Jan. 27, 1953 C. L. RICARDS ET AL 2,626,541

STEREOTYPE PLATE FINISHING MACHINE

Filed Oct. 1, 1948 8 Sheets-Sheet 1

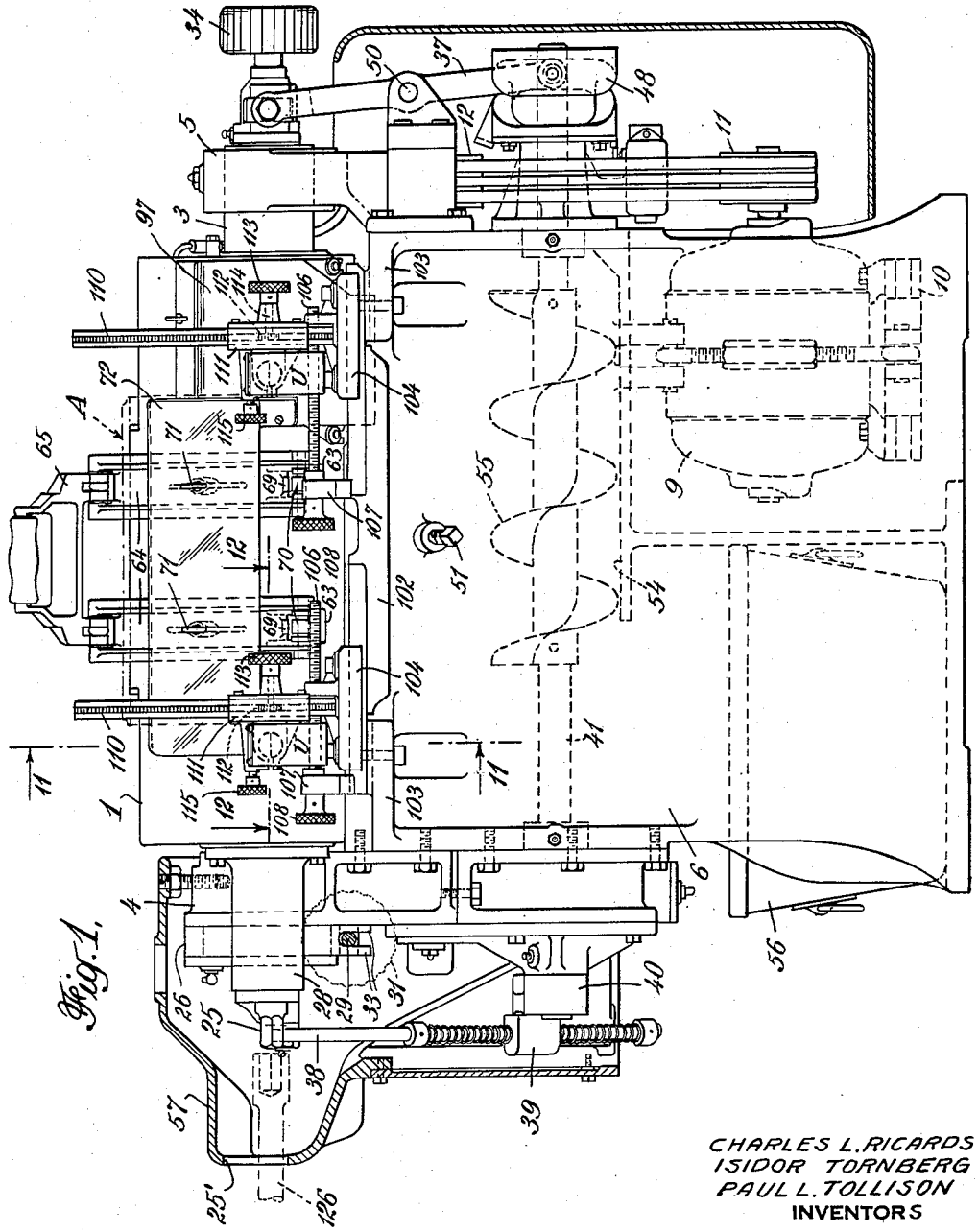

Fig. 1.

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STEREOTYPE PLATE FINISHING MACHINE

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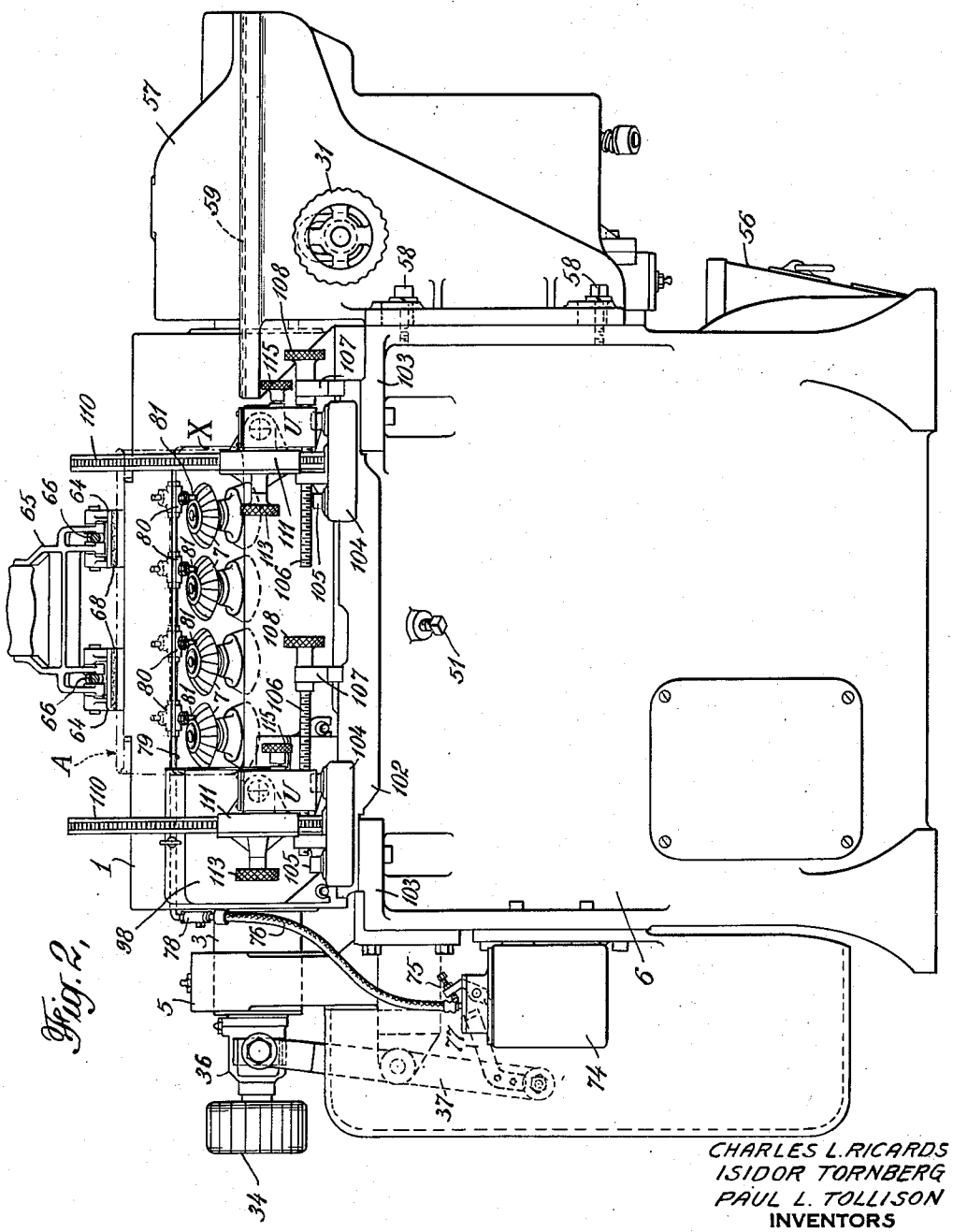

Fig. 2.

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STEREOTYPE PLATE FINISHING MACHINE

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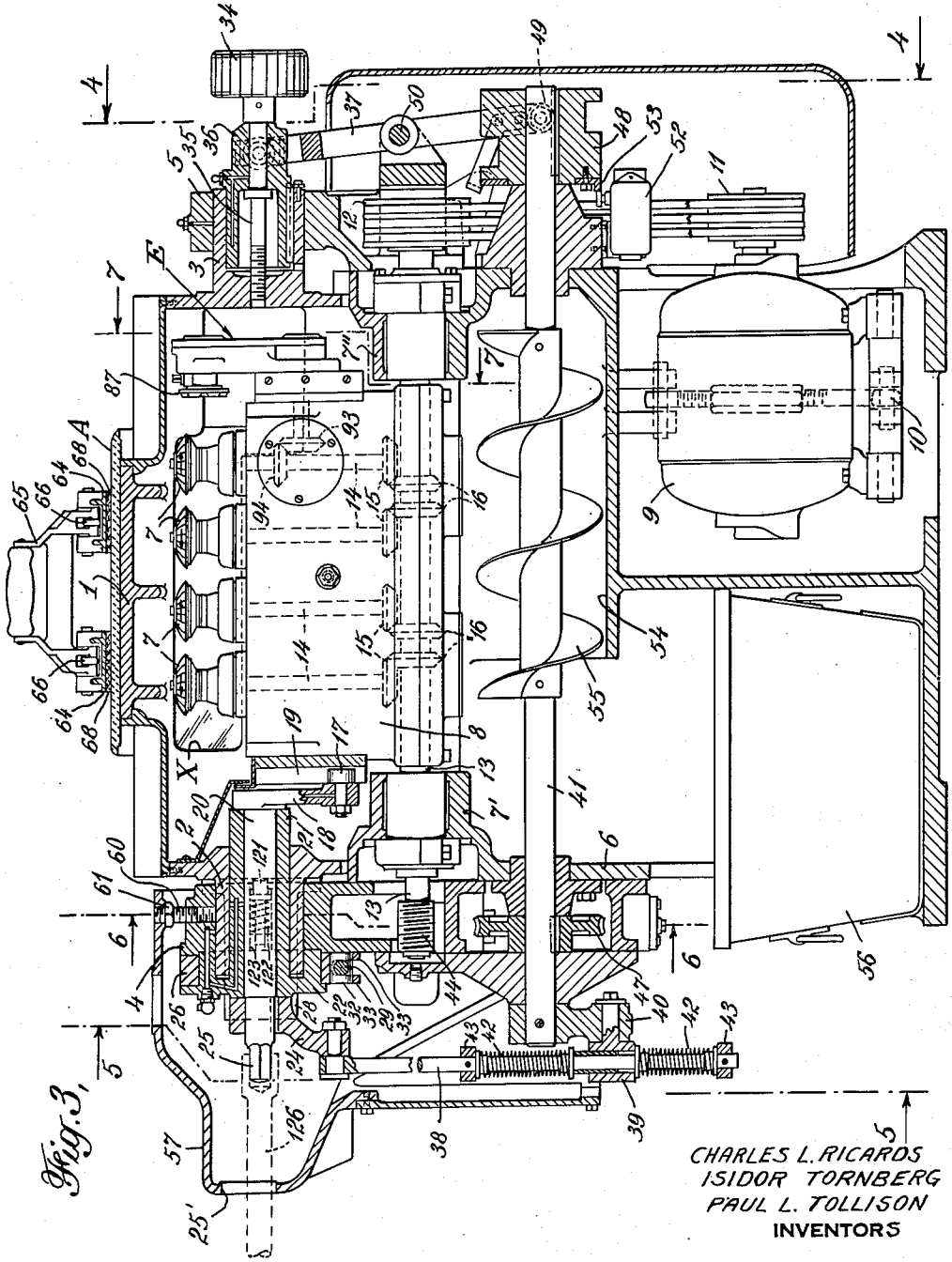

Fig. 3.

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STEREOTYPE PLATE FINISHING MACHINE

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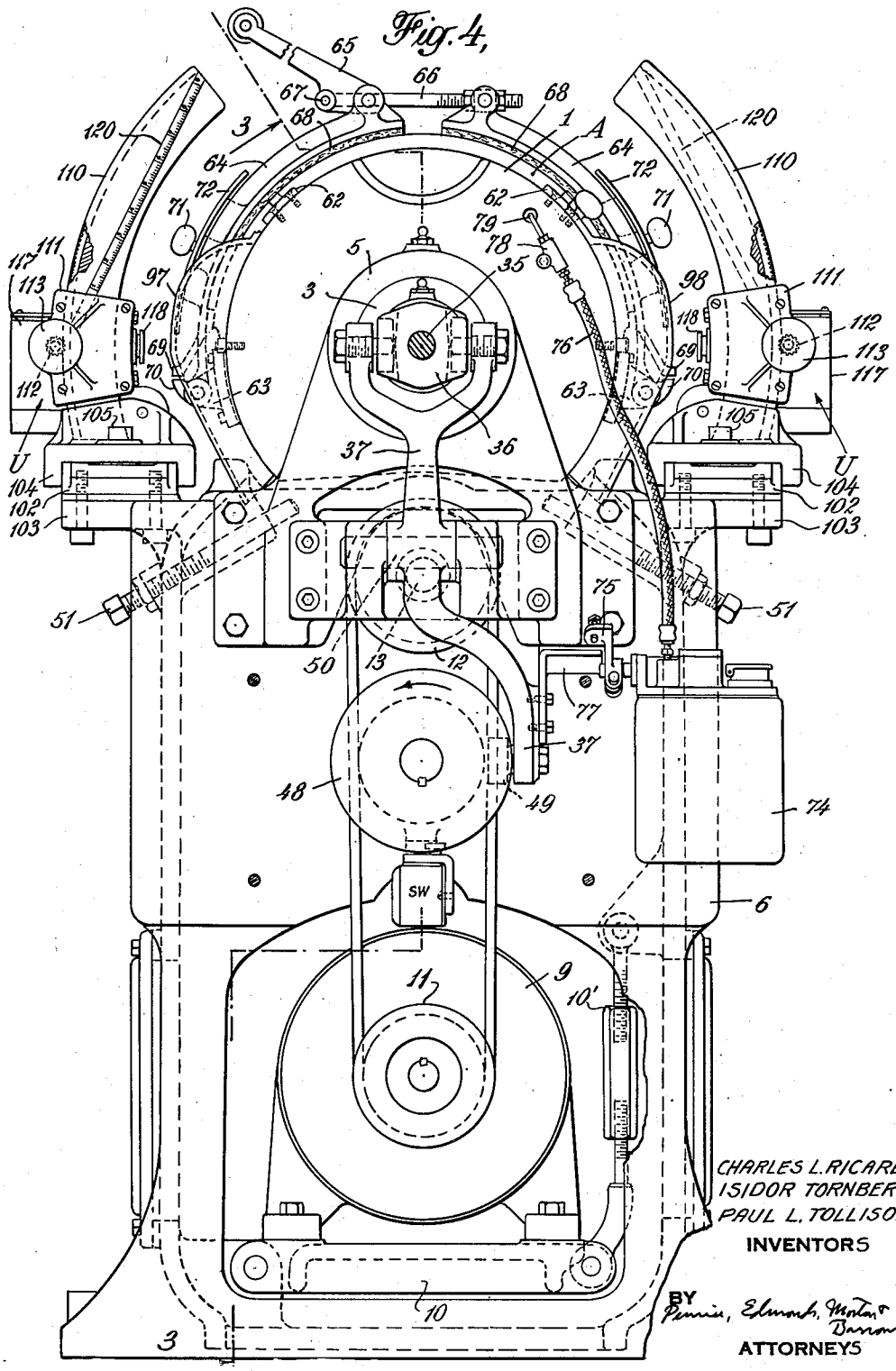
Fig. 4.



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STEREOTYPE PLATE FINISHING MACHINE

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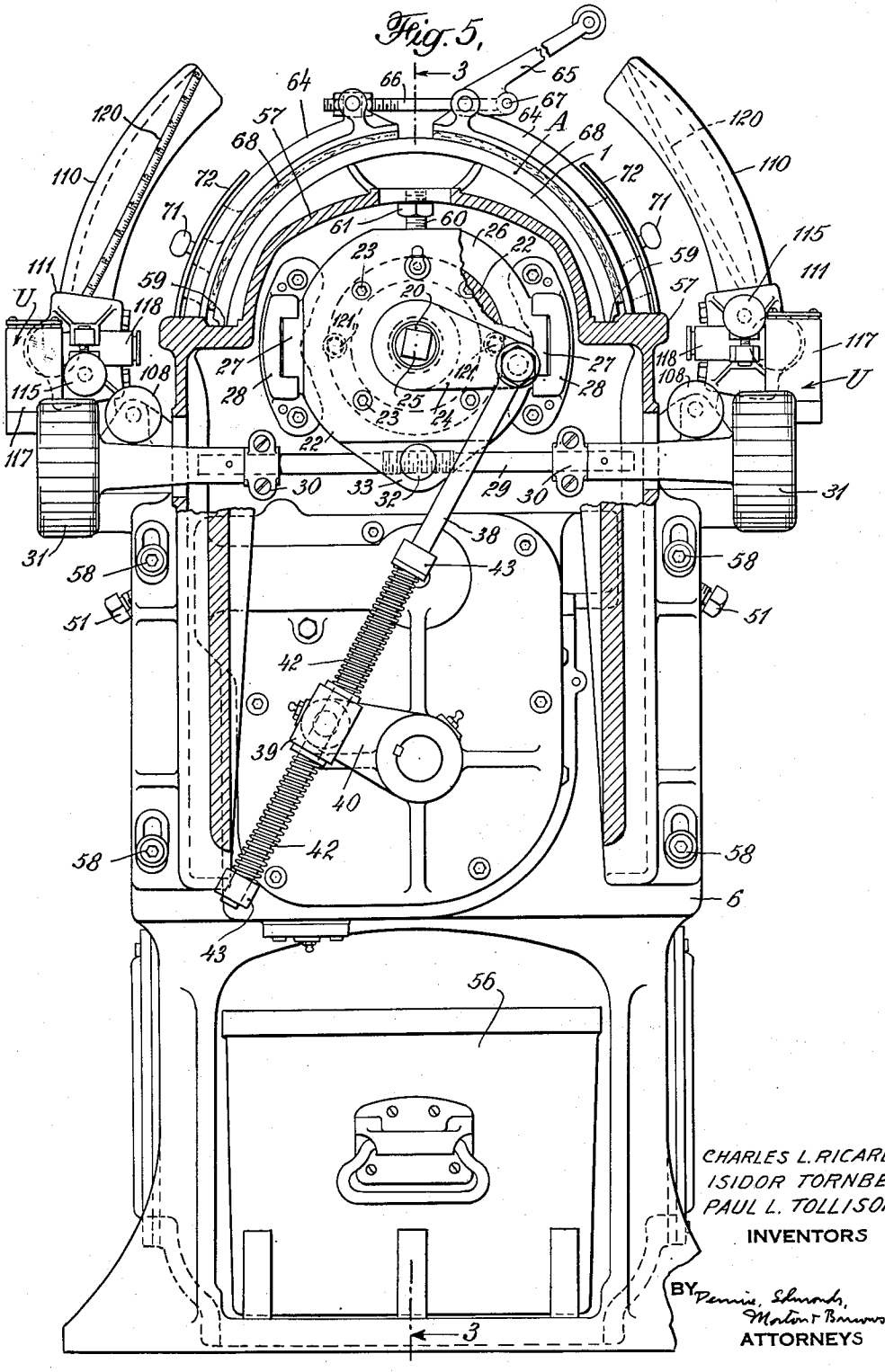
Fig. 5.



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STEREOTYPE PLATE FINISHING MACHINE

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Fig. 6,

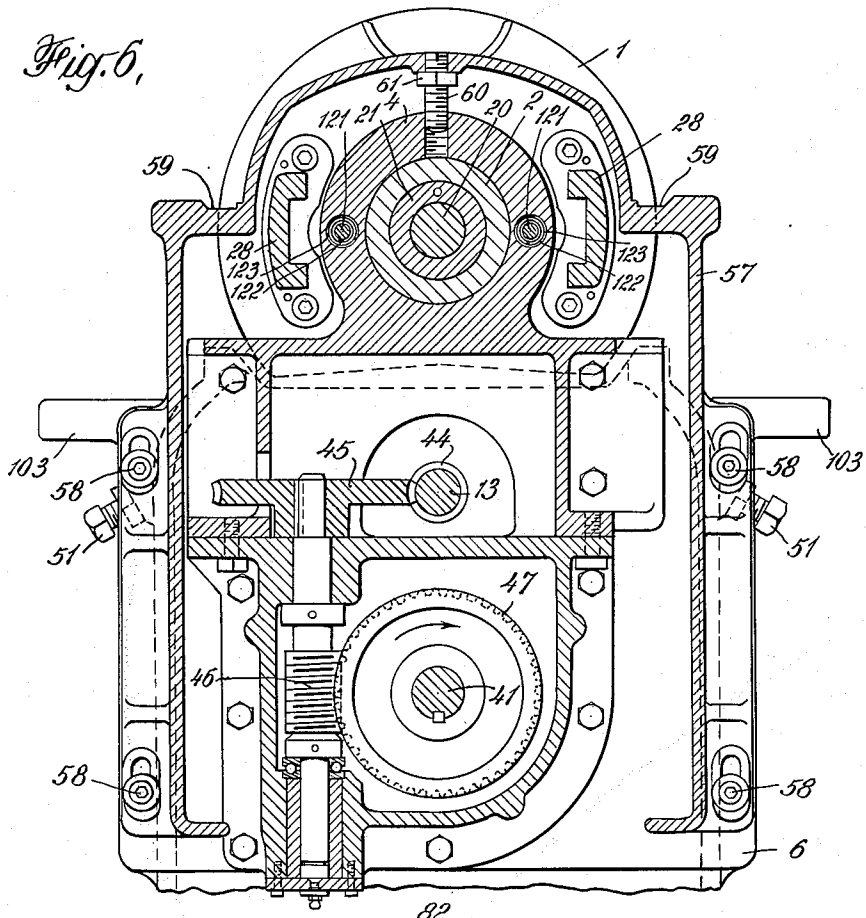
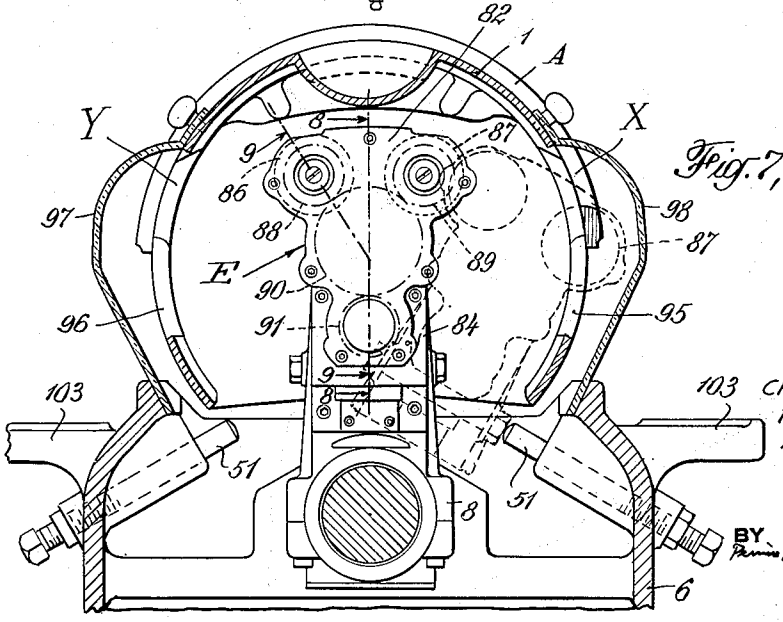


Fig. 7,



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Jan. 27, 1953 C. L. RICARDS ET AL 2,626,541

STEREOTYPE PLATE FINISHING MACHINE

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Fig. 8,

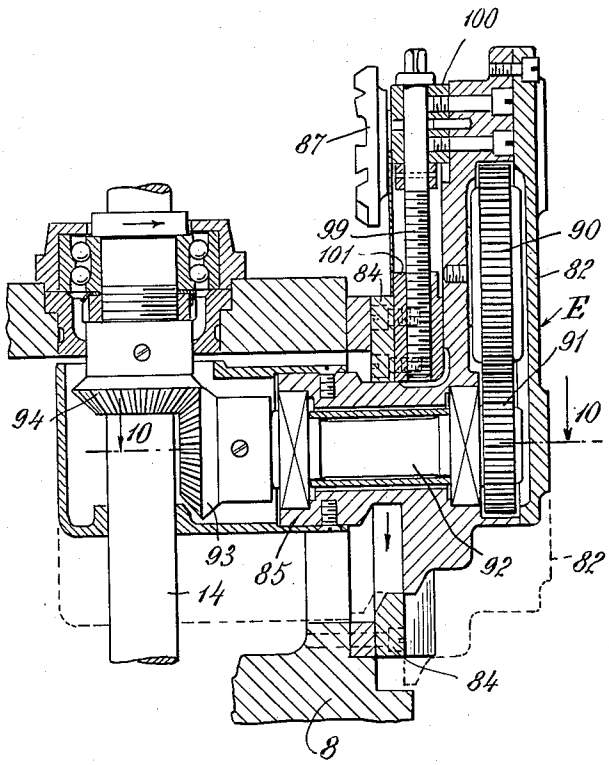


Fig. 9,

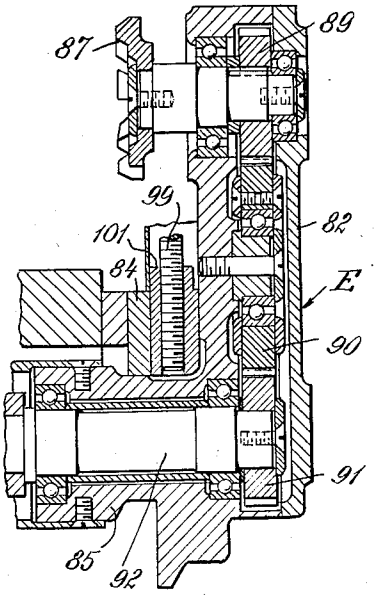
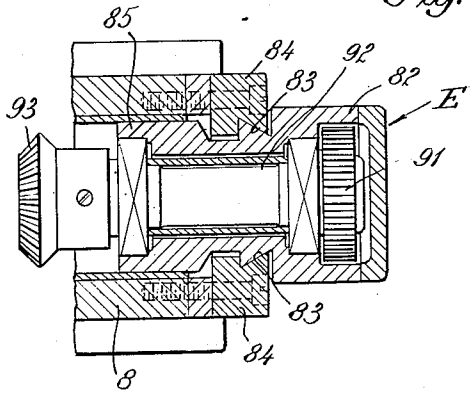


Fig. 10,



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STEREOTYPE PLATE FINISHING MACHINE

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Fig. 11.

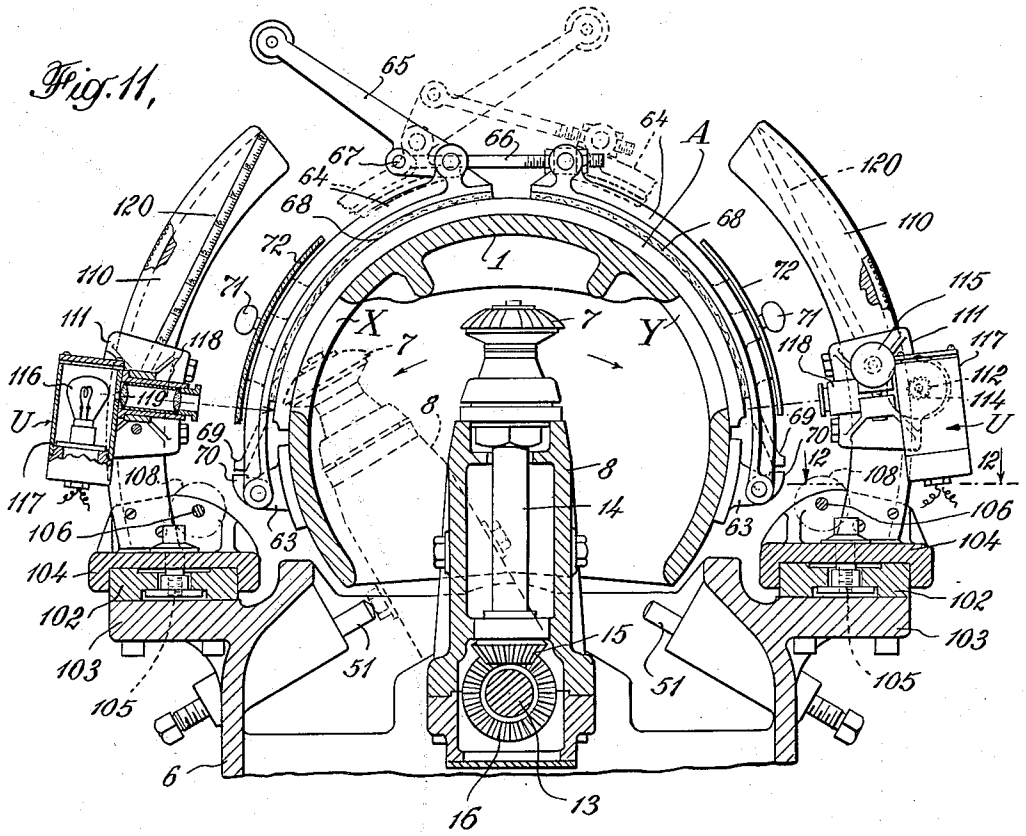
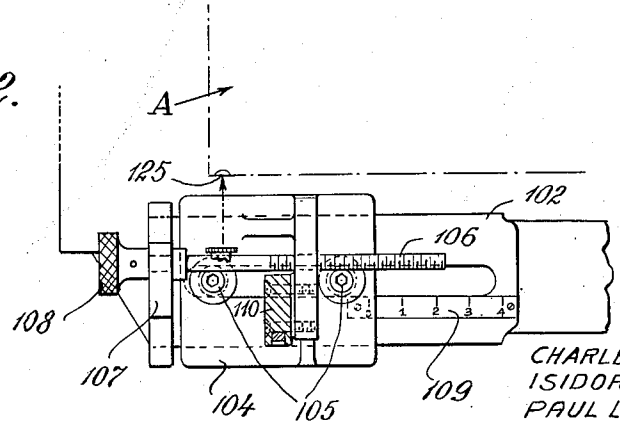


Fig. 12.



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Patented Jan. 27, 1953 2,626,541

UNITED STATES PATENT OFFICE

2,626,541

STEREOTYPE PLATE FINISHING MACHINE

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Application October 1, 1948, Serial No. 52,323

14 Claims. (Cl. 90—15)

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This invention relates to improvements in stereotype plate finishing machines and especially to an improved machine for milling tension lock-up pockets in the concave inner surfaces of stereotype plates.

Particular advantages of the machine of the present invention include improved apparatus for supporting a plate for sliding endwise movement onto the saddle or support on which it is carried during the finishing operation; improved apparatus for machining flat surfaces at the corners of one end of the plate; improved plate clamping apparatus for securing the plate on the supporting saddle; improved apparatus for bringing the plate into registry so as to insure that the finishing operations are correctly correlated to the type on the plate; transparent guards for guarding the pocket cutters while permitting registry of the plate by register indicators projected through the transparent guards; improved cutter lubricating mechanism and mechanism permitting manual withdrawal of the cutters from the plate pockets when the machine is stopped.

The invention will be best understood by reference to the accompanying drawings, in which—

Fig. 1 is a right side elevation of the machine with part of the housing structure in section;

Fig. 2 is a left side elevation of the machine;

Fig. 3 is a sectional elevation of the machine taken along the line 3—3 of Fig. 5;

Fig. 4 is a rear end elevation of the machine taken along the line 4—4 of Fig. 3;

Fig. 5 is a front end elevation of the machine, partly in section, taken along the line 5—5 of Fig. 3;

Figs. 6 and 7 are sectional views taken, respectively, along the lines 6—6 and 7—7 of Fig. 3;

Figs. 8 and 9 are, respectively, sectional views of the side register cutter unit taken, respectively, along the lines 8—8 and 9—9 of Fig. 7;

Fig. 10 is a sectional view taken along the line 10—10 of Fig. 8;

Fig. 11 is a sectional view taken along the line 11—11 of Fig. 1; and

Fig. 12 is a sectional view taken along the line 12—12 of Figs. 1 and 11.

Referring to Figs. 1, 2 and 3, a stereotype plate A of generally semi-cylindrical form is carried on a cylindrical saddle 1. The saddle 1 is journalled at each end by journal extensions 2 and 3, respectively, engaging bearings 4 and 5, which are secured to the main frame 6 of the machine. The saddle 1 has longitudinal side openings X and Y in its opposite sides to permit the passage of the cutters 7 therethrough (Figs. 2, 3 and 11). Four cutters 7 are mounted on a cutter bar 8.

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The machine is powered by a motor 9 contained in a recess in the base of the main frame 6 on a support 10 which is adjustable by means of a turn buckle 10' to adjust the tension on the drive belts (Figs. 1, 3 and 4). Power is transmitted from the motor 9 to the driven parts of the machine through V belts engaging a motor pulley 11 and a pulley 12 on a shaft 13.

Each of the cutters 7 is fixed to the upper end of a vertically extending cutter spindle 14 journalled in the cutter bar 7 and driven from the horizontal shaft 13 through bevel gears 15 and 16 (Fig. 11). Cutter bar 8 is pivoted to swing about a horizontal axis in the main frame by bearings 7' and 7'' at its opposite ends. The cutter bar oscillates from side to side of the machine and extends its cutters 7 out through the saddle openings X and Y to engage the plate A and mill pockets therein. Oscillatory motion is imparted to the cutter bar 8 by a roller 17 carried by a crank arm 18 engaging a slot track 19 secured to the front end of the cutter bar 8 and extending radially of the axis about which the cutter bar oscillates (Fig. 3). The crank arm 17 is fixed to the inner end of a shaft 20 journalled within a tubular bearing 21 slidably fitted within the journal extension 2 of the saddle 1 and secured to the machine frame by a flange 22 and bolts 23 (Figs. 3 and 5). A crank 24 is fixed to shaft 20 outside the bearing 21, and the end of the shaft 20 is squared at 25 to receive a hand wrench or crank which may be inserted through an opening 25' in the platform bracket 57, as indicated at 126. The shaft 20 may be manually turned slightly in order to move the cutters 7 out of engagement with a plate A in the event the machine should stop while the cutters engage a plate. It is inadvisable to start the machine with the cutters engaging a plate and this arrangement enables the operator to avoid so starting the machine under load. The power mechanism which oscillates the shaft 20 includes a spring connection to be described which permits this manual movement of the cutter bar when the power drive is stationary.

Limited adjustment of the saddle 1 about the axis of its journals 2 and 3 for registry of a saddle carried plate is provided by an adjustment ring 26 which is mounted to rotate in a shouldered recess in the outer surface of the fixed flange 22 of the bearing 21 (Fig. 3). The ring 26 carries laterally projecting ears 27 which fit into slots in guides 28 that are secured to the front end of the saddle 1 (Figs. 5 and 6). A cross shaft 29 journalled in

brackets 30 on the main frame 6 carries hand wheels 31 on its opposite ends and is fixed against axial movement by engagement of the hubs of the hand wheels with the brackets 31. The shaft 29 is threaded along its central portion which engages a threaded transverse opening in a pin 32 mounted in spaced ears 33 extending radially downward from the bottom of the ring 26. Rotation of the shaft 29 by either hand wheel 31 turns the saddle 1 about the axis of its bearings without interfering with endwise reciprocation of the saddle during which the guides 28 slide on the ears 27 of the ring 26.

Longitudinal adjustment of the saddle 1 for plate registry is provided for by a hand wheel 34 at the back end of the machine. The shaft 35 of this hand wheel is fixed against axial movement in an adaptor 36 which is slidably fitted within the saddle journal extension 3 and keyed against rotation with respect thereto, as shown in Fig. 3. The inner end of the shaft 35 threadedly engages a tapped opening in the saddle journal extension 3. The adaptor 36 is pivotally connected to the bifurcated upper end of a lever 37 which moves the saddle endwise during machine operation, as will be explained.

The crank 24 of the cutter bar oscillating shaft 20 is pivotally connected to the upper end of connecting rod 38. The rod 38 slidably engages a tubular fitting 39 rotatably secured to a crank 40 fixed to the low speed shaft 41. Two coiled springs 42 are carried by the rod 38 on opposite sides of the fitting 39 and their outer ends engage collars 43 fixed to the rod. With this arrangement one rotation of the shaft 41 raises and lowers the connecting rod 38 and so swings the cutter bar 8 first to one side of the saddle 1 and then to the other, the springs 42 taking up the excess motion of the crank 40 when the outward movement of the cutter bar is arrested by one of the adjustable stop screws 51 (Figs. 4 and 11). Adjustment of the screws 51 regulates the depth to which pockets are milled in the plate A by the cutters 7.

The shaft 41 is driven from the high speed shaft 13 through the worm reduction gear train 44—45, 46—47 (Fig. 6), the speed of the shaft 41 being sufficiently reduced from that of the shaft 13 that a single revolution of the shaft 41 completes one plate finishing cycle of the machine. A barrel cam 48 is fixed to the rearward end of the shaft 41. A cam follower 49 on the lower end of lever 37 engages the cam 48. The lever 37 is pivoted to the main frame 6 at 50. Oscillation of the lever 37 by the cam 48 slides the saddle 1 back and forth endwise of the machine.

The relation between the cutter bar oscillating drive and the plate saddle reciprocating drive is such that the cutter bar 8 is first moved to one extreme tilted position to move the cutters 7 into the plate A, then the plate is moved longitudinally by the saddle 1 in one direction, then while the saddle is at rest at one extreme position, the cutter bar swings to its extreme opposite tilted position to move the cutters into the opposite side of the plate, and then the plate is moved by the saddle in the opposite direction. The cycle ends with the movement of the cutter bar to an intermediate position to withdraw the cutters 7 from the pockets last cut and the operation of the machine is stopped at this point by a motor deenergizing limit switch 52 operated by a cam 53 attached to the inner face of the barrel cam 48.

A trough 54 is provided in the main frame beneath the cutter bar 8 and a conveyor screw 55 on the slow speed shaft 41 carries plate chips from this trough into a removable chip pan 56.

A loading platform is provided at the front end of the machine and comprises a platform bracket 57 attached to the frame 6 by four shoulder screws 58 passing through vertically elongated slots in the bracket (Fig. 5). The upper portion of the platform bracket is provided with spaced parallel track grooves 59 for the reception of the side edges of a plate A. A screw 60 threaded into the bearing 4 and provided with a stop nut 61 permits vertical adjustment of the platform bracket 57 so that a stereotype plate of predetermined dimensions may slide directly from the platform onto the saddle 1, coming too rest against the stops 62 secured to the saddle (Fig. 4). This adjustable feature also permits lowering of the platform to permit the milling of double length plates which overhang the end of the saddle when pockets are milled in the opposite end thereof.

The mechanism for clamping the plate on the saddle includes two brackets 63 attached to each side of the saddle and carrying pivots for the lower ends of four clamp sectors 64 (Figs. 1, 4, 5 and 11). A clamp toggle 65 is pivotally secured to the upper ends of the sector 64 on the left side of the machine, as viewed in Fig. 11, and each of the sectors 64 on the right hand side is pivotally secured to an eye bolt 66, the opposite end of which is pivotally attached to the clamp toggle 65 at 67. The inner surfaces of the sectors 64 are lined with yielding material, such as leather stripping 68. The radius of the inner surface of this stripping 68 is slightly larger than the radius of the outer plate surface so that when the clamp toggle 65 is closed, the sectors 64 are flexed and put pressure on the plate at all points where the stripping 68 contacts it. A stop projection 69 on each sector 64 comes in contact with an abutment 70 on each bracket 63 when the clamp toggle 65 is opened, these parts acting as stops to limit the pivotal opening movement of each sector 64. This insures that each sector 64 moves substantially the same distance away from the saddle 1 as the oppositely disposed sector so that all sectors disengage the plate when the clamp toggle is opened.

Each sector 64 carries a boss with a tapped hole therein to receive a thumb screw 71. The thumb screws 71 secure transparent guards 72 on opposite sides of the saddle 1 over saddle openings X and Y. The guards 72 may be formed of suitable transparent plastic material. They prevent injury to an operator if the machine operates without a plate A on the saddle 1, in which event the unprotected cutters extend through the openings X and Y. The guards 72 are transparent to permit the passage therethrough of light beams that project register images onto the plate, and the observation of such images and of register marks on the plate by the operator. In order to prevent clinging of stereotype plate metal to the cutters 7, means are provided for applying a small amount of lubricant to each cutter at one point in each operating cycle. A plunger type lubricator 74 of known construction is secured to the machine frame near one side of the rear end thereof, as shown in Figs. 2 and 4. The operating arm 75 of the lubricator, which acts in a known manner to discharge a predetermined amount of lubricant through the flexible hose 76 each time it is oscillated, is disposed in the path of an arm 77 fixed to the lever 37 and is oscillated thereby once in each cycle of machine operation. The

hose 76 conducts the lubricant through a connector 78 secured to the rearward end of the saddle and a rigid tube 79 to four T's 80, each of which is secured to the inside of the saddle 1 over one of the cutters 7 when the cutter bar 8 is in an intermediate position tilting toward the right side of the saddle, as viewed in Fig. 4. Each T carries a metering nozzle 81 which directs lubricant onto the adjacent cutter 7. The intermittent operation of the lubricator operating arm 75 by the lever 37 is so timed that a limited amount of lubricant is ejected from the nozzles 81 when the cutters 7 are beneath these nozzles.

Particularly in multi-color printing, it is important that one end of each plate shall have flat surfaces finished to precise dimensions with respect to the type thereon in order to maintain proper side register between plates in a color series. For this purpose a side register cutter unit E is provided, the construction and mounting of which are shown in Figs. 3, 7, 8, 9 and 10.

The unit E includes a gear housing 82 with a dovetail extension 83 which slides in a slide plate 84 secured to the cutter bar 8 (Fig. 10). The gear housing 82 carries an extension 85 that extends within the cutter bar 8 and embraces the rearmost cutter spindle 14 (Fig. 8). Two end-face cutters 86 and 87 are rotatably carried by the housing 82 and are driven from the cutter spindle 14 through the gears 88, 89, 90 and 91, and a shaft 92 and bevel gears 93 and 94. The cutters 86 and 87 are so disposed that when the housing 82 is in position to effect engagement of the bevel gear 93 with the spindle carried bevel gear 94, the cutters 86 and 87 move to positions where they finish flats on the opposite sides of the plate ends when moved across the plate ends by the cutter bar 8. The flats thus finished are used to abut stops on the plate cylinder of a press and so accurately locate the plate longitudinally of the cylinder. Openings 95 and 96, which are extensions of the openings X and Y, are provided at opposite sides of the saddle 1 to receive the cutters 86 and 87 of the unit E, and guards 97 and 98 are removably attached to the saddle to guard the cutters as they swing through the openings.

When longitudinal registry of the plate is not required, as when the plate is used for printing in one color, the unit E is moved downward on the slide plate 84 so as to disengage the bevel gear 93 from the bevel gear 94 and retract the cutters 86 and 87 to positions where they do not engage the plate A. This retracted and inoperative position of the unit E is illustrated by broken lines in Fig. 8. A screw 99 is rotatably carried by and fixed against axial movement in a block 100 fixed to the gear housing 82. The threaded lower end of the screw 99 engages a tapped opening in a block 101 fixed to the slide plate 84. Operation of the screw 99 moves the unit E between its operative and retracted positions.

When the machine is employed to finish plates for multi-color printing, it is important that the plate pockets formed by the cutters 7 and which are engaged by plate clamping mechanism on the press cylinder be disposed in the same circumferential relation to the printing type on the face of the plate in each plate making up a color series. It is likewise important that the flats produced by the side register cutter unit E of each plate of the series be equally spaced longitudinally of the plate from the type. For this purpose means are provided for projecting indicator marks onto the outer surface of the plate whereby each plate in the series can be moved by adjustment of the saddle 1 to a position where register marks (which are cast with the type or otherwise fixed with relation to the type during manufacture of the plate) are aligned with the projected indicator marks.

Four indicator units U are disposed at points respectively adjacent the four corners of a plate A mounted on the saddle 1. These units are adjustably movable longitudinally of the plate and circumferentially thereof and the construction of the several units and their mounting means is substantially identical. Two support rails 102 are respectively carried by machine frame pad extensions 103 at opposite sides of the machine (Figs. 2, 4, 11 and 12). Each support rail 102 carries two slide brackets 104 adjacent its opposite ends. Each slide bracket 104 may be locked against sliding movement along the rail 102 by clamp bolts 105. Each slide bracket 104 is adjustably movable along its rail by a screw 106 threadedly engaging an upwardly extending part of the slide bracket. Each screw 106 has an operating knob 108 and is rotatably mounted in but held against axial movement with respect to a bracket 107 fixed to the rail 102. A scale 109 is secured to the rail 102 and permits setting of the bracket 104. An arcuate rack segment is fixed to each slide bracket 102 and extends upwardly therefrom along an arc concentric with the plate A on the saddle 1. A projector unit is carried by a bracket 111 which is slidably adjustable along each rack segment 110. A pinion 112 operated by a knob 113 on a shaft 114 journalled in the bracket 111 engages the rack teeth of the segment 110 for moving the bracket and projector unit along the segment, and a clamp screw 115 threaded in an opening in the bracket engages the segment and fixes the bracket in its adjusted position.

Each projector unit U includes a lamp 116 in a housing 117 and a projection tube 118 having its axis aligned with the lamp filament. Cross hairs or other like indicator image-forming means are etched on the inner lens 119 of the tube 118 and the lenses are adjusted to project the image on the surface of the plate A. The projected light beam passes through the transparent guard 72 (Fig. 11). A scale 120 is provided along each rack segment 110 and these, with the scales 109 on the rails 102, permit the operator to take readings of the projector unit settings for each plate series so that duplicate plates of one series can be accurately finished even after the projector units have been moved to finish a different series of plates.

Since there are several points of possible lost motion in the mechanism that reciprocates the saddle 1 longitudinally of the plate axis, means are provided for taking up all of this motion in the same direction at the time the machine is at rest and a plate is being adjusted for registry. This position of rest is illustrated in Fig. 3 where the saddle 1 is in its extreme left-hand position. Two pins 121 are respectively carried in horizontal openings 123 at diametrically opposite points in saddle bearing 4 at the front end of the machine. Springs 122 surround these pins and are compressed between shoulders on the pins and shoulder sleeves in the openings so as to force the pins to the right as viewed in Fig. 3 and against the end of the saddle 1, taking up all lost motion in one direction when the saddle is adjusted by the knobs 31 and 34 to bring a plate into

registry. Shoulders at the rearward ends of the openings limit the outward movement of the pins 121 by engagement with the pin shoulders.

With a plate A clamped in place on the saddle 1, the operator sets the projector units to the desired position and brings the plate into registry by adjustment horizontally and circumferentially with the knobs 31 and 34. The motor 9 is then started and it brings the pocket cutter 7 and the side register unit cutters 86 and 87 up to speed as the shaft 41 begins to turn slowly. As the shaft 41 turns, the cutters 7 are first carried from the starting position shown in full lines in Fig. 11 to positions in which they move out of the opening Y at the right side of the machine, as viewed in that figure, and start to mill pockets in that side of the plate. At the same time, the side register unit E moves its cutter 87 to the position shown in broken lines in Fig. 7. During the dwell of the cutters in this tilted position, the barrel cam 48 moves the saddle 1 and plate A to the right as viewed in Fig. 3 for a distance appropriate to mill pockets of the desired length. At the same time the rearward end face of the plate near its corner comes in contact with the cutter 87 and a flat surface is finished thereon. Continued rotation of the shaft 41 moves the cutter bar 8 back through its central position, completing the finishing of the side register flat by the cutter 87 (Fig. 7). Then the cutter bar 8 moves to the left side, as viewed in Figs. 7 and 11, causing the cutter 86 to finish a flat for side registry near the opposite corner of the plate, and moving the cutters 7 into the plate to start pockets in its opposite side, as shown in broken lines in Fig. 11. The barrel cam 48 which has held the saddle 1 stationary during this transverse movement of the cutters now moves the saddle 1 and plate A to the left, as viewed in Fig. 3, back to its starting position to mill pockets of the desired length in the opposite side of the plate. The cycle is then ended by movement of the cutter bar 8 to a central position, whereupon the motor 9 is deenergized by the switch 52 operated by the cam 53.

Duplicate plates of the series are similarly finished, each being first brought into registry with the images projected by the units U which remain in the positions where they were when registered with the points 125 on the first plate A of the series (Fig. 12). If end registry is not required, the unit E is retracted to inoperative position, as has been explained.

We claim:

1. A stereotype plate finishing machine comprising in combination a frame, a cylindrical saddle carried on said frame and having longitudinally extending side openings at circumferentially spaced points therein, means for releasably securing a stereotype plate on said saddle over part of said openings, a cutter bar journalled in said frame to swing about an axis parallel to the axis of said saddle, rotary pocket milling cutters carried by said cutter bar eccentrically of its axis, means to swing said cutter bar to move said cutters alternately through said openings and into engagement with a plate on said saddle, and plate end cutters carried by said cutter bar adjacent one end of said plate and movable with said cutter bar through parts of said openings into alternate engagement with opposite portions of an end face of said plate.

2. A stereotype plate finishing machine comprising in combination a frame, a cylindrical saddle carried on said frame and having longitudinally extending side openings at circumferentially spaced points therein, means for releasably securing a stereotype plate on said saddle over part of said openings, a cutter bar journalled in said frame to swing about an axis parallel to the axis of said saddle, rotary pocket milling cutters carried by said cutter bar eccentrically of its axis, means to swing said cutter bar to move said cutters alternately through said openings and into engagement with a plate on said saddle, a cutter unit carried by said cutter bar adjacent one end thereof and adjustably movable radially of the cutter bar axis, and cutters on said cutter unit movable with said cutter bar through said saddle openings into alternate engagement with opposite corners of an end face of said plate.

3. A stereotype plate finishing machine comprising in combination a frame, a cylindrical saddle carried on said frame and having longitudinally extending side openings at circumferentially spaced points therein, means for releasably securing a stereotype plate on said saddle over part of said openings, a cutter bar journalled in said frame to swing about an axis parallel to the axis of said saddle, rotary pocket milling cutters carried by said cutter bar eccentrically of its axis, means to swing said cutter bar to move said cutters alternately through said openings and into engagement with a plate on said saddle, a cutter unit carried by said cutter bar at one end thereof, cutters on said unit movable with said cutter bar through said saddle openings into alternate engagement with opposite corners of an end face of said plate, a driving connection between said cutter unit cutters and said cutter bar cutters including separable gears, and means for adjustably moving said cutter unit on said cutter bar radially of the cutter bar axis for retracting said cutter unit cutters from engagement with said plate and simultaneously separating said separable gears to break said driving connection.

4. A stereotype plate finishing machine comprising in combination a frame, a horizontally extending cylindrical saddle carried on said frame and slidable axially thereon, said saddle having longitudinally extending side openings at circumferentially spaced points, means for releasably securing a substantially semi-cylindrical stereotype plate to said saddle with one end face of said plate extending across said openings, a cutter bar journalled in said frame within said saddle to swing transversely of said saddle about an axis parallel to the saddle axis, pocket cutters on said cutter bar, spindles in said cutter bar carrying said cutters and extending radially of the cutter bar axis, a cutter unit including a plate end finishing cutter carried by said cutter bar, and driving means for first swinging said cutter bar to one side of said saddle to move said pocket cutters through one of said longitudinal saddle openings into contact with said plate and simultaneously to swing said plate end finishing cutter through said opening into line with a corner of an end face of said plate, and then sliding said saddle longitudinally to bring said end face of said plate against said end finishing cutter.

5. A stereotype plate finishing machine comprising in combination a frame, a horizontally extending cylindrical saddle carried on said frame and slidable axially thereon, said saddle having longitudinally extending side openings at circumferentially spaced points, means for releasably securing a substantially semi-cylindrical

stereotype plate to said saddle with one end face of said plate extending across said openings, a cutter bar journalled in said frame within said saddle to swing transversely of said saddle about an axis parallel to the saddle axis, pocket cutters on said cutter bar, spindles in said cutter bar carrying said cutters and extending radially of the cutter bar axis, a cutter unit including a plate end finishing cutter carried by said cutter bar, driving means for first swinging said cutter bar to one side of said saddle to move said pocket cutters through one of said longitudinal saddle openings into contact with said plate and simultaneously to swing said plate end finishing cutter through said opening into line with a corner of an end face of said plate and then sliding said saddle longitudinally to bring said end face of said plate against said finishing cutter, and adjustable means for retracting said cutter unit radially of said cutter bar to a position in which said plate end finishing cutter cannot contact said plate end face.

6. A stereotype plate finishing machine comprising in combination a frame, a cylindrical saddle carried by said frame and having at least one longitudinally extending side opening therein, a milling cutter carried by said frame within said saddle, means for moving said cutter through said opening to cut a pocket in a plate carried by said saddle, means for releasably clamping a stereotype plate to said saddle including elongated members extending circumferentially of said saddle over said opening, and a guard plate extending over said saddle opening and secured to one of said clamp members.

7. A stereotype plate finishing machine comprising in combination a frame, a cylindrical saddle carried by said frame and having at least one longitudinally extending side opening therein, a milling cutter carried by said frame within said saddle, means for moving said cutter through said opening to cut a pocket in a plate carried by said saddle, means for releasably clamping a stereotype plate to said saddle including elongated members extending circumferentially of said saddle over said opening, and a transparent guard plate secured to one of said clamp members and extending over said saddle opening.

8. A stereotype plate finishing machine comprising in combination a frame, a cylindrical saddle carried by said frame and having at least one side opening therein, means for releasably securing a stereotype plate to said saddle in a position to extend over said opening, a milling cutter within said saddle, means for moving said cutter through said opening and into contact with a plate on said saddle, means for adjustably moving said saddle relative to said cutter, a transparent guard plate extending over said saddle opening, and a plurality of projector units secured to said frame each including means for projecting an image through said guard plate onto a stereotype plate on said saddle.

9. A stereotype plate finishing machine comprising in combination a frame, a cylindrical saddle carried by said frame and having side openings therein, means for releasably securing a stereotype plate on said saddle in a position to extend over said openings, a milling cutter within said saddle, means for moving said cutter alternately through said openings and into contact with a plate on said saddle, means for adjustably moving said saddle relative to said cutter, a transparent guard plate carried by said plate securing means and extending over said saddle openings, a plurality of projector units secured to said frame on opposite sides of said saddle, each including means for projecting an image through said guard plate onto a plate on said saddle, and means for adjustably moving said projector units longitudinally and circumferentially of said saddle.

10. A stereotype plate finishing machine comprising in combination a frame, a cylindrical saddle carried by said frame and having side openings therein, means for releasably securing a stereotype plate on said saddle in a position to extend over said openings, a milling cutter within said saddle, means for moving said cutter alternately through said openings and into contact with a plate on said saddle, means for adjustably moving said saddle relative to said cutter, a plurality of projector units secured to said frame on opposite sides of said saddle, each including means for projecting an image onto a plate on said saddle, and means for adjustably moving said projector units longitudinally and circumferentially of said saddle.

11. A stereotype plate finishing machine comprising in combination a frame, a cylindrical saddle having a longitudinal opening therein carried by said frame, means for adjustably moving said saddle axially and circumferentially relative to said frame, means for releasably securing a stereotype plate on said saddle over said opening, at least one milling cutter carried by said frame within said saddle, means for moving said cutter transversely of said saddle through said opening into contact with a plate on said saddle, a plurality of elongated projector unit supports secured to said frame adjacent said saddle and extending circumferentially of said saddle in spaced relation thereon, a projector unit carried by each of said supports and including means for projecting an image onto the surface of a plate on said saddle, means for adjustably moving said projector units along said supports and a scale on each support for indicating the circumferential position of the projector unit thereon.

12. A stereotype plate finishing machine comprising in combination a frame, a longitudinally extending cylindrical saddle carried by said frame and having two circumferentially spaced longitudinally extending openings therein, means for removably securing a stereotype plate on said saddle over said openings, a cutter bar journalled within said saddle on an axis parallel to the axis of said saddle, a plurality of rotary cutters carried by said cutter bar, means to swing said cutter bar about its axis to move said cutters transversely of said saddle through said openings into contact with a plate on said saddle, a driving motor, a driving connection between said motor and said cutter bar including a yielding element, and means on said driving connection between said yielding element and said cutter bar for permitting manual movement of said cutter bar about its axis when said motor is stationary.

13. A stereotype plate finishing machine comprising in combination a frame, a longitudinally extending cylindrical saddle carried by said frame and having two circumferentially spaced longitudinally extending openings therein, means for removably securing a stereotype plate on said saddle over said openings, a cutter bar journalled within said saddle on an axis parallel to the axis of said saddle, a plurality of rotary cutters car-

ried by said cutter bar, a crank connected to said cutter bar, a driving motor, a driving connection between said crank and said motor to reciprocate said crank and swing said cutter bar about its axis transversely of said saddle to move said cutters alternately through said openings into contact with a plate on said saddle, said driving connection including a connecting rod and means connected through springs to reciprocate said connecting rod and means connected to said crank for permitting manual movement of said cutter bar to move said cutters away from a plate when said motor is stationary.

14. A stereotype plate finishing machine comprising in combination a frame, a cylindrical saddle having an opening therein, bearings supporting said saddle on said frame for reciprocatory movement axially of said saddle, means for securing a stereotype plate on said saddle over said opening, a plurality of cutters within said saddle, means for moving said cutters transversely of said saddle through said opening into contact with a plate on said saddle, driving means connected to said saddle to reciprocate said saddle axially, register means carried by said frame adjacent said saddle for registry with points on a plate carried by said saddle, means for adjustably moving said saddle axially relative to said driving means, and resilient means interposed between said frame and said saddle for taking up slack in said driving connection in one direction.

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