LE ROY E. JOLLS.

MACHINE TOOL.

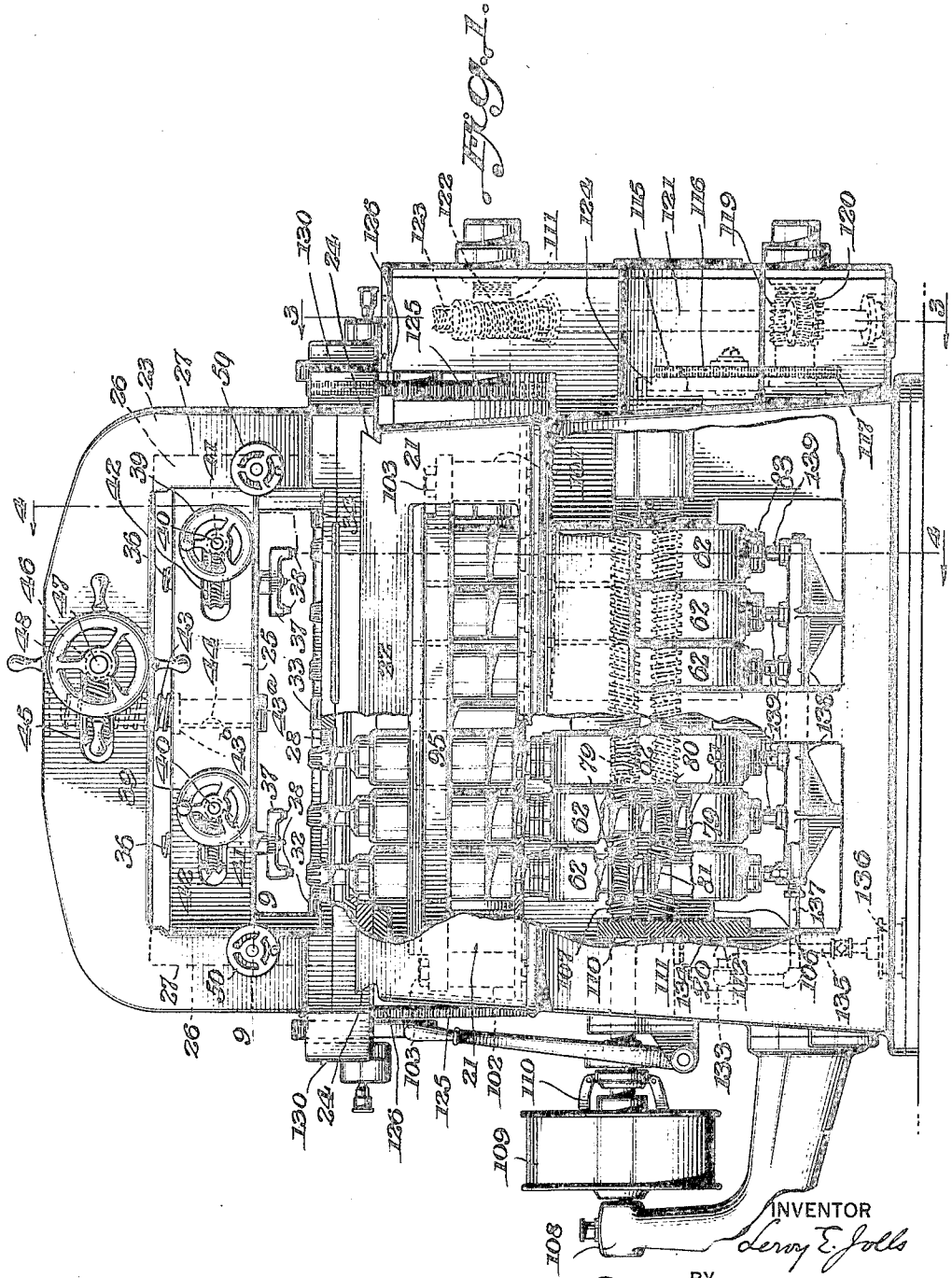
APPLICATION FILED JUNE 20, 1918.

1,397,006.

Patented Nov. 15, 1921.

6 SHEETS—SHEET 1.

Fig. 1.



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6 SHEETS—SHEET 2.

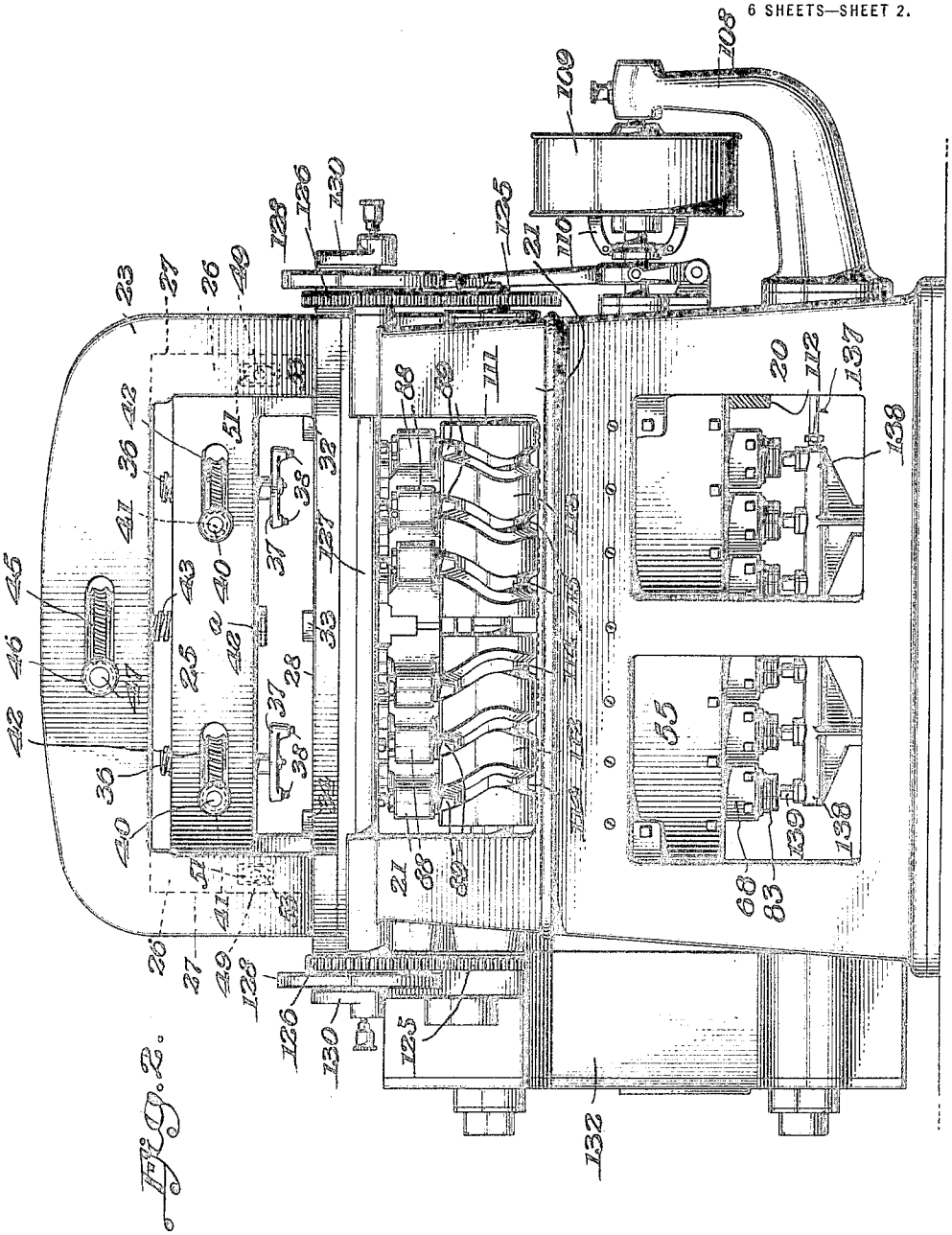


Fig. 2.

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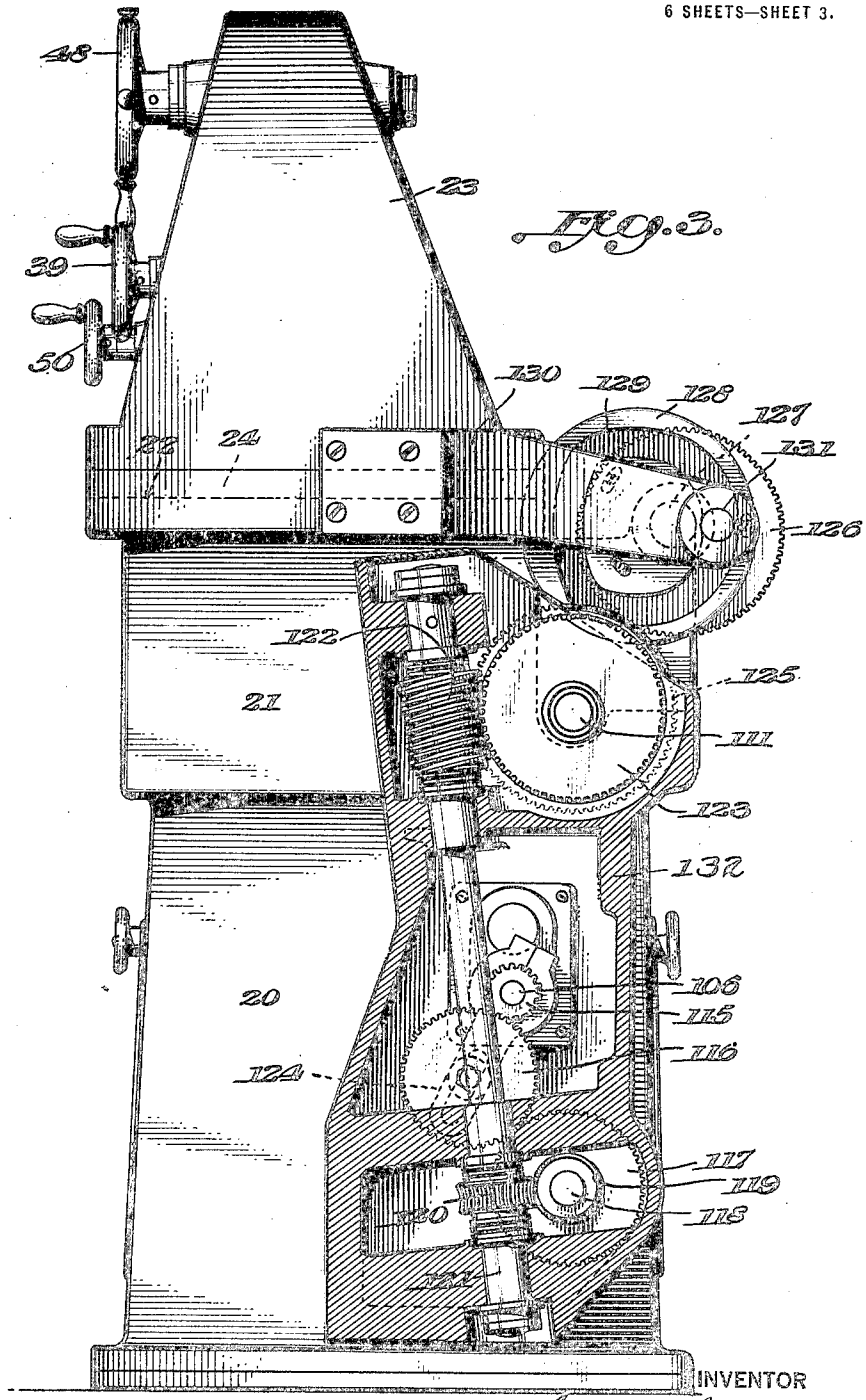


Fig. 3.

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6 SHEETS—SHEET 4.

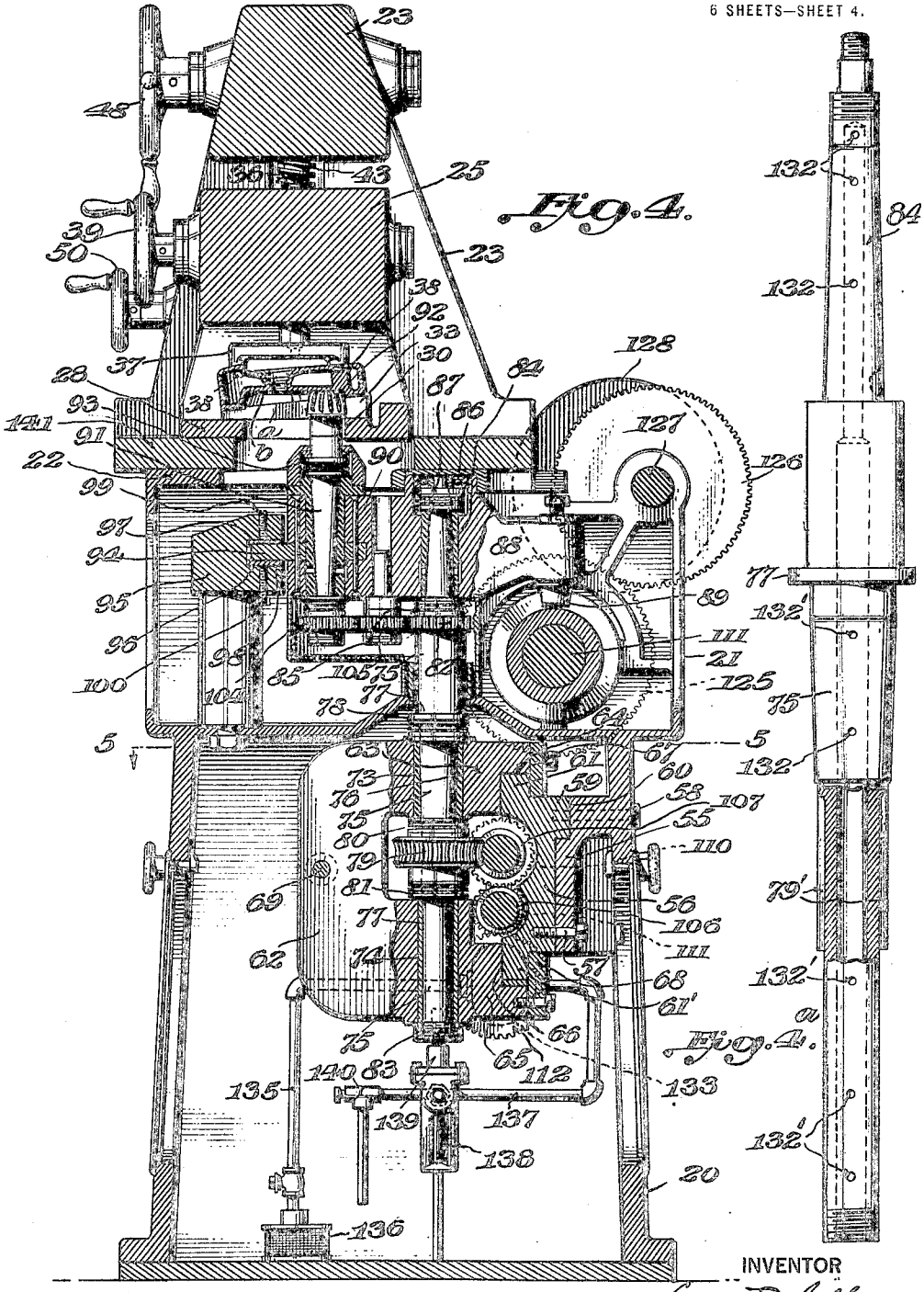


Fig. 4.

Fig. 4a.

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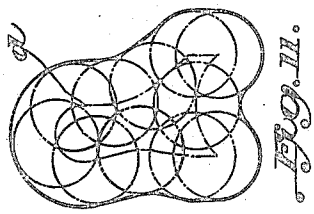


Fig. 11.

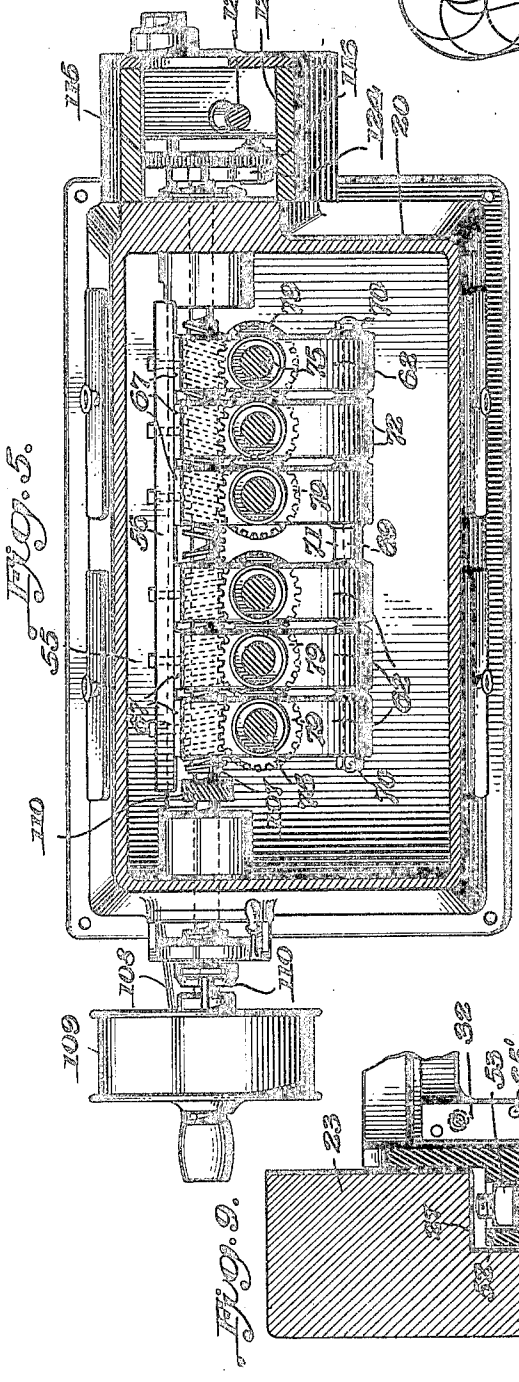


Fig. 5.

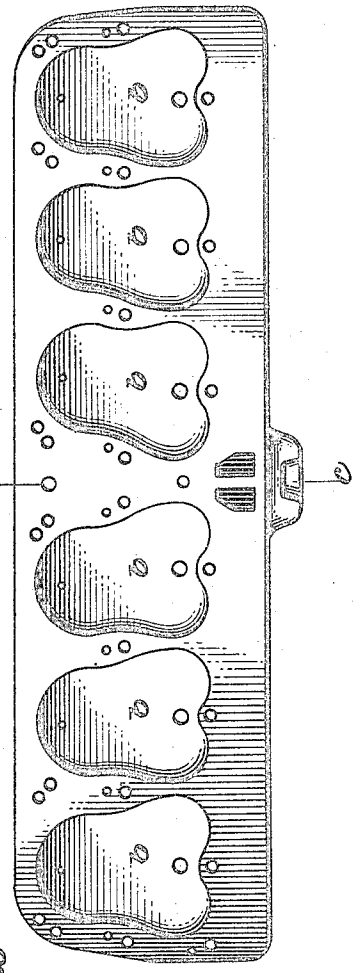


Fig. 10.

Fig. 6.

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6 SHEETS—SHEET 6.

Fig. 6.

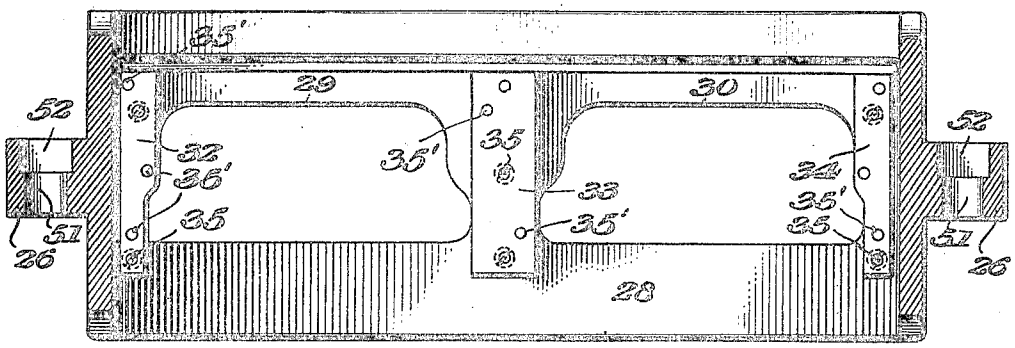
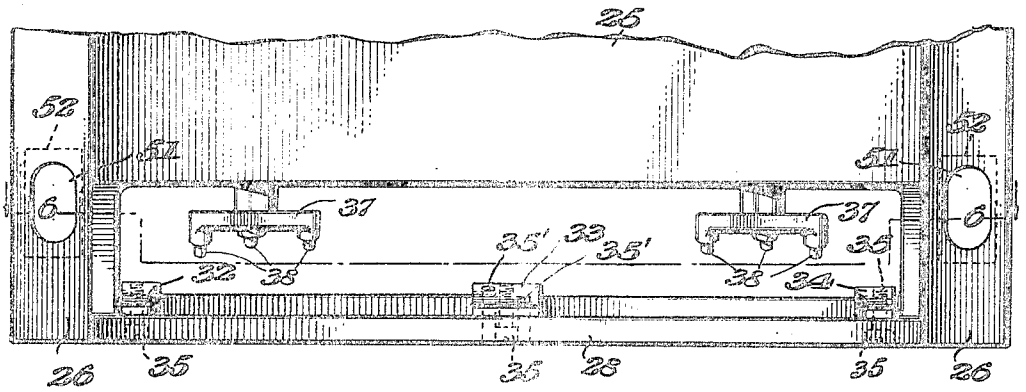


Fig. 7.



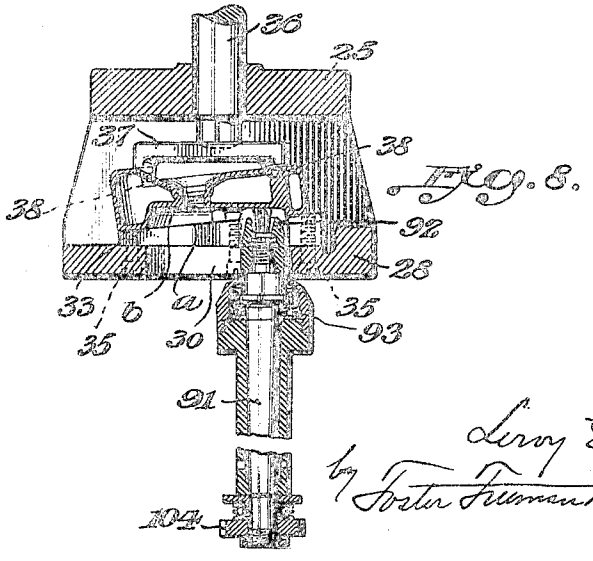


Fig. 8.

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UNITED STATES PATENT OFFICE.

LE ROY E. JOLLS, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO PACKARD MOTOR CAR COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

MACHINE-TOOL.

REISSUED

1,397,006. Specification of Letters Patent. Patented Nov. 15, 1921.

Application filed June 20, 1918. Serial No. 241,042.

To all whom it may concern:

Be it known that I, LE ROY E. JOLLS, a citizen of the United States, and resident of Elizabeth, Union county, State of New Jersey, have invented certain new and useful Improvements in Machine-Tools, of which the following is a specification.

The present invention relates to a machine tool and is illustrated and described as embodied in a machine for finishing the surfaces bounding the compression recesses formed in the detachable cylinder heads of hydrocarbon motors. It is to be understood, however, that the invention may be embodied in other machines.

The objects of the invention are to provide an arrangement of tool and work supports and means for actuating the same which permits an exceedingly strong construction without unnecessary weight or bulk; to provide a profiling machine with a plurality of tools and means for operating all of them simultaneously; to provide a novel means for simultaneously moving the work and tools in different directions to make the desired cut or cuts on the work; to provide a machine in which the work support is reciprocated in one direction and the tool in another; to provide such a machine in which the work support is above the tool; to provide a machine in which the tool is moved to and fro in a curved path while the work is reciprocated in another path; to provide a machine having at least two tools and means on a single shaft for moving them in opposite directions whereby end thrust on the shaft is eliminated; to provide a novel means for supporting and driving the tools; to provide a novel work support and means for adjusting the work to and from the tool; and generally to provide an efficient and dependable machine of the type mentioned. Other objects and features of novelty will be apparent from the description taken in connection with the drawings in which,

Figure 1 is a front elevation of a machine constructed in accordance with the present invention, certain parts being broken away;

Fig. 2 is a rear elevation of the machine;

Fig. 3 is a sectional elevation taken substantially on the line 3—3 of Fig. 1;

Fig. 4 is a transverse sectional elevation taken substantially on the line 4—4 of Fig. 1;

Fig. 4ª is an elevation of one of the spindles;

Fig. 5 is a plan sectional view taken substantially on the line 5—5 of Fig. 4;

Fig. 6 is a sectional view of the inner frame of the work support taken substantially on the line 6—6 of Fig. 7;

Fig. 7 is a front elevation of the inner frame, the upper portion thereof being broken away;

Fig. 8 is an enlarged sectional view showing the relation of the tool and work;

Fig. 9 is a sectional view taken substantially on the line 9—9 of Fig. 1;

Fig. 10 is a bottom plan view of a detachable cylinder head for a hydrocarbon motor, illustrating the form of the compression recesses, the surfaces of which are finished by the present machine; and

Fig. 11 is a diagrammatic view illustrating the path of the tool relative to the work, showing that all the surfaces bounding a compression recess are finished by the tool.

Referring to the drawings, it will be seen that the machine comprises a hollow base 20 having at the ends of the top thereof the two uprights 21 supporting the table 22. A work support which includes a rectangular frame 23 is mounted on the table 22 for reciprocating movement transversely thereof, the dove-tail ways 24 being provided for this purpose. An inner rectangular frame 25 is mounted within the rectangular frame 23 for adjustment in a vertical direction. For this purpose the inner frame is formed with lateral flanges 26 which are slidable in the ways 27 formed in the outer frame. The lower or bottom member 28 of the inner frame is formed with the two apertures 29 and 30 (Fig. 6) and carries three pads 32, 33 and 34 the upper surfaces of which are inclined relative to the bottom member 28, as illustrated at *a* in Figs. 4 and 8. The pads are secured to the member 28 in any suitable manner, as by means of screws 35 and dowel pins 35′. As shown in Figs. 4 and 8, the bottom surface *b* of the compression recess in the cylinder head is at an angle to the bottom surface of the head proper, and the inclined pads 32, 33 and 34 are provided so that the bottom surface of the compression

recesses are positioned in a plane perpendicular to the axis of the tool. It is understood, however, that the invention is not limited to supporting the work in this particular manner, but that said means may be varied so that the work will be arranged in proper position relative to the tool.

For the purpose of clamping the work against the pads the upper member of the inner frame 25 is provided with a pair of spaced threaded rods 36 which at their lower ends have the heads 37 carrying the pins 38 adapted to engage in registering recesses in the work. The rods 36 are adjusted vertically by means of the hand wheels 39 projecting at the front of the machine and mounted on the shafts 40 which carry the worms 41 (Fig. 2) meshing with the worm wheels 42 which are threaded on the rods 36. It will be seen, as rotation of the rods 36 is prevented by engagement with the work, when the hand wheels 39 are turned the worm wheels 42 will be rotated and act as nuts to raise or lower the rods 36.

It is desirable to adjust the position of the work vertically relative to the tools and for this purpose the inner frame 25 is mounted for sliding movement in a vertical direction as previously described, and any suitable mechanism may be provided for adjusting the inner frame. As shown, a short shaft 43 extends through the upper member of the frame 25 and is secured therein against rotation as by the key 44, longitudinal movement being prevented by the collars 43^a and 43^b. The upper portion of this shaft is threaded and engages in the worm wheel 45, the latter being rotated by a worm 46 (Fig. 2) on the shaft 47 having the hand wheel 48 at the front side of the machine. In order to prevent any play or looseness of the flanges 26 in the ways 27, each of the side members of the outer frame has a horizontal shaft 49 (Fig. 9) which at the front of the machine carries a hand wheel 50. Each shaft is threaded at its inner end and extends through the elongated aperture 51 in the flange 26 of the inner frame (see Figs. 6 and 7). An elongated recess 52 is formed in the rear of the flange 26 and a nut 53 threaded on the end of the shaft 49 is fitted in the same, so that it is held against rotation but may slide therein. It will be seen, therefore, when a hand wheel 50 is rotated in a direction to screw the shaft 49 into the nut 53, the flange 26 will be held in contact with the wall 54 of the way 27. In this manner as the pins 38 position the work relative to the inner frame and the means just described positively secures the inner frame always in the same position transversely of the machine, the work will always be located accurately in the same position relative to the tools.

Referring to Fig. 10, it will be seen that the three compression recesses at the right of the transverse center line *c—c* are symmetrically located with respect to the other recesses on the other side of said center line. For the purpose of finishing the entire surface bounding these recesses, in the present embodiment of the invention, the work is reciprocated transversely of the machine and simultaneously the tools, one being provided for each recess, are moved in a path at an angle to the direction of movement of the work. The resulting path of the axis of a tool relative to the work is illustrated by the dotted line *d* in Fig. 11. Some of the positions of the tool are illustrated in dotted lines and it is apparent that the entire bottom surface *b* of the recess is finished by the top of the tool and the side or edge surfaces are finished by the cutting edges at the sides of the tool. In this manner the entire bounding surface of the recess is finished.

The means for moving the tools in their respective paths and for rotating the same are located beneath the table 22 and within the hollow base 20. The rear wall of the base 20 is formed with a supporting member 55 extending longitudinally of the machine. A bar 56 is secured to and supported by the member 55, by means of the bolts 57 and 58 and the projection 59 formed on the bar and seated in the recess 60 in the member 55. At its top and bottom, the bar 56 is formed with the flanges 61 and 61′. A series of U-shaped members 62, one for each tool, are arranged as shown in the drawings. Each of these members 62 has one of its arms 63 formed with a seat 64 for the flange 61 and the other arm 65 formed with a seat 66 for the flange 61′, whereby the U-shaped members are supported and carried by the bar 56. In order to securely hold the members 62 to the bar 56, each member has the plates 67 and 68 secured to the arms 63 and 65 respectively to clamp the flanges 61 and 61′ between said plates and the seats formed in the arms. In order to hold the members 62, at their bases in proper spaced relation, a rod 69 extends through the same and has the nuts 70 threaded on the ends. As clearly shown in Fig. 5, the members 62 are arranged in two groups of three each. One group is spaced from the other by means of the spacing sleeve 71 arranged around the rod 69, and the members 62 of each group are maintained in proper spaced relation by means of the abutting bosses 72.

The arms 63 and 65 of the U-shaped members 62 are formed with the alined bores 73 and 74, and a spindle 75 is mounted in the bushings 76 and 77 of the bores. The spindle 75 extends from the bottom of the bottom arm 65 to the table 22. At a point just above the arm 63 it is formed with a shoulder 77 and a roller thrust bearing 78 is interposed between this shoulder and the top of the arm 63, so that any downward pressure on this sleeve is carried through the

bearing 78 to the U-shaped member 62. A worm wheel 79 is secured to the spindle 75 for rotation therewith by splines 79' and is positioned between the arms 63 and 65 of the U-shaped member, any end thrust being carried through the roller thrust bearings 80 and 81 to the arms.

Near its upper end the spindle 75 has a gear 82 secured for rotation therewith. The lower end of the spindle 75 has the nuts 83 threaded on the same, which bear against the lower side of the arm 65, and the top thereof is tapered, as shown at 84 in Fig. 4. A tool support in the form of a lever is pivoted on this tapered portion 84 of the spindle and a thrust bearing 85 is interposed between the bottom of the lever and the spindle, so that the weight of the lever is transmitted through the bearing on to the said spindle. The upper tapered end 84 is provided with a radial roller bearing 86, and a thrust bearing 87. The lever comprises two arms, one of which 88 extends to the right from the shaft as viewed in Fig. 4, and this arm carries a roller 89 for a purpose presently to be described. The other arm 90 of the tool support rotatively carries a tool holder 91, and a tool 92 is adapted to be secured to the holder, a thrust bearing 93 being provided to carry any axial thrust of the tool to the arm. A projecting bearing plate 94 is secured to the arm 90 and is slidingly supported by the block 95. For this purpose the block is formed with a recess 96 and wear plates 97 and 98 are interposed between the sides of the plate 94 and the walls of the recess, these plates being adjustable, as by means of the set screws 99 and 100. As shown in Fig. 1 the bar 95 is supported at its ends on the sleeves 101 and 102, bolts 103 passing through the bar and sleeves and securing the same to the top of the base. The lower end of the tool holder 91 has a gear 104 secured thereto for rotation therewith, and this gear is in mesh with an idler gear 105, which in turn meshes with the gear 82 on the sleeve 75. It will be seen, therefore, when the worm wheel 79 is rotated, the tool holder and tool will also be rotated through the connections described.

Referring now to Fig. 1, it will be seen that two shafts 106 and 107 extend longitudinally of the base of the machine, the shaft 107 being arranged vertically over the shaft 106 and having two threaded portions, the lead of the thread on one portion being opposite to that of the other. Likewise the shaft 106 has two threaded portions, the lead of one portion being opposite to that of the other. The shaft 107 is extended outside of the base at the left of the machine and has its outer end mounted in a bearing in the bracket 108. A pulley 109 is rotatively mounted on the shaft and a clutch 110 is provided for rotatively connecting the pulley and shaft 107. The shaft 106 is driven from the shaft 107 by means of the meshing gears 110 and 111, and gear 111 in turn meshes with another gear 112, which drives the oil pump for the oiling system. Referring to the three worm wheels of the left hand group of tools shown in Fig. 1, it will be observed that the end worm wheels 79 are driven from the shaft 107, while the middle worm wheel 79 is driven from the shaft 106. However, as the lead of the threaded portion of shaft 106 just below that of shaft 107 is opposite to the latter, these three worm wheels will all be rotated in the same direction, and consequently the three tools of the left hand group will all rotate in the same direction. The worm wheels of the right hand group of tools are arranged in the same manner as the left hand, but as the threaded portions of the shaft 107 and 106 have a lead opposite to that of the portions already described, the worm wheels and consequently the tools of this right hand group will be driven in the opposite direction. By displacing the middle worm wheel of each group downward with respect to the other two, the three tools are permitted to be arranged closer together than they would be if the worm wheels were all driven from a single shaft. Furthermore it will be observed, as the two worm wheels driven by the shaft 106, are driven by threaded portions having opposite leads, there will be no end thrust on the shaft. For a similar reason there will be no end thrust on the shaft 107.

Directly under the arms 88 of the tool supporting levers is a shaft 111, which carries two cams 112 and 113, each formed with the cam grooves 114 and 115, these grooves being oppositely inclined, as shown in Fig. 2. Each of the rollers 89 carried on the arms 88, is adapted to engage in one of the grooves of the cams. In this manner the lever carrying the tool support is oscillated to and fro and consequently the tool support and the tool are moved to and fro in a curved path, this path being substantially at right angles relative to the direction of movement of the work support. For the purpose of rotating the shaft 111, the end of the shaft 106 (see Fig. 3) carries a pinion 115 which through the idler gear 116, drives a gear 117 on a shaft 118. This latter shaft has a worm 119 which meshes with the worm wheel 120 connected to rotate with the substantially vertical shaft 121. The upper end of this latter shaft has a worm 122 in mesh with a worm wheel 123 on the shaft 111. If it is desired to change the angular velocity ratio between the shafts 106 and 111, the pinion 115 may be changed, the idler 116 being mounted on a slotted pivoted arm 124 in the usual manner for this purpose. It will be observed that as the cam grooves of cam 112 are oppositely inclined with respect to

those on cam 113, the axial thrust of one cam will counterbalance that of the other, so that the shaft 111 has no longitudinal thrust in its bearings.

The work support is adapted to be reciprocated in timed relation with the movement of the tool. As shown the shaft 111 has a gear 125 on each end thereof driving a gear 126 on each end of a shaft 127 arranged parallel to the shaft 111. Outside the gears 126, on each end of the shaft 127 is a cam 128 which is formed with a cam groove 129. An arm 130 is secured to each side of the work support near the bottom thereof and carries a roller 131 which works in the cam groove 129. Thus as the tools are reciprocated to and fro, the work support will be moved back and forth by means of the cams 128. By properly designing the cams 112, 113 and 128 the path of the tool relative to the work may be as desired. The drive for connecting shafts 106 and 111 may be arranged within the casing 132, so that the gears will not be a menace to the operator.

For the purpose of properly lubricating the bearings for the spindle 75, it is made hollow nearly to its upper end, and the bearing portions have the radial oil holes 132' whereby oil is fed to said bearings. An oil pump 133 (Figs. 1 and 4) is connected to be driven by the shaft 134 carrying gear 112, and its suction pipe 135 takes the oil from the bottom of the base 20 through the strainer 136. The discharge pipe 137 of the pump has a connection to one end of a manifold 138 which has six nipples 139, one for each spindle. The discharge pipe also has a relief valve 140. Thus oil is continually forced through the holes 132 of the spindles and drains back to the bottom of the base. If the pressure of the oil is excessive, then relief valve 140 will open permitting the oil to discharge directly into the base of the machine. Obviously other bearings of the machine might be lubricated by oil from the pump if desired.

In the operation of the machine the hand wheels 50 are manipulated so that the flanges 26 of the inner frame 25 (see Fig. 9) are held against the surface 54 of the guideways 27, so that the frame may be adjusted up and down but without any looseness or play. The hand wheel 48 is then rotated to raise the frame 25. The work which in this instance is a cylinder head casting is clamped against the pads 32, 33 and 34 by turning wheels 39 and the frame moved downward to feed the work against the tools by operating hand wheel 48. It is to be understood, although the tools might cut out the entire recesses, in the embodiment of the invention illustrated, the tolls merely finish the surfaces bounding the recesses, the recesses having been cast in the head. The work is then fed downward against the tools until the bottom member 28 of the inner frame 25 abuts the bottom member 141 of the frame 23, thus accurately determining the position of the bottom of the recesses with respect to the tools. The work support 23 is caused to reciprocate by means of the cams 128 and the tools are rocked about the axes of their associated spindles 75 by means of cams 112 and 113, so that each of the tools moves in a path substantially at right angles to the direction of reciprocation of the work support. The cams 128, 112 and 113 are designed so that the path of the tools with respect to the work is such that the tools will give the proper outline to the recesses and will also finish the entire bottom surface thereof. As previously described the bearings for the spindles 75 are lubricated by oil forced to the said bearings by the pump 133.

Although a specific embodiment of the invention has been described in detail, it is to be understood that the invention is not limited to the exact construction illustrated but that changes and modifications may be made which come within the scope of the appended claims.

Having thus described my invention what is claimed as new and desired to be secured by Letters Patent is:

1. A metal working machine including in combination, a work support, a tool holder, means for rotating the holder, means for moving the support to and fro in one direction, a driving member, and means operated from said member for moving the holder to and fro in a direction transverse to the first direction, whereby the axis of the holder traces a closed figure on the support.

2. A metal working machine including in combination, a work support, a pivoted tool holder, means for rotating the holder, a driving member, means for moving the support to and fro in one direction and means operated from said member for swinging the holder to and fro in another direction.

3. A metal working machine including in combination, a slidably mounted work support, a tool holder, a driving member, means operated from said member for rotating the holder, sliding the support to and fro in one direction and moving the holder to and fro in another direction.

4. A metal working machine including in combination, a slidably mounted work support, a pivoted tool holder, means for rotating the holder, means for sliding the support to and fro in one direction, a driving member, and means operated by said member, for swinging the holder to and fro in another direction.

5. A metal working machine including in combination, a work support, a tool holder,

means for rotating the holder and cam means for moving the work support to and fro in one direction and the holder simultaneously to and fro in a direction substantially parallel to the plane of movement of the support and substantially at right angles to the first mentioned direction whereby the axis of the holder traces a closed figure on the support.

6. A metal working machine including in combination, a slidable work support, means for sliding said support to and fro, a tool holder rotatable about an axis perpendicular to the direction of movement of the support, means for rotating the holder, and means for moving the holder to and fro in a direction substantially perpendicular to the direction of movement of the support, and simultaneously therewith.

7. A metal working machine including in combination, a slidable work support, means for sliding said support, a tool holder rotatable about an axis perpendicular to the direction of movement of the support, means for rotating the holder, said sliding means including a rotatable cam; and a rotatable cam for moving the holder in a direction substantially perpendicular to the direction of movement of the support, the axes of said cams being parallel.

8. A metal working machine including in combination, a slidable work support, means for sliding said support, a tool holder rotatable about an axis perpendicular to the direction of movement of the support, means for rotating the holder, said sliding means including a rotatable cam; and a rotatable cam for moving the holder in a direction substantially perpendicular to the direction of movement of the support, the axes of said cams being parallel and at right angles to the direction of movement of said support.

9. A metal working machine including in combination, a work support, a tool holder, means for rotating the holder, cam means for moving the holder in one direction and cam means rotating in timed relation with the holder moving means for moving the work support to and fro in a direction transverse to the first mentioned direction.

10. A metal working machine including in combination, a work support, a tool holder, means for rotating the holder, a rotatable cam for moving the holder in one direction, and a cam rotatable about an axis parallel to the axis of the first mentioned cam for moving the work support in another direction.

11. A metal working machine including in combination, a horizontally movable work support, a tool holder rotatable about a vertical axis, means for rotating the holder, means for moving the support and other means for simultaneously moving the holder horizontally to and fro and transverse to the support.

12. A metal working machine including in combination, a work support, a pivotally mounted tool support, a tool holder carried by the support for rotation about an axis eccentric and parallel to the pivot axis of the tool support, a rotatable driving member, means operated by said member for rocking the support and means for continuously rotating the holder.

13. A metal working machine including in combination, a work support, a pivotally mounted tool support, a tool holder carried by the support for rotation about an axis eccentric and parallel to the pivot axis of the tool support, means for rocking the support including a rotatable cam and means for continuously rotating the holder.

14. A metal working machine including in combination, a work support, a pivotally mounted tool support, a tool holder carried by the support for rotation about an axis eccentric and parallel to the pivot axis of the tool support, means for rocking the support including a rotatable cam and means for continuously rotating the holder including a gear coaxial with the holder and a gear coaxial with the pivot axis of the tool support.

15. A metal working machine including in combination, a work support, a rotatable spindle, a tool support mounted on said spindle for rocking movement, a tool holder carried by said tool support for rotation about an axis eccentric and parallel to the spindle axis, a rotatable driving member, means operated by said member for rocking the tool support and means for rotating the holder including gearing connecting the spindle and holder.

16. A metal working machine including in combination, a work support, a tool support pivoted for rocking movement about an axis intermediate its ends, a rotatable tool holder at one end of the tool support, a cam operative on the other end to rock the tool support and means for continuously rotating the holder.

17. A metal working machine including in combination, a work support, two rotatable tool holders and means for rotating said holders including a worm wheel operatively connected to each holder, and a driving shaft, a portion of which has a right hand thread associated with one worm wheel and another portion a left hand thread associated with the other worm wheel whereby the said shaft is subjected to no end thrust.

18. A machine of the class described including in combination, a tool holder, a slidable work support comprising an outer rectangular frame and an inner rectangular

frame slidably mounted within the outer frame having means to clamp the work and means for moving the inner frame relative to the outer to adjust the work relative to the tool holder.

19. A machine of the class described including in combination, a tool holder, a slidable work support comprising an outer rectangular frame and an inner rectangular frame slidably mounted within the outer frame having means to clamp the work against one side thereof, said side and the adjacent side of the outer frame having registering openings for the tool, and means for moving the inner frame relative to the outer frame to adjust the position of the work relative to the tool holder.

20. A machine of the class described including in combination a tool holder, a horizontally slidable work support comprising a vertical rectangular outer frame, and a rectangular inner frame vertically slidable in the outer frame having means to clamp the work against the bottom side thereof, said side and the corresponding side of the outer frame formed with openings for the tool holder and means for sliding the inner frame to adjust the position of the work relative to the tool.

21. A profiling machine including in combination, a work support, a tool holder, one of said parts being mounted for rectilinear reciprocatory movement, and the other for reciprocatory movement in a curved path across the other part, and means for reciprocating said parts.

22. A profiling machine including in combination, a work support, a tool holder, one of said parts being mounted for rectilinear reciprocatory movement, and the other for reciprocatory movement in a curved path across the other part, means for reciprocating said parts, and means for continuously rotating said holder.

23. A machine tool including in combination, a work support, two tool holders, means for reciprocating said support, and means for moving the tool holders in a path transverse to the path of the support, the direction of movement of one holder being always opposite to the direction of movement of the other.

24. A machine tool including in combination, a work support, two tool holders, each mounted for movement in a curved path, means for reciprocating said support, and means for moving said holders in their curved paths, the direction of movement of one holder being always opposite to the direction of movement of the other.

25. A machine tool including in combination, a work support, two tool holders, means for reciprocating said support, and means for moving the tool holders in a path transverse to the path of the support including a rotatable shaft having cams for actuating said holders constructed to move said holders in opposite directions.

26. A metal working machine including in combination, a work support, a plurality of parallel spindles, a tool support mounted on each spindle for rocking movement, a tool holder carried by each support for rotation about an axis eccentric to the associated spindle axis, means for rocking the tool support, means for rotating the spindles and gearing connecting each spindle and its associated tool holder.

27. A metal working machine including in combination, a slidably mounted work support, a tool holder, means to slide the support to and fro in one direction, a driving member and means operated by said member to rotate said holder and move the holder to and fro in another direction.

28. A metal working machine including in combination, a work support, a tool holder, means for rotating the holder, means to reciprocate the support, and continuously rotating means operable on said holder to move it to and fro in a direction substantially parallel to the plane of movement of the support, whereby the axis of the holder traces a closed path on the support.

29. A metal working machine including in combination, a work support, a tool holder, means rotating the holder, means reciprocating the support, and means reciprocating the holder in a direction substantially parallel to the plane of movement of the support, the holder making a complete reciprocation while the support makes a complete reciprocation, whereby the axis of the holder traces a closed figure on the support.

30. A metal working machine including in combination, a horizontally reciprocable work support, a tool holder below said support, means to reciprocate the holder across the support in a path parallel thereto and means to rotate the holder.

31. A metal working machine including in combination, a work support, a tool holder, and means to move said parts transversely to each other whereby the axis of the holder traces a closed figure on the support, said support being mounted for adjustment to and from the holder.

In testimony whereof I affix my signature.

LE ROY E. JOLLS.