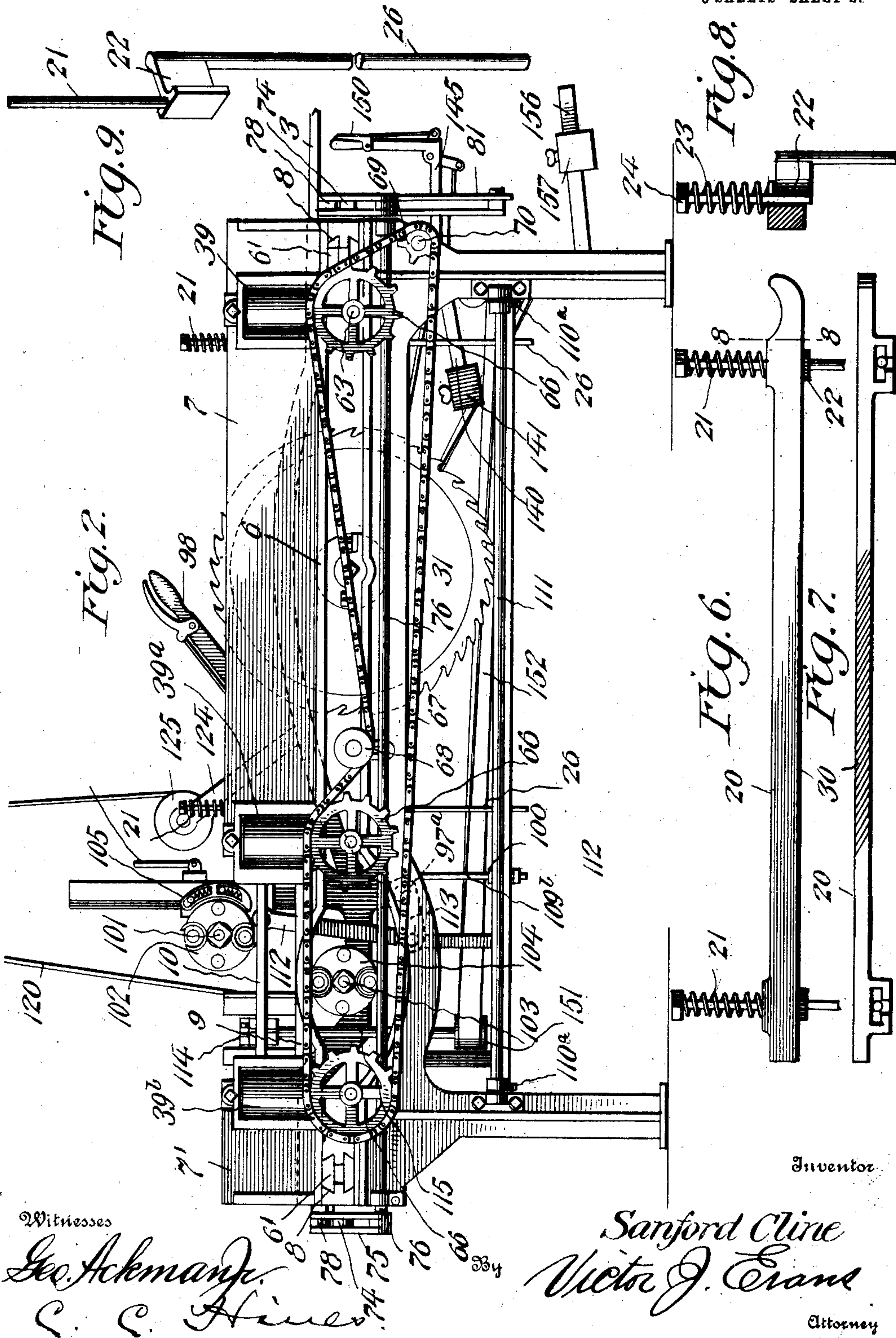
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8 SHEETS—SHEET 2.



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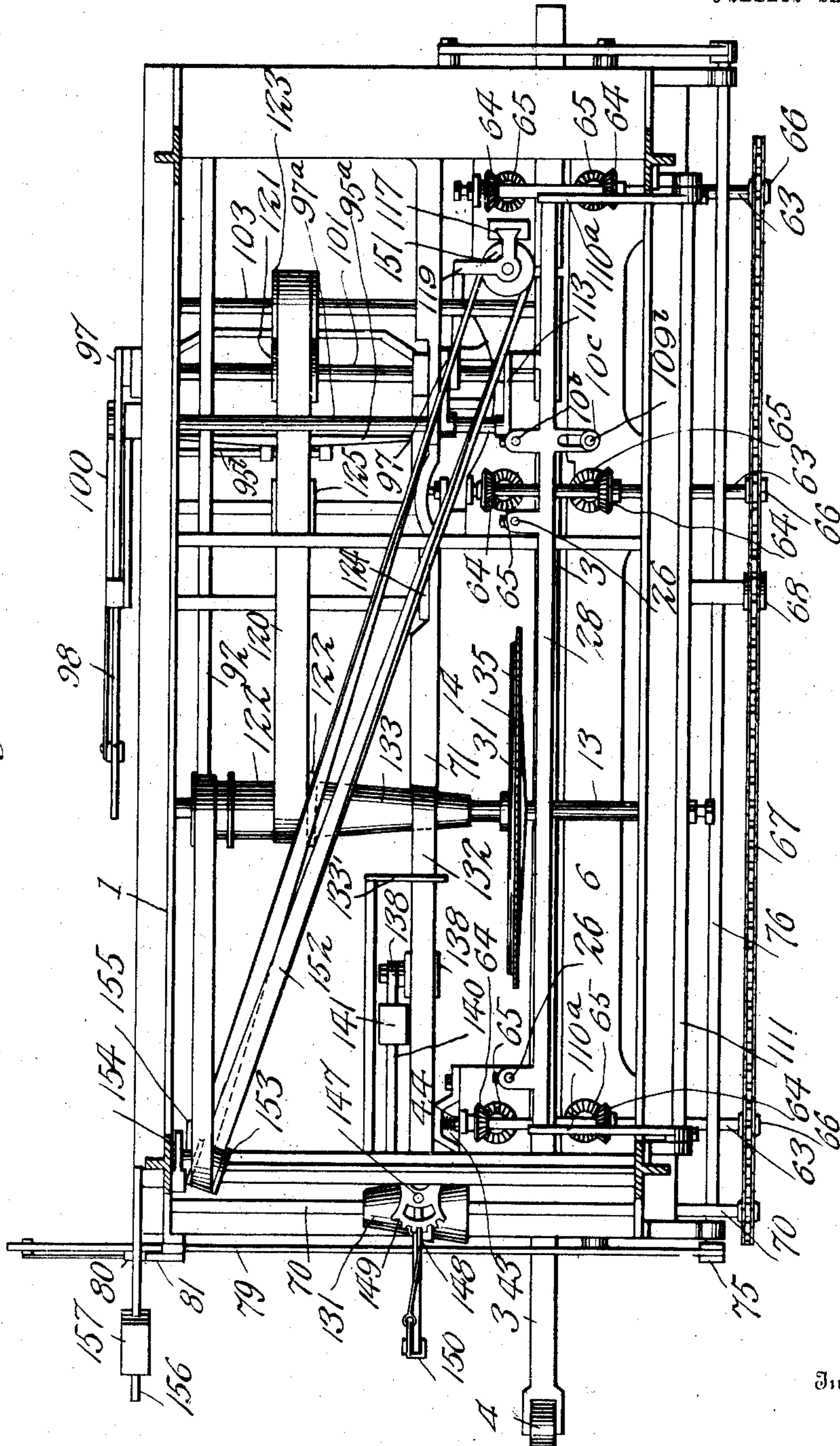
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Fig. 3a.



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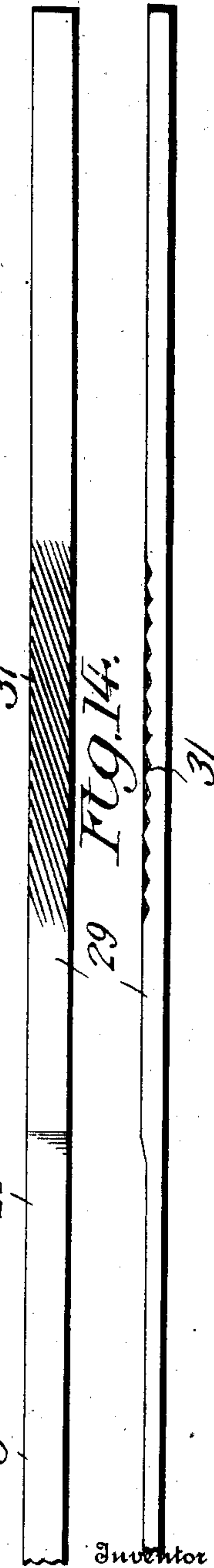
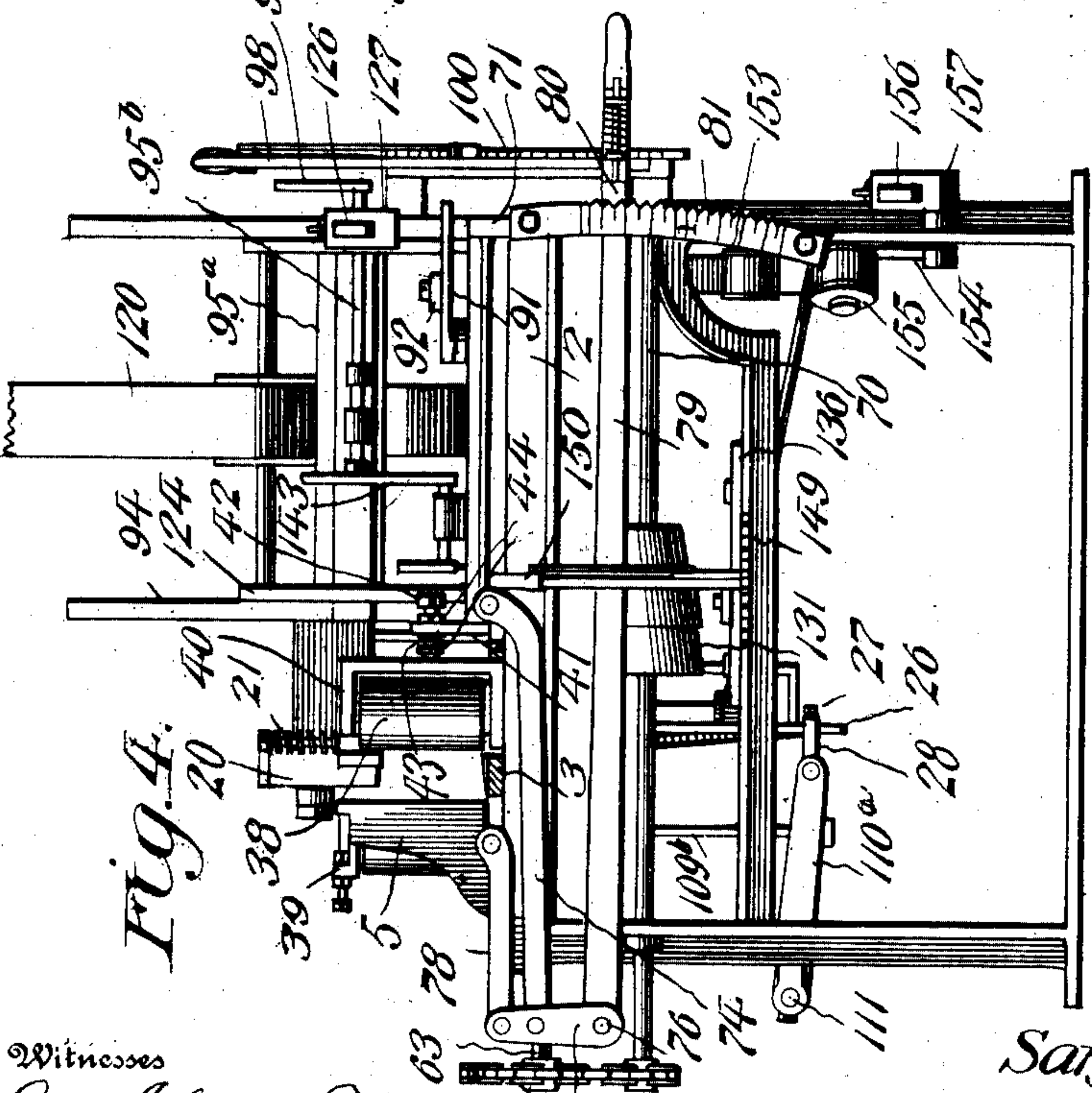
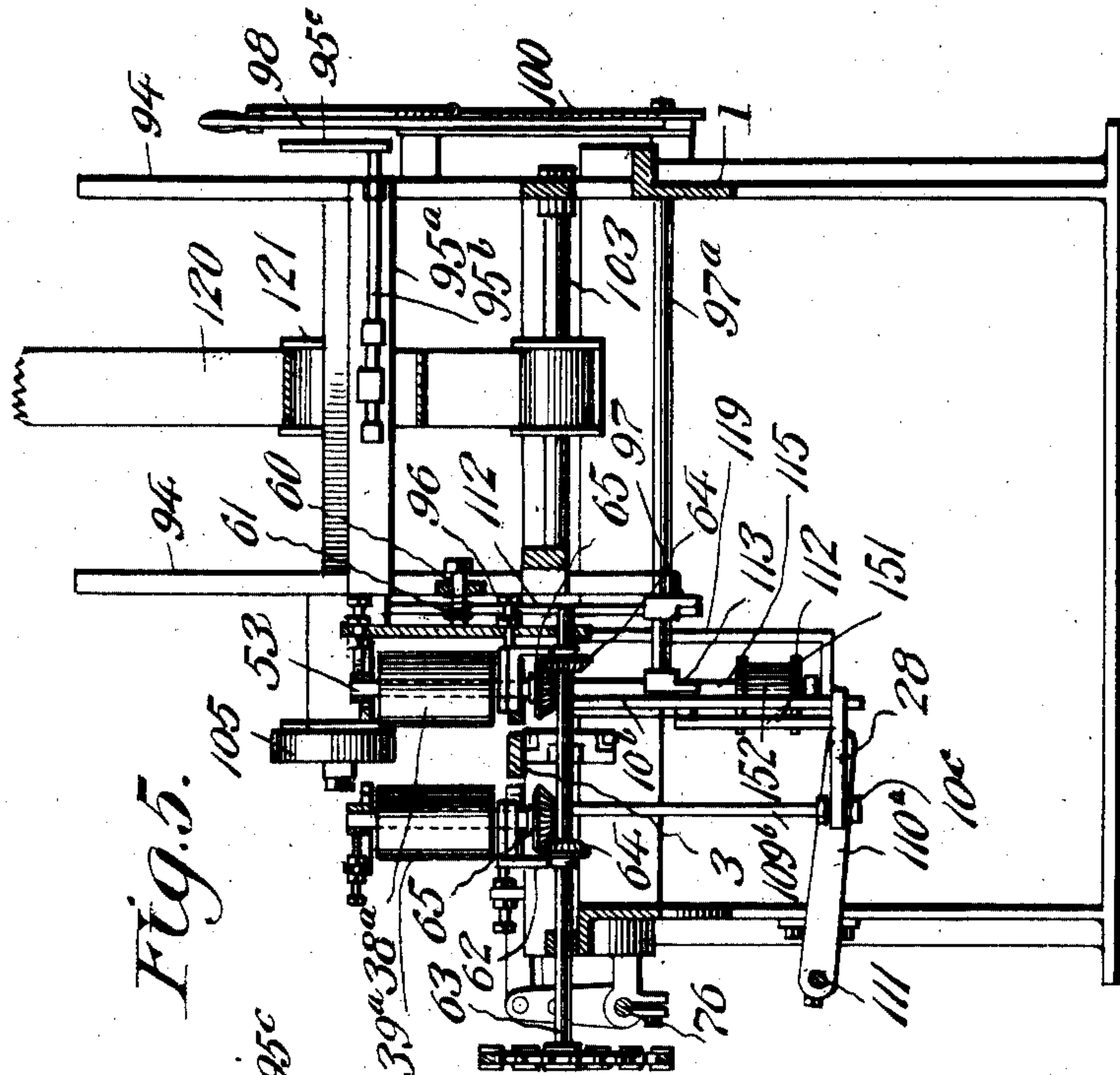
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8 SHEETS—SHEET 5.



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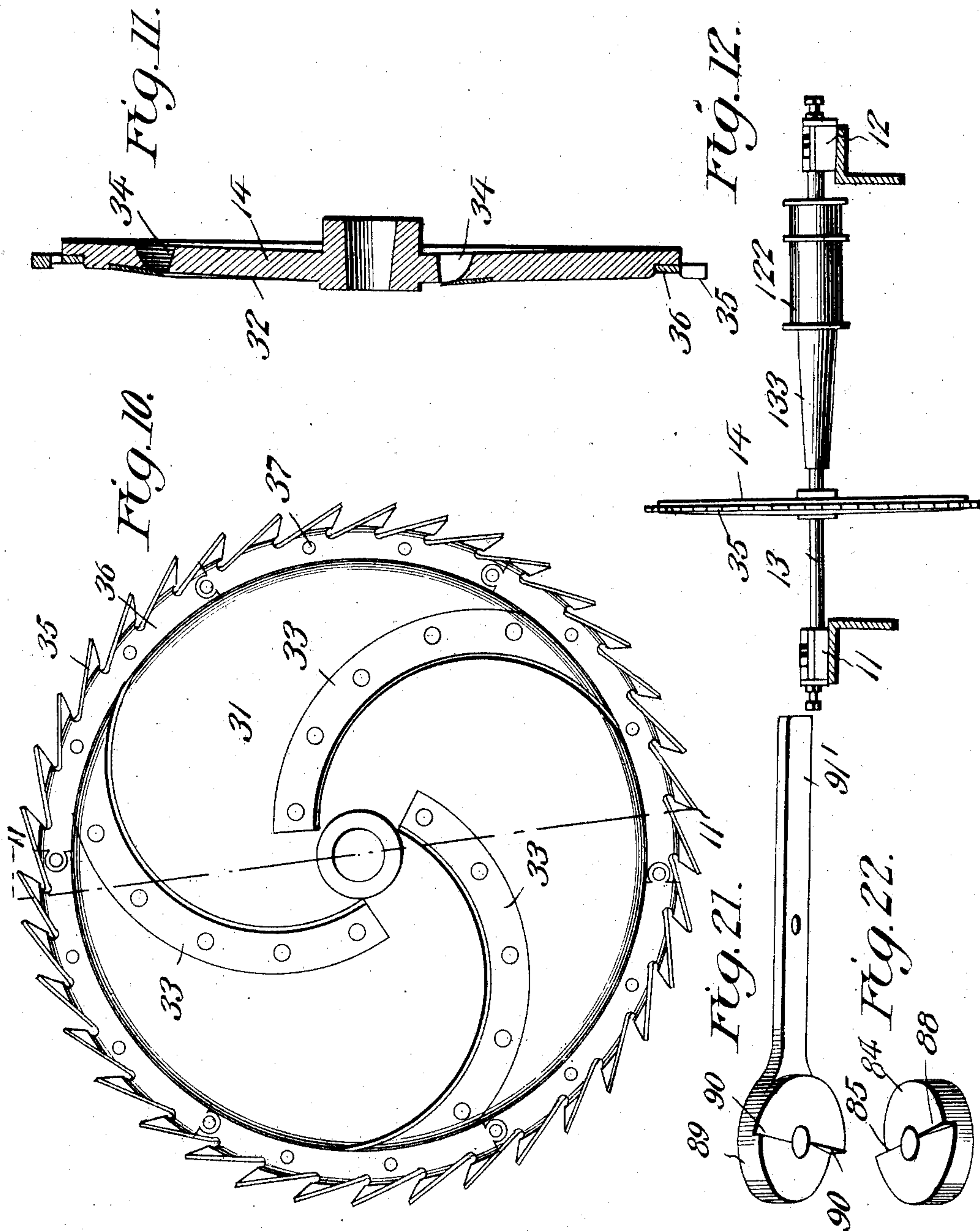
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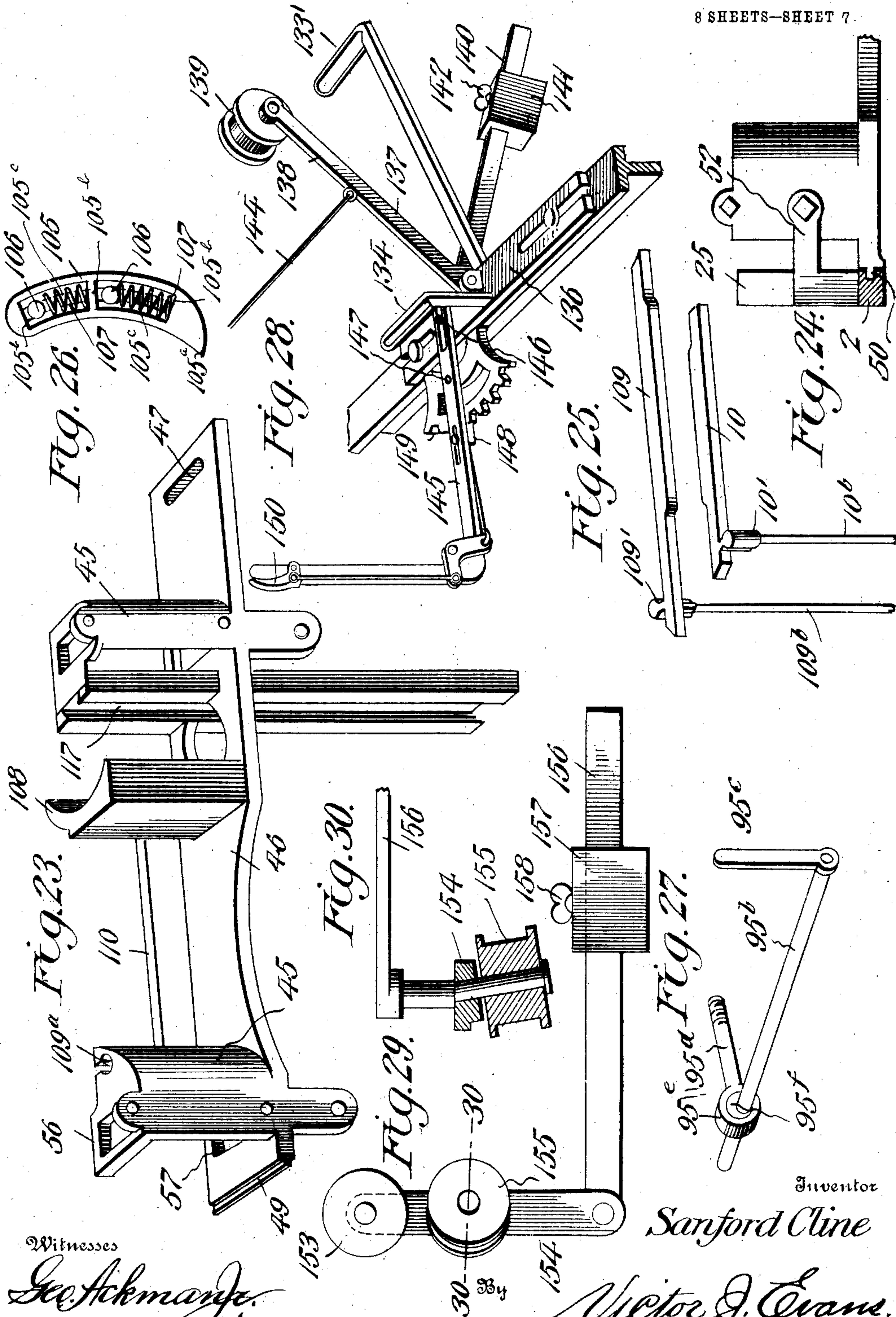
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8 SHEETS—SHEET 7.



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UNITED STATES PATENT OFFICE.

SANFORD CLINE, OF HENRY, NORTH CAROLINA.

PLANING AND MATCHING MACHINE.

No. 864,612.

Specification of Letters Patent.

Patented Aug. 27, 1907.

Application filed September 21, 1905. Serial No. 279,471.

To all whom it may concern:

Be it known that I, SANFORD CLINE, a citizen of the United States, residing at Henry, in the county of Lincoln and State of North Carolina, have invented new and useful Improvements in Planing and Matching Machines, of which the following is a specification.

The invention relates to a planing and matching machine for simultaneously smooth surfacing or finishing the faces and tonguing and grooving the edges of boards for flooring, ceiling and the like, and also beading the boards when required.

The main object of the invention is the provision of a machine of this character wherein the parts are adjustable to set the cutting elements to operate upon boards of different thicknesses and widths.

Another object is to effect the adjustment of the cutting means in such manner that the matchers will be quickly and accurately set to properly cut the tongues and grooves in pieces of boards of any thickness and of the standard widths established for the different thicknesses.

Another object is to effect the feed of the boards in the most effective manner to position them for an accurate action of the cutters thereon.

Another object is to provide an improved construction of facing cutter which will operate with the least resistance and maximum efficiency to smoothly finish the faces of the boards.

Another object is to provide novel driving mechanism for the working parts embodying belts and effective means for automatically taking up all slack therein.

Another object is to provide means for permitting the working parts to yield when occasion requires to accommodate slight variations of surface in the work and to automatically adjust said parts to compensate for wear.

The invention further has for its object to generally simplify and improve the construction and increase the practical efficiency of machines of this character, and to this end consists of the features of construction, combination and arrangement of parts hereinafter described and claimed, reference being had to the accompanying drawings, in which:—

Figure 1 is an elevational view looking toward one side of the machine, Fig. 2 is a similar view looking toward the opposite side of the machine, Fig. 3 is a top plan view of the machine, Fig. 3^a is a bottom plan view of the machine, the supporting legs appearing in section, Fig. 4 is a front elevation thereof, Fig. 5 is a vertical cross section taken on the line 5—5 of Fig. 3, Fig. 6 is a side elevation of the presser bar or work clamp, Fig. 7 is a bottom plan view of the same, Fig. 8 is a section on line 8—8 of Fig. 6, Fig. 9 is a perspective view of one of the guide and adjusting members for the presser bar or work clamp, Fig. 10 is a front view of the facing cutter head, Fig. 11 is a sectional view thereof taken on line 11—11 of Fig. 10, Fig. 12 is an edge

view of the facing cutter head and a side view of its shaft and the bearings thereof, Figs. 13 and 14 are respectively a top plan and an edge view of the bottom rest, Fig. 15 is a view of the shaft of the facing cutter head and a sectional view of its bearings, showing the manner of mounting the shaft therein, Fig. 16 is a section through the guide carriage, showing the manner of adjustably mounting one of the outer feed rolls thereon, Fig. 17 shows in vertical section the upper and lower adjustable bearings of said roll, Fig. 18 is a section through one of the matching cutter heads, Fig. 19 is a detail plan view of the connecting bar, whereby motion is communicated from the adjusting mechanism of the frame of the tonguing cutter and chip breaker to raise and lower the presser bar and auxiliary guide bars, Fig. 20 is a cross section taken substantially on the line 20—20 of Fig. 3, showing the cam mechanism for locking the forward end of the laterally shifting carriage from movement, Figs. 21 and 22 are detail views of the parts of one of the cam locking devices, Fig. 23 is a detail view of the sliding bracket plate carrying the two rear or inner feed rolls and the adjustable beader, Fig. 24 is a section through the table and a rear elevation of one end of said bracket plate, showing the mode of slidably connecting it with the table, Fig. 25 shows in detail the two auxiliary guide bars and stems for adjusting the same, Fig. 26 is a detail view of the chip breaker, Fig. 27 is a similar view of the device for actuating the clamp of the vertically movable carriage carrying the adjustable matcher and chip breaker, Fig. 28 is a perspective view of the tightener and shifter cooperating with the drive belt operating the feed rolls, Fig. 29 is a detail view of the beader drive belt tightener, Fig. 30 is a section on line 30—30 of Fig. 29, Fig. 31 is a perspective view of the drive-belt of the cutter-head and beader-shafts and the coacting belt-tightener, Fig. 32 is a detail cross-section showing the arrangement of the sets of relatively fixed and adjustable guide-bars at opposite sides of the rest-bar adjacent the matching-cutters.

Referring now more particularly to the drawings, the numeral 1 designates a supporting frame, of suitable form and size, and carrying a table 2 of skeleton form and of proper construction to receive and support the operating parts.

Extending longitudinally across the table from front to rear of the machine is a bar or strip 3, serving as a rest for the board to be treated, and on which the board is rested edgewise for feed to and past the cutting devices. This rest bar 3 is provided at its forward end with a roller 4 to facilitate the feed of the board and extends longitudinally between a laterally movable guide carriage 5 and the sets of cutting devices. The guide carriage 5 comprises a base 6 having at each end a dovetailed slide 6' operating in a transverse dovetailed guideway 8, whereby it is adapted to be moved

toward and from the rest bar 3. At its inner end the base 6 carries a vertical guide board 7 against which the outer rear face of the board bears as it is fed through the machine. This board 7 extends from the forward or feeding-in end of the machine to a point past the roughing and smoothing cutter head, hereinafter described, and is disposed in alinement with a short guide board 7' arranged at the delivery end. Between the guide boards 7 and 7' the base 6 carries a fixed guide bar 9 and a vertically adjustable guide bar 10, adjusted in the manner hereinafter described.

Journalled in bearings 11 and 12 on the frame is a transverse shaft 13 on which is fixed a rotary cutter head 14 which dresses the face of the board to be tongued and grooved. This cutter head is arranged opposite the guide board 7 and adjacent the inner edge of the rest bar 3 and is adjustable toward and from said bar to meet varying conditions of service. To this end, the bearings 11 and 12 are made in the form of boxes receiving the ends of the shaft 13, the rear end of the shaft being arranged to abut against an adjusting screw 15 carrying a check nut 16, whereby the shaft may be held against rearward movement under the pressure of the treated board. The forward end of the shaft bears against a coiled resistance spring 16' arranged in the bearing 11. This spring bears at its outer end against a slidable head 17 adjustable through the medium of a set screw 18 carrying a check nut 19, whereby the resistance of the spring may be varied. It will thus be seen that the shaft 13 may be adjusted in either direction to set the cutter head with nicety and accuracy for fineness of action on the work and that the spring 16' will hold the shaft 13 from endwise movement in one direction while the screw 17 holds it from similar movement in the opposite direction while the cutter is in action. The function of the spring 16' is, by exerting a determined resistance, to prevent too free and sudden forward movement of the shaft 13 in adjusting the cutter head toward the work. It also serves to automatically feed the shaft 13 backward in adjusting the cutter head in a direction away from the work when the set screw 15 is relaxed, thus relieving the operator of the work of manually adjusting the cutter head in this direction.

Arranged in advance of the working face of the cutter head is a clamping or presser bar 20 adapted to bear upon the upper edge of the board, which rests at its lower edge on the rest bar 3. This clamping bar 20 is provided at its ends with openings for the passage of guide stems 21 on which it is slidably mounted, said stems being connected at their lower ends to guide heads or webs 22 which limit the downward movement of said bar. A spiral spring 23 surrounds each stem 21 between the bar and a head 24 on the upper end of the stem, thus permitting the bar to accommodate itself to different widths of boards and to yieldingly hold the same down against the rest bar 3. The heads or webs 22 are vertically movable in guides 25 fixed to the table and are attached to rods 26 projecting through said guides below the table, said rods being connected at their lower ends by set screws 27 to a connecting bar 28 adapted to be operated, as hereinafter described, to raise and lower the clamping bar to suit different widths of boards to be operated upon. In order to hold the work firmly against the guide 7,

the rest bar 3 is provided with a beveled surface 29 which tends to force the work toward the board 7, and the lower edge of the clamping bar 20 and upper surface of the rest bar 3 are respectively provided with diagonally corrugated or fluted surfaces 30 and 31 extending toward the board 7 in the direction of movement of the work so as to cause the latter to be forced outward against said board 7 and to thereby move in a true path while it is being acted upon by the cutters.

The cutter head 14 comprises a circular disk having a hub keyed or otherwise fixed to the shaft 13 and provided with a working face which is beveled outwardly or toward its rim portion from said hub, as indicated at 32. This working face carries a series of curved or segmental cutter blades 33 seated in recesses therein and extending from a point adjacent the hub outwardly toward and terminating adjacent to the rim of the wheel. The cutting edges of the blades are located over slots 34 through which the cuttings discharge and project slightly outward beyond the beveled face of the wheel to act upon the surface of the work. The rim of the disk carries a circumferential series of cutting blades 35 which serve to remove all roughness and irregularities from the surface of the work and smooth the same off to the approximate finish, the smoothing or dressing action being performed by the cutter blades 33. The cutters 35 may be integrally formed upon the rim and the latter formed of a single section fixed to the wheel, but it is preferred to make the rim of a series of segmental sections 36 detachably fastened to the disk by bolts or other suitable fastenings 37, whereby should any of the cutters 35 become injured or break, the rim section carrying the same may be readily removed and a new rim section substituted therefor. The object in beveling the face of the cutter head 14 and employing the curved cutting blades 33 is to secure a draw cut and prevent the cutting knives from cutting across the grain of the wood and leaving a rough or unfinished surface. The shaft 13 inclines downwardly from the bearing 12 to the bearing 11 to cause that portion of the beveled face 32 which is above the center of the head in the direction of rotation thereof to lie parallel with the surface of the work. Thus that portion of the board or piece of work which lies opposite the upper portion of the cutter wheel will be disposed in parallel relation therewith, while the other portions of the beveled face 32 will incline rearwardly from the board, so that each cutter 33 will act upon the board at the highest point in the plane of rotation of the wheel and will exert a draw cut thereon or a planing action in the direction of the grain of the board, thus finishing the same off to a smooth surface. This construction, therefore, effectively obviates the objections to cutter heads of ordinary construction which fail to give the smooth finishing action desired.

The work is fed through the machine by sets of feed rolls 38, 38^a and 38^b and 39, 39^a and 39^b respectively arranged upon the frame and guide carriage 5 on opposite sides of the rest bar 3. The feed roll 38 is located opposite the feed roll 39 and is journalled in a bearing bracket 40 connected with the yoke 41 by an adjusting screw 42. A buffer spring 43 surrounds said screw between the yoke and bracket and permits the feed roll to have yielding movement to compensate

for different thicknesses of boards. The screw is slidably mounted in the yoke and is limited in movement by check nuts 44 disposed in front and rear of the yoke. Feed rolls 38 and 38^b are arranged opposite 5 feed rolls 39^a and 39^b near the delivery end of the machine and are adapted to feed the work through at that point. The rolls 38^a and 38^b are mounted in suitable housings 45 upon a bracket plate 46, provided at its rear end with a transverse slot 47 slidably connected 10 with the table 2 by a bolt 48, while the forward end of the bracket plate is formed with a tongue 49 slidably engaging a groove formed in the table. Projecting upward from the table is a short post or standard 51 forming part of the rear guide 25 and provided with an arm 15 52 projecting in rear of the feed roll 38^a. Each roll 38^a and 38^b is mounted on a shaft 53 journaled at its upper end in a bearing 54 and at its lower end in a bearing 55 slidable in slots 56 and 57 respectively formed in the upper wall of the housing 45 and bracket 20 plate 46. Engaging each bearing is a set screw 58, whereby the rolls may be adjusted, said screws being locked in adjusted position by check nuts 59. Fixed to each housing 45 is a guide pin or screw 60 slidably engaging a part of the frame, and between which and the housing 25 is a buffer spring 61, the two buffer springs permitting the rolls and bracket plate to yield to prevent injury in the event of any foreign particles coming between the same and the face of the work. The feed rolls 39, 39^a and 39^b are mounted upon the guide 5 in 30 the same manner that the rolls 38^a and 38^b are mounted upon the bracket plate 46, and the lower bearing of each of the aforesaid rolls is provided with a downward extension 62. Journaled in bearings upon the frame below the table are three transverse shafts 63 35 which extend below the opposite feed rolls of each set, and on each of said shafts two beveled gears 64 are mounted and mesh with gears 65 on the shafts of the rolls to impart motion to said rolls. All the gears 64 are feathered to slide upon their respective shafts and 40 are engaged by the said projections 62 of the gears driven thereby to adapt said driving gears 64 to slide on their shafts to maintain them in mesh with the gear 65 as the rolls are adjusted. The shafts 63 are provided with sprocket wheels 66 around which passes an 45 endless driving chain 67, which also engages a suitable adjustable tightener 68. This chain receives motion from a sprocket pinion 69 on a drive shaft 70 journaled upon the forward portion of the frame.

Arranged upon the frame behind the rolls 38, 38^a and 50 38^b is a laterally movable supporting carriage 71 provided at its ends with dovetailed guides 72 engaging dovetailed guideways 73 formed in the table or suitable guide blocks secured thereto. This carriage is connected at each of its ends by a link 74 with a crank 55 arm 75 fixed at its lower end to the adjacent end of a rock shaft 76 journaled in bearings 77 on the frame beyond the guide carriage 5, which latter is also connected at each end to each of the crank arms 75 by a link 78. A lever 79 is connected at one end to the rock 60 shaft 76 by which said shaft may be oscillated to transmit motion to the links to laterally shift the two carriages and thereby adjust the guides 7, 9 and 10 and the upper matching cutter, hereinafter described, toward and from each other to position them for oper- 65 ating upon different thicknesses of work and to dis-

pose the matching cutter accordingly. The links 74 and 78 are so connected with the crank arms 75 that the carriage 71 will have an adjustment approximately two-thirds as great as that of the guide carriage 5, so that the matching cutters will have the proper ratio 70 of movement to form the tongues and grooves according to established rules regarding widths and positions between front and rear faces of the work. The lever 79 carries a spring actuated dog 80 to engage a rack 81 fixed to the frame, the face of which rack is 75 preferably sealed to form a gage to indicate the proper extent of movement of the lever for different thicknesses of work. In order to securely hold the carriages against possible movement after the parts have been adjusted, clamping mechanism is provided for 80 locking the carriage 71. Each end of the carriage 71 carries a bolt 82 having its headed end adjustable in the slots 83 in the table 2 and its head bridging across said slot and bearing against the underside of the table. The threaded portion of the shank of the bolt projects 85 above the end of the carriage 71 and receives a nut 84 having a cam face formed at its opposite sides with abutting shoulders 85. A locking head 89 is formed with a matching cam face having abutting shoulders 90 and is revolubly mounted upon the upper end of the 90 bolt and retained in position thereon by a nut 91. The cam faces of the nut and head are in opposing relation and the construction is such that when the head is turned in one direction one of the shoulders thereon will engage one of the shoulders of the nut and turn 95 the nut to tighten up the bolt and clamp the carriage, while upon a reverse movement of the head the other set of shoulders will engage and relax the nut, thus permitting the carriage to be adjusted. Each head 89 is provided with a lever arm 91', the two lever arms be- 100 ing connected by a link 92. One of the lever arms is longer than the other to project beyond the link and form an operating handle 93. By manipulating this handle the two clamping devices may be simultaneously operated to clamp or release the carriage 71, as 105 will be readily understood.

The frame 71 is provided at its rear end with posts 94 forming guides for a vertically adjustable frame or carriage 95 having guide members engaging the same, said carriage 95 being connected at each side by a link 110 96 with a crank 97 connected with a rock shaft 97^a operated by a lever 98, whereby said carriage may be vertically adjusted. The lever carries a pawl 99 to engage a rack 100 fixed to the main frame 1, whereby the carriage may be firmly locked in adjusted position. The 115 degree of adjustment of the carriage may be ascertained and controlled by providing the face of the rack with a suitable scale. Journaled on said carriage 95 is a transverse shaft 101 carrying at its inner end a matcher head 102 projecting over the rest bar 3 opposite the fixed and adjustable guides 9 and 10 and adapted to operate upon the upper edge of the work to form the tongue thereon. By the vertical adjustment of the carriage this cutter head may be raised or lowered to operate upon different thicknesses of boards, and 125 by lateral adjustment of the carriage 71 said cutter head may be regulated to form the tongue in accordance with the thickness of the board. The carriage 95 carries a clamping bar 95^a to engage the guides 94, and upon this clamping bar is journaled a rod 95^b pro- 130

vided at its outer end with an actuating crank handle 95^c. Extending loosely through the clamping bar is a stem 95^d threaded for the reception of nuts to fix it to the carriage and having at its outer end an eye 95^e which receives a cam or eccentric 95^f carried by the rod. Through the action of this eccentric the clamp will be adjusted toward and from the guides 94 to clamp the carriage 95 thereto or release it therefrom, as will be readily understood. Below and in rear of the shaft 101 a shaft 103 is journaled upon the carriage 71 and carries the cooperating grooving matching head 104 which operates through an opening formed in the rest bar 3 on the lower edge of the work supported thereby and fed therealong by the feed rolls.

A chip breaker 105 of segmental form and provided at its lower end with an acting point 105^a is arranged alongside the tonguing cutter head 102 and is formed in one side with recesses, the end and intermediate division walls of which provide shoulders 105^b. Segmental slots 105^c communicate with the recesses and receive guide pins 106, which guide pins slidably mount the breaker upon the carriage 95. A spring 107 is arranged within each recess, the upper spring being arranged to terminally bear against the upper guide pin 106 and the intermediate or partition shoulder 105^b, while the lower spring terminally bears against the lower guide pin 106 and the lower terminal shoulder 105^b. The springs tend to yieldingly hold the chip breaker down against the work, its downward movement being limited by engagement of the upper and lower guide pins with the upper and intermediate shoulders 105^b. The springs allow the chip breaker to have yielding movement in a vertical direction in an obvious manner, and by the described construction and arrangement of the duplicate guide slots, guide pins and springs the chip breaker is guided and supported to allow it to have free vertical movement without tendency of the springs to bind therein. The construction possesses advantages over one employing a single spring, for the reason that a spring of any considerable length extending in an arc would tend to bind against the walls of the recess in which it is mounted, thus preventing free action of the breaker.

The cutter head 102 projects into the path of movement of the work through the space between the housing 45 of the feed roll 38^a and a housing or shield 108 carried by the bracket 46 and above a sliding guide bar 109 disposed above a relatively fixed guide bar 110, which guide bars 109 and 110 are carried by the bracket 46 and disposed opposite the movable and fixed guide bars 10 and 9 at the outer or opposite side of the rest bar 3 and serve as guide members for guiding the work when it passes beyond the guide board 7 and clamp 20 and is being acted upon by the matching cutter heads. The guide bar 110 is rigid with the bracket 46 for adjustment toward and from the rest bar 3, but is inadjustable laterally, while the guide bars 10 and 109 are adjustable vertically with the clamping bar 20 and tonguing cutter 102 and to this end are provided respectively with guide heads 10^f and 109^f slidable in guides 10^a and 109^a in the housings of the feed rolls 39^a and 38^a and connected to guide rods 10^b and 109^b which are attached at their lower ends to the connecting bar 28, the rod 10^b being slidably mounted in a slotted offset 28^a from said bar to permit it to be

laterally adjusted with the guide frame 5 and retained in connection therewith by nuts 10^c, while the rod 109^b projects through an opening in the connecting bar and is fixed thereto by a set screw 109^c. The bar 28 is attached to crank arms 110 fixed to a crank shaft 111 journaled on the frame, and receives motion from the carriage 95 through the medium of a crank arm 112 fixed thereto and pivoted to a crank arm 113 fixed to the shaft 97^a.

It will be understood from the foregoing description that the bars 9 and 10 bridge the space between the guides 7 and 7', while the bars 109 and 110 cooperate therewith to firmly support the work while it is being acted upon by the matching cutter, the said sets of bars holding the work from lateral deflection in either direction.

The housing 108 partially incloses a rotary beader 114 mounted upon a vertical shaft 115 having its upper bearing 116 slidably fitted in a guideway 117 carried by the slide bracket plate 46, by means of which said beader may be raised or lowered with the frame or carriage 95, to which the lower bearing 118 of said shaft is connected by an arm 119. The planing and-matching cutter head are adapted to be driven from a suitable superposed line shaft by an endless belt 120 which passes around the pulley 121 on the shaft 101 of the tonguing cutter 102, then around a pulley 122 on the shaft 13 of the cutter head 14 and thence rearwardly and around a pulley 123 on the shaft 103 of the grooving cutter 104 and up to the line shaft, not shown. In order to maintain the belt tight when the tonguing cutter is adjusted and to take up all slack from wear, an automatic tightener is provided. This comprises a swinging frame 124 carried by the laterally shiftable carriage 71 and having journaled thereon a pulley 125 which bears upon the belt. To one of the sides of the frame 124 is pivoted an arm 126 carrying an adjustable weight 127 adapted to be locked in adjusted position by a set screw 128, the action of said weight tending to swing the frame in the direction towards the pulley 125 to maintain contact with the belt and hold it taut and to be automatically adjusted whenever slackness occurs in the belt to take up the slack. The leverage of the arm 26 may be varied by means of a pivoted dog or latch 129 carried thereby and adapted to engage a rack 130 carried by the frame 124, whereby the angular relation of the said arm 126 thereto may be varied.

The shaft 70 which transmits motion to the feed rolls through the medium of the chain 67 is provided with a cone pulley 131 around which passes a belt 132 which engages a corresponding pulley 133 on the shaft 13 of the planing cutter head. The lower stretch of this belt passes through a pair of slotted guides 133' and 134 carried by a shifting bracket plate 136, which also carries a pivoted bell crank lever 137, the upper arm 138 of which carries a tightening pulley 139 bearing upon the upper stretch of the belt to maintain the belt taut. The lower arms 140 of the bell crank lever carries an adjustable weight 141 adapted to be locked thereto by a set screw 142 and to be adjusted on said arm to regulate the pressure of the pulley. The lever 137 may be swung upward to throw the pulley 139 out of engagement with the belt by a hand lever 143 to which said bell crank lever is connected by a rod 144. To the frame is pivoted an elbow shifting lever 145 slotted at the free end of its

horizontal arm to receive a pivot pin 146 carried by the shifter plate 136, whereby the latter may be moved laterally of the frame in one direction or the other to shift the belt on the pulleys 122 and 131 to drive the feed rolls at varying rates of speed. The vertical arm of the lever 145 is employed as a hand grasp by which the lever may be swung laterally on its pivot 147 to shift the plate 136. The lever carries a dog 148 to engage a rack 149 fixed to the frame to lock it in adjusted position. This dog is adapted to be operated by suitable operating connections, such as shown in Fig. 28, actuated by a pivoted trip 150.

The beading cutter 114 carries a pulley 151 engaged by a cross belt 152, which passes around a pulley 153 journaled on a tightener arm or lever 154 pivotally mounted upon the frame adjacent to the shaft 70, and thence passes over a pulley 154 on the shaft 13, and thence back over a pulley 155 journaled on the arm 154 and to the pulley 151 again, the pulley 155 being set at an inclination, as shown in Fig. 30, to adapt the belt to run between the same and the shaft 13 at the proper angle. The arm 154 is connected with an arm 156 carrying a sliding weight 157 adapted to be fixed in adjusted position by a set screw 158. By means of this weight the pressure of the pulleys 153 and 155 on the belt 152 may be varied and the action of the arm 154 rendered automatic in taking up all slack in said belt. By throwing the arm 156 forward the belt 152 may be slackened sufficiently to prevent motion from being communicated to the beader, thus enabling the latter to be thrown out of operation when its use is not required, as in finishing boards for flooring. By substituting jointing heads for the tonguing and grooving heads the machine may be used for dressing three sides of boards of any dimensions within its range of work. Molding cutters may also be substituted for the tonguing and grooving cutters for planing moldings.

From the foregoing description, taken in connection with the accompanying drawings, the construction, mode of operation and advantages of the invention will be readily understood without a further extended description, and it will be seen that a construction is provided which permits the parts to be adjusted to operate upon different widths and thicknesses of material and to position the matching cutters for action in tonguing and grooving the material in each case according to the established practice. Also that the construction permits the beader to be thrown out of operation when its use is not required.

Having thus described the invention what is claimed as new is:—

1. In a machine of the character described, the combination of a frame provided with a bottom rest for the work, stationary and adjustable feeding devices on opposite sides of the rest, a planing cutter on the frame, a vertically adjustable presser bar to hold the work against the rest, a carriage on the frame adjustable laterally to the plane of motion of the work, a matching cutter on said carriage, a second carriage vertically adjustable on the first-named carriage, a cooperating matching cutter on said vertically adjustable carriage, means for simultaneously adjusting the laterally adjustable carriage and adjustable feeding devices, means for simultaneously adjusting the presser bar and vertically adjustable carriage, and means for operating the cutters and feeding devices.

2. In a machine of the character described, the combination of a frame having a bottom rest for the work, a laterally adjustable guide carriage on one side of the rest,

a vertically adjustable presser bar arranged to hold the work against the rest, sets of feeding devices, one of said sets being carried by the guide carriage, a planing cutter mounted on the frame, a second laterally adjustable carriage on the side opposite the guide carriage, a matching cutter on said second laterally adjustable carriage means for adjusting said carriages in unison, a third carriage vertically adjustable on the second carriage and carrying a coacting matching cutter, means for simultaneously adjusting said third carriage and the presser bar, and operating mechanism for driving the several parts.

3. In a machine of the character described, the combination of a frame provided with a bottom rest for the work, a presser bar above said rest, laterally adjustable guide and supporting carriages on opposite sides of the rest, sets of feeding devices mounted respectively on the frame laterally and the adjustable guide carriage, a planing cutter mounted on the frame, a matching cutter on the supporting carriage a third carriage vertically adjustable on the supporting carriage, and provided with a coacting matching cutter, means for adjusting the laterally adjustable carriages in unison, means for vertically adjusting the presser bar and vertically adjustable carriage in unison, and means for driving the feeding devices and cutters.

4. In a machine of the character described, the combination of a frame provided with a bottom rest for the work, laterally adjustable carriages arranged on opposite sides of the rest, adjusting mechanism connecting said carriages for a different ratio of movement, feeding means, a vertically adjustable presser bar, a planing cutter carried by the frame, relatively fixed and adjustable matching cutters on one of the laterally movable carriages, means for simultaneously adjusting said adjustable matching cutter and presser bar, and driving means for operating the feeding means and cutters.

5. In a machine of the character described, the combination of a frame having a bottom rest for the work, laterally adjustable carriages arranged on opposite sides of the rest, opposite sets of feeding devices upon the frame and one of the carriages, a planing cutter upon the frame, cooperating relatively fixed and vertically adjustable matching cutter on the other carriage, a presser bar, means for vertically adjusting the adjustable matching cutter and presser bar in unison, a rock shaft, an operating lever connected thereto, links connecting said shaft with the carriages for adjusting the same at a different ratio, and operating mechanism for driving the feeding devices and cutters.

6. In a machine of the character described, the combination of a frame provided with sets of feed rolls, one set being adjustable with relation to the other, a planing cutter supported upon the frame oppositely arranged laterally movable carriages, one carrying the adjustable set of feed rolls, relatively fixed and adjustable matching cutter on the other carriage, a presser bar operatively connected for movement with said cutter, means for simultaneously adjusting the said adjustable matching cutter and presser bar, adjusting mechanism for adjusting the carriages by a different ratio of movement, and operating means for driving the cutters.

7. In a machine of the character described, the combination of a frame having a support for the work to be fed therethrough, sets of feeding devices disposed on opposite sides of said support, a laterally movable carriage carrying one of said sets of feeding devices, a second laterally movable carriage, planing and matching cutters, the former mounted upon the frame and the latter upon the said second laterally shiftable carriage, means for simultaneously laterally adjusting the two carriages, and means for vertically adjusting one of the matching cutters.

8. In a machine of the character described, the combination of a frame having a support for the work to be fed therethrough, of sets of feeding devices on opposite sides of said support, a laterally movable carriage carrying one of said sets of feeding devices, a second laterally movable carriage arranged adjacent the other set of feed devices, a planer mounted upon the frame, a presser bar for holding the work against the support while it is being acted upon by the planer, matching cutters carried by the second laterally adjustable carriage, means for simultane-

ously adjusting the two carriages, and independent means for simultaneously vertically adjusting the presser member and one of the matching cutters.

9. In a machine of the character described, the combination of a supporting frame provided with a bottom rest for the work, laterally adjustable carriages arranged on opposite sides of said rest, one of said carriages being provided with a work guide, opposite sets of feed rollers mounted respectively on said carriage and the frame, a planing cutter mounted upon the frame opposite said guide, a presser bar adjustably mounted on the frame, relatively stationary and vertically adjustable matching cutters mounted upon the other carriage, the said presser bar

and adjustable cutter being connected for simultaneous adjustment, means upon the latter named carriage for adjusting said bar and cutter, adjusting mechanism connecting the carriages for movement in unison, means for locking the parts in adjusted position, and means for driving the feed rolls and cutters. 15

In testimony whereof, I affix my signature in presence of two witnesses. 20

SANFORD CLINE.

Witnesses:

R. F. HENDLEY.

O. G. WOLFF.