April 17, 1928. 1,666,634

C. J. THOMSON

RULING MACHINE

Filed March 27, 1925 5 Sheets-Sheet 1

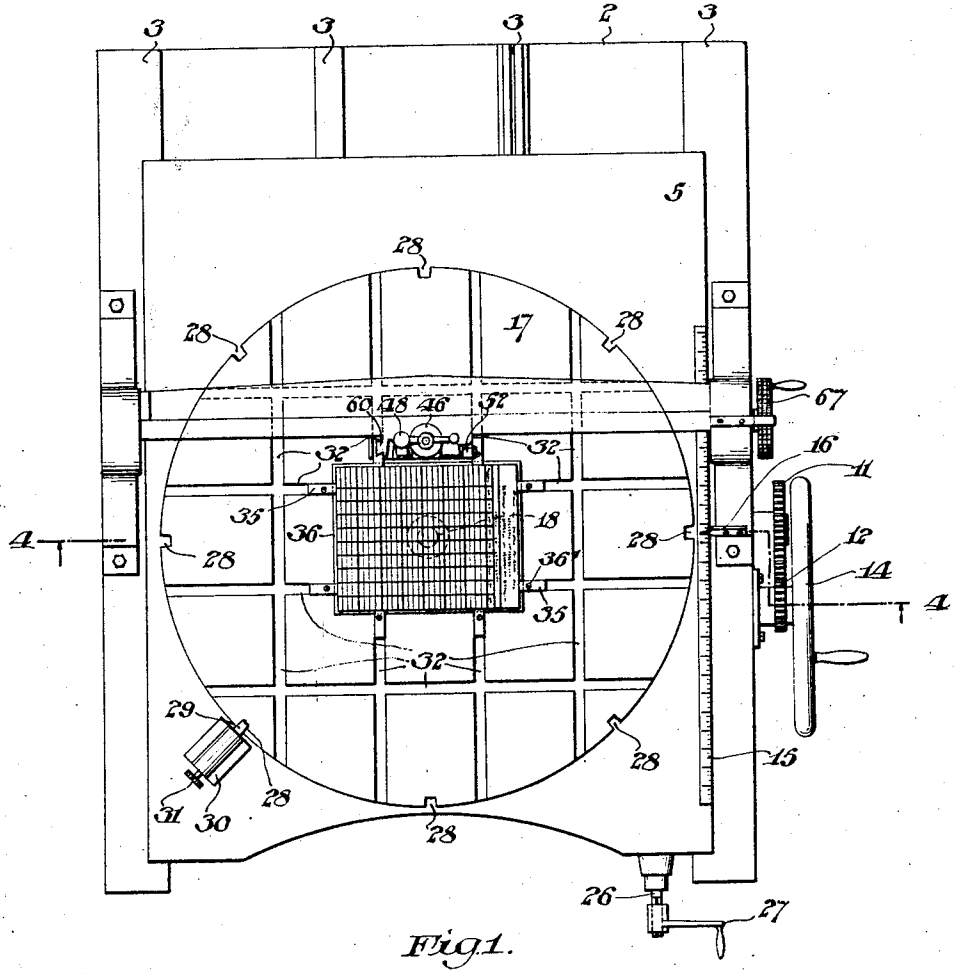


Fig. 1.

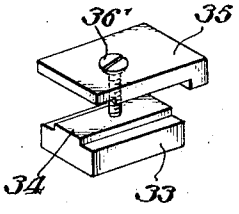


Fig. 9.

Inventor:
Charles J. Thomson
By
Attorney.

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C. J. THOMSON

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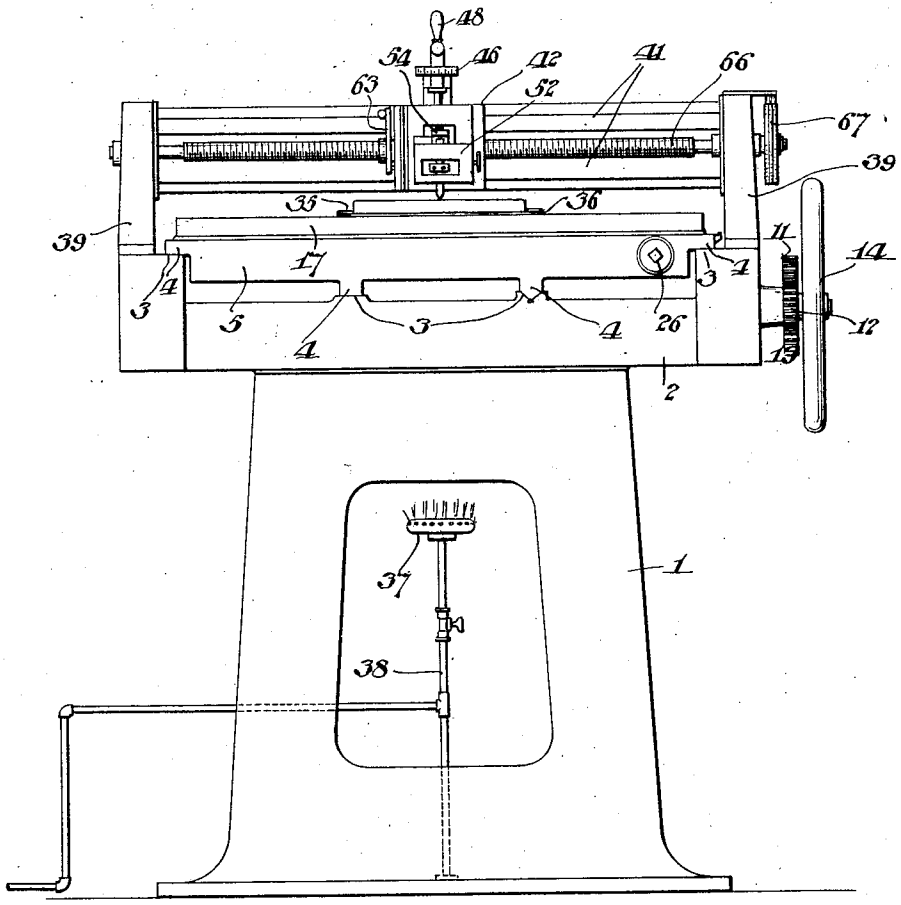


Fig. 2.

Inventor:
Charles J. Thomson
By
Attorney

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C. J. THOMSON

RULING MACHINE

Filed March 27, 1925 5 Sheets-Sheet 3

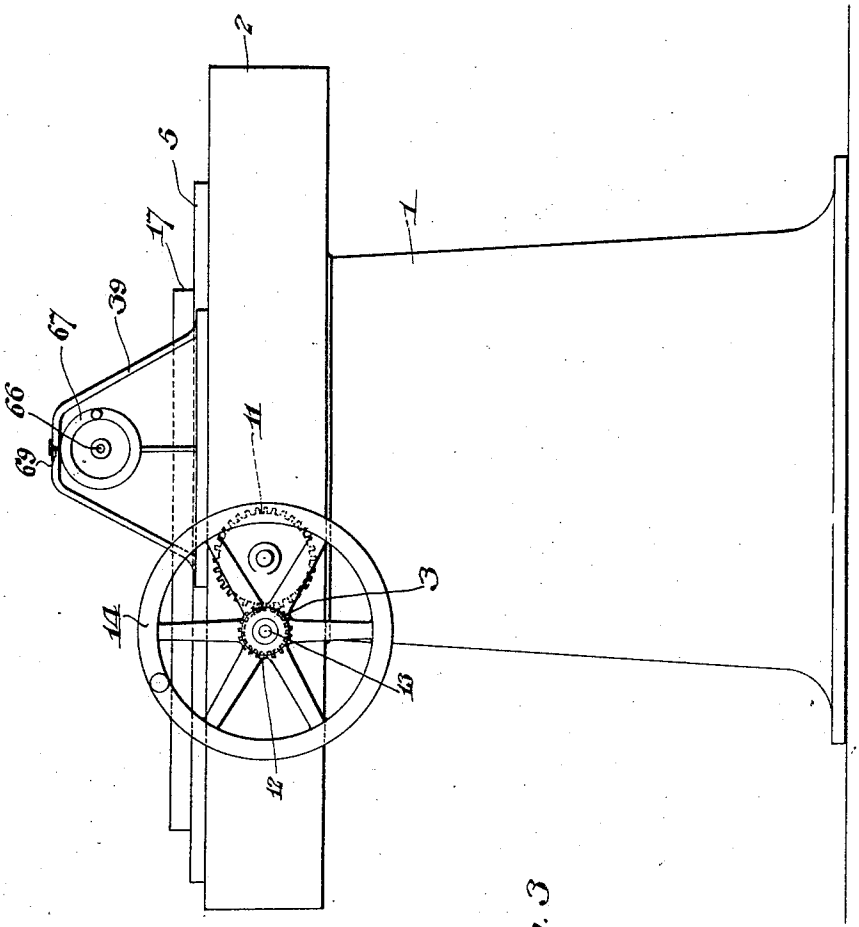


Fig. 3

Inventor:
Charles J. Thomson

By [illegible]
Attorney.

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C. J. THOMSON

RULING MACHINE

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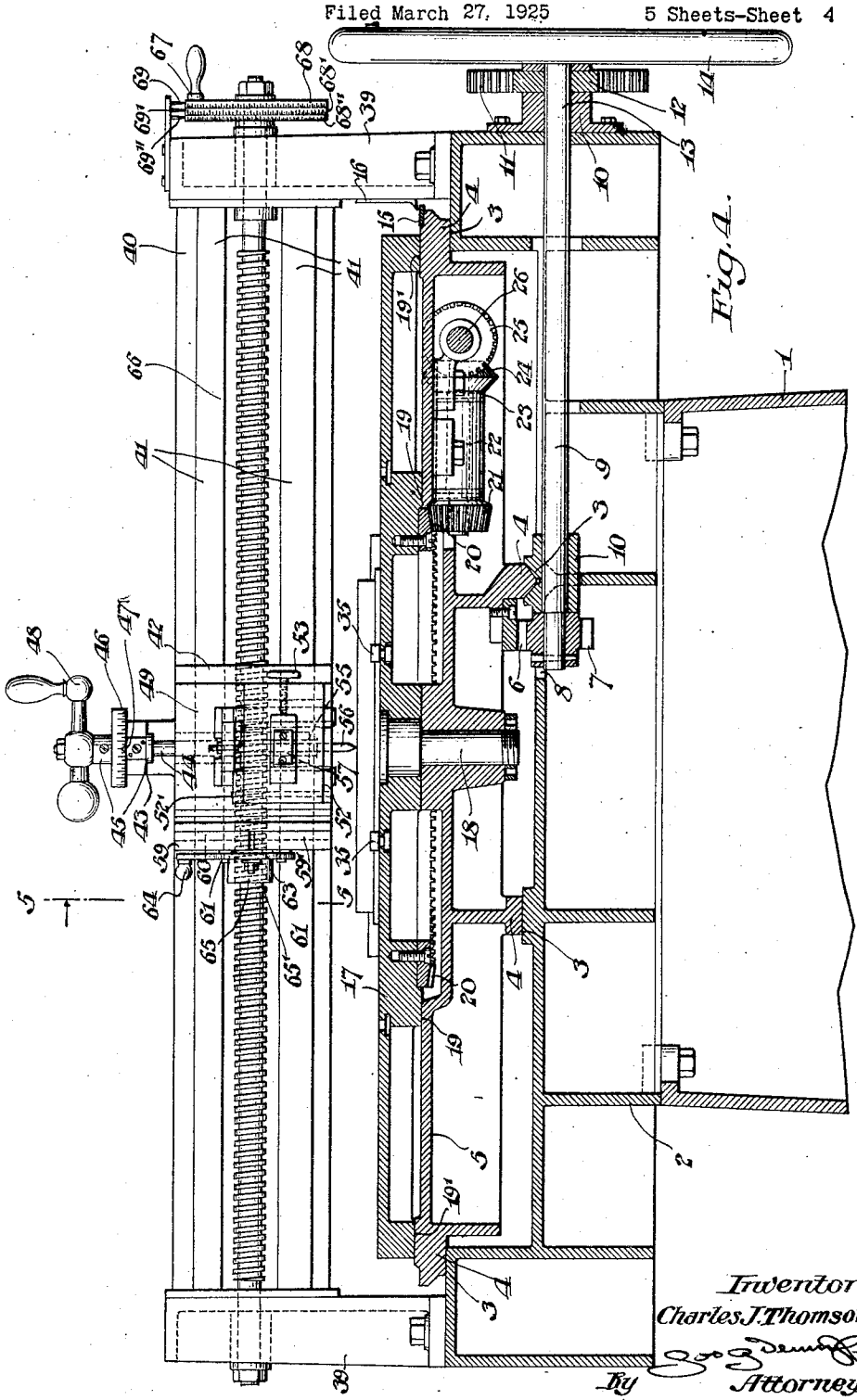


Fig. 4.

Inventor:
Charles J. Thomson
By Geo. B. Dennis
Attorney

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C. J. THOMSON

RULING MACHINE

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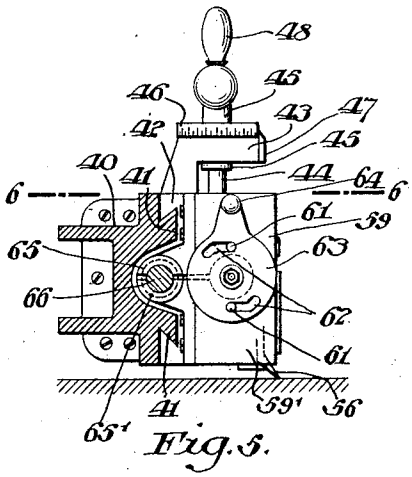


Fig. 5.

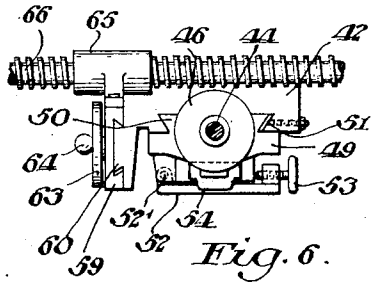


Fig. 6.

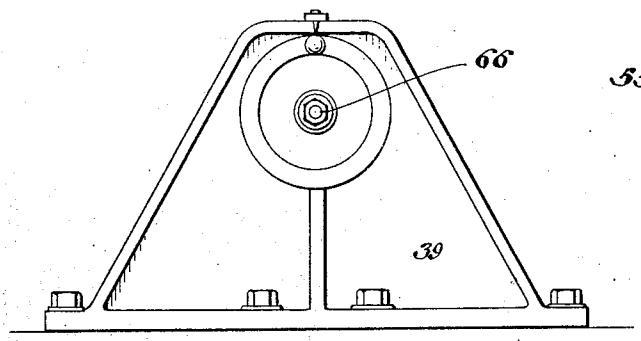


Fig. 7.

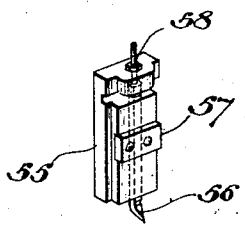


Fig. 8.

Inventor:
Charles J. Thomson
By [signature]
Attorney.

Patented Apr. 17, 1928. 1,666,634

UNITED STATES PATENT OFFICE.

CHARLES J. THOMSON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO WESTCOTT & THOMSON, INC., OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

RULING MACHINE.

Application filed March 27, 1925. Serial No. 18,672.

My improved machine is particularly designed for ruling electrotypers' wax "cases" made by the deposition of wax upon a metal plate, and my leading objects are to provide such a machine having capacity for a wide variety of work; that will produce work with perfect solid joints; and that provides means for effecting accurate micrometer measurements and adjustment by simple mechanical means.

The characteristic features and advantages of my improvements will more fully appear from the following description and the accompanying drawings of a preferred embodiment of my invention.

In the drawings, Fig. 1 is a top plan view of a machine embodying my invention with a "case" fixed thereon; Fig. 2 is an end view of the machine; Fig. 3 is a side elevation thereof; Fig. 4 is an enlarged transverse sectional view on the line 4—4 of Fig. 1; Fig. 5 is a sectional view on the line 5—5 of Fig. 4; Fig. 6 is a sectional view on the line 6—6 of Fig. 5; Fig. 7 is an elevation of a bracket for supporting the tool carrying mechanism; Fig. 8 is a perspective view of a tool holder on an enlarged scale; and Fig. 9 is a perspective view of a work holding clip on an enlarged scale.

As illustrated in the drawings, a pedestal 1 has bolted thereto a bed 2 provided with ways 3 for supporting the slides 4 of a horizontally reciprocable carriage 5. A rack 6, fixed to one of the slides of the table, meshes with a pinion 7 projecting through a bed aperture 8 and fixed on a shaft 9 which is journalled in the bed bearings 10. The shaft 9 has fixed thereon a gear wheel 11 rotatable by a smaller gear wheel 12 fixed on the journalled shaft 13 of a hand wheel 14. The movement of the carriage by the mechanism is indicated on the carriage scale 15 by a pointer 16 fixed to the bed.

A rotary table 17 is journalled relatively to the carriage 5 by a shaft 18 and is provided with depending circular flanges 19, 19′ sliding over the surface of the carriage. A conoidal rack 20, fixed to the flange 19, meshes with a bevel pinion 21 fixed on a shaft 22. The latter is journalled in a bearing 23 depending from the table and has thereon a bevel gear 24 meshing with a bevel gear 25 fixed on a journalled shaft 26 and rotatable by a detachable handle 27.

The periphery of the table contains notches 28 for the engagement of a spring pressed pin or detent 29 housed in a bearing 30 on the bed, the pin being provided with a knurled head 31 for retracting it from a notch.

The surface of the table contains a plurality of undercut grooves 32 preferably intersecting at right angles.

The undercut grooves contain work holders comprising channeled blocks 33 having tenons 34 extending upwardly through the grooves and flanged work-holding clips 35 connected with the blocks by screws 36′, the clips having their edges recessed to accommodate the edges of the wax coated metal plate 36 forming the electrotyper's "case" to be ruled.

A burner 37 is housed in the pedestal below the bed and table and supplied with fuel through the valve controlled pipe 38 to furnish heat for maintaining the wax of the case at the proper consistency.

Brackets 39 fixed to the bed 2 provide supports for a beam 40 extending across the machine above the table, the beam having on its face undercut rails 41 forming slideways for the tool carriage 42 which is recessed to receive the rails.

A bracket 43 on the carriage 42 has journalled therein a shaft 44 positioned by collars 45 and having thereon a scale disk 46 upon which the pointer 47 indicates the movement of the shaft by the balanced handle 48. The lower end of the shaft makes a threaded engagement with and adjustably supports a tool slide 49 having a dovetail tenon 50 engaged in the undercut vertical slideway 51 of the carriage.

The tool slide 49 has hinged thereto by a pintle 52′ a door 52 held shut by a thumbnut 53 for securing in the socket or chamber 54 a tool holder 55 having an irregular contour conforming with the contour of the socket 54, so that the protuberances of one part register with recesses of the other part and longitudinal movement of the tool holder is thereby prevented. The tools 56 required for different kinds of work are respectively clamped in similar slotted tool holders by clamps 57 and longitudinally adjusted therein by the threaded bolts and nuts 58, so that substitution of tools in the machine may be quickly and simply made by

merely opening the gate 52, replacing the tool holder and locking the gate.

A pair of undercut slides 59, 59′ are movable on the dovetail tenon 60 of the carriage 42 by the engagement of pins 61 thereon with eccentric slots 62 of a disk 63 journalled on the carriage between the slides and rotatable by a handle 64. The slides 59, 59′ are provided with rearwardly extending extensions containing seats for semicircular threaded segments 65, 65′, forming a split nut movable by the operation of the slides into and out of engagement with a threaded shaft or screw 66, the unthreaded ends of the shaft being journalled in the brackets 39.

A hand wheel 67 is fixed on one end of the shaft 66, and has upon the periphery thereof three scales 68, 68′, and 68″ cooperating with the pointers 69, 69′ and 69″ so that a micrometer adjustment of the movement and position of the tool carriage may be effected, the plurality of scales permitting adjustment to various minute fractions of an inch without confusion.

In the operation of the machine, a "case" or wax coated plate, upon which desired typographical matter, other than lines, has been impressed, is clamped upon the table 17 by means of the work holders 34, 35 and in a position depending upon the character of the lines to be cut in the wax. A tool holder 55, containing a tool 56 suitable for performing the work to be done, is clamped in the tool slide 49 by the gate 52. The work and tool are then positioned by adjustment of their respective carriers until the point of the tool is at the desired starting point. The depth of cut of the tool is accurately adjusted by turning the handle 48 until the pointer 47 and scale 46 indicate that the tool has been moved down into proper position. The tool is then moved relatively to the work by rotating the hand wheel 67 until a line of desired length has been cut, as indicated by the pointers 69, 69′ and 69″ on the scales 68, 68′ and 68″. The handle 64 may be then moved to rotate the disk 63 and retract the slides 59, 59′ and open the threaded jaws or nut sections 65, 65′ so that the tool carriage can be moved freely along the rail 41. The position of the work is again adjusted by operating the hand wheel 14 and the handle 27, or either of them, and the cutter 56 is vertically positioned and its cutting depth regulated by operating the handle 48. The tool carriage is connected with the screw 66 by operating the handle 64 and the tool is advanced to the work by operating the handle 67.

By my machine, any desired arrangement of lines can be quickly and accurately cut in the wax without necessity for the employment of a highly skilled operative, since the adjustments are clearly indicated on the scales provided and are effected through mechanical means which are simple in construction and operation.

Having described my invention, I claim:

1. In apparatus of the character described, the combination of a reciprocable carriage, a table journalled relatively to said carriage, a conoidal rack fixed to said table, a beveled pinion engaging said rack, a shaft to which said pinion is fixed, a shaft extending transversely to said shaft last named, means for connecting said shafts, means for securing work on said table, a tool, and means for moving said tool transversely to the work on said table.

2. In apparatus of the character described, the combination of a reciprocable carriage, a table journalled relatively to said carriage, means for securing work to said table, a heater beneath said table for warming work thereon, a tool, and means for moving said tool transversely to the work on said table.

3. In apparatus of the character described, the combination of a reciprocable carriage, a table journalled relatively to said carriage, said table having undercut slots in the surface thereof, blocks movable in said slots, and flanged work holding clips connected with said blocks, said clips having their edges recessed to accommodate the edges of work on said table, a tool and means for moving said tool transversely to the work on said table.

4. In apparatus of the character described, the combination of a work holding table, a tool carriage movable over said table, means for supporting and moving said carriage over said table, threaded jaws connected with said tool carriage, a screw, and means for operating said jaws to engage and disengage said screw.

5. In apparatus of the character described, the combination of a reciprocable carriage, a revoluble table journalled relatively to said carriage and having a slotted surface, work holders engaged in said slots, a journalled screw above said table, a tool carriage having a split nut engaging said screw, means for operating said nut, a tool slide reciprocable vertically in said carriage, means comprising a threaded shaft for reciprocating said slide, said slide containing a socket and having a hinged gate for closing said socket, a tool holder engaged in said socket by said gate, a tool fixed to said holder, means for rotating said screw, and means for indicating the movement of said first named carriage, said tool holding carriage, and said tool slide.

6. In apparatus of the character described, the combination of a reciprocable carriage, a table journalled relatively to said carriage, means for rotating said table, said table containing peripheral notches, a detent adapted to be engaged in said notches and secure said

table against rotation by said means, means for securing work to the surface of said table, a tool, and means for moving said tool transversely to the work on said table.

7. In apparatus of the character described, the combination of a reciprocable carriage, a table connected with said carriage, means for affixing work to said table, a tool carriage, means for supporting and moving said tool carriage over and parallel to said table, a tool holder connected with said tool carriage, a tool in said holder, means comprising a threaded bolt for effecting micrometer longitudinal adjustment of said tool in its holder, and means for adjusting said tool holder perpendicularly to the work on said table.

8. In apparatus of the character described, the combination with a work holding table, of a tool carriage containing a socket, a screw connected with said tool carriage and moving it over said table, a tool holder registering with the socket in said tool carriage. a threaded bolt movable in said holder, a tool movable longitudinally by said bolt, and a nut for positioning said bolt relatively to said holder.

9. In apparatus of the character described, the combination with a work holding table, of a tool carriage, means for moving said carriage across said table, a tool slide, means for moving said slide relatively to said carriage, a socket in said slide, a tool holder in said socket, a hinged gate for closing said socket, and a tool fixed to said tool holder.

10. In apparatus of the character described, the combination of a work holding table, a tool carriage movable over said table and having slides connected therewith, means for supporting and moving said carriage over said table, threaded jaws fixed to said slides on said carriage, means comprising pins and eccentric slots for operating said slides, and a screw, said jaws being movable by said slides into and out of engagement with said screw.

11. In apparatus of the character described, the combination of a work holding table, a tool carriage, means for supporting and moving said carriage across said table, a tool slide containing a socket for a tool holder, a gate closing said socket, and means for moving said tool slide on said carriage.

Signed at Philadelphia, in the county of Philadelphia, and State of Pennsylvania, this 17 day of March, 1925.

CHAS. J. THOMSON.