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LEATHER WORKING MACHINE.

APPLICATION FILED JULY 11, 1911.

1,067,165.

Patented July 8, 1913.

3 SHEETS—SHEET 1.

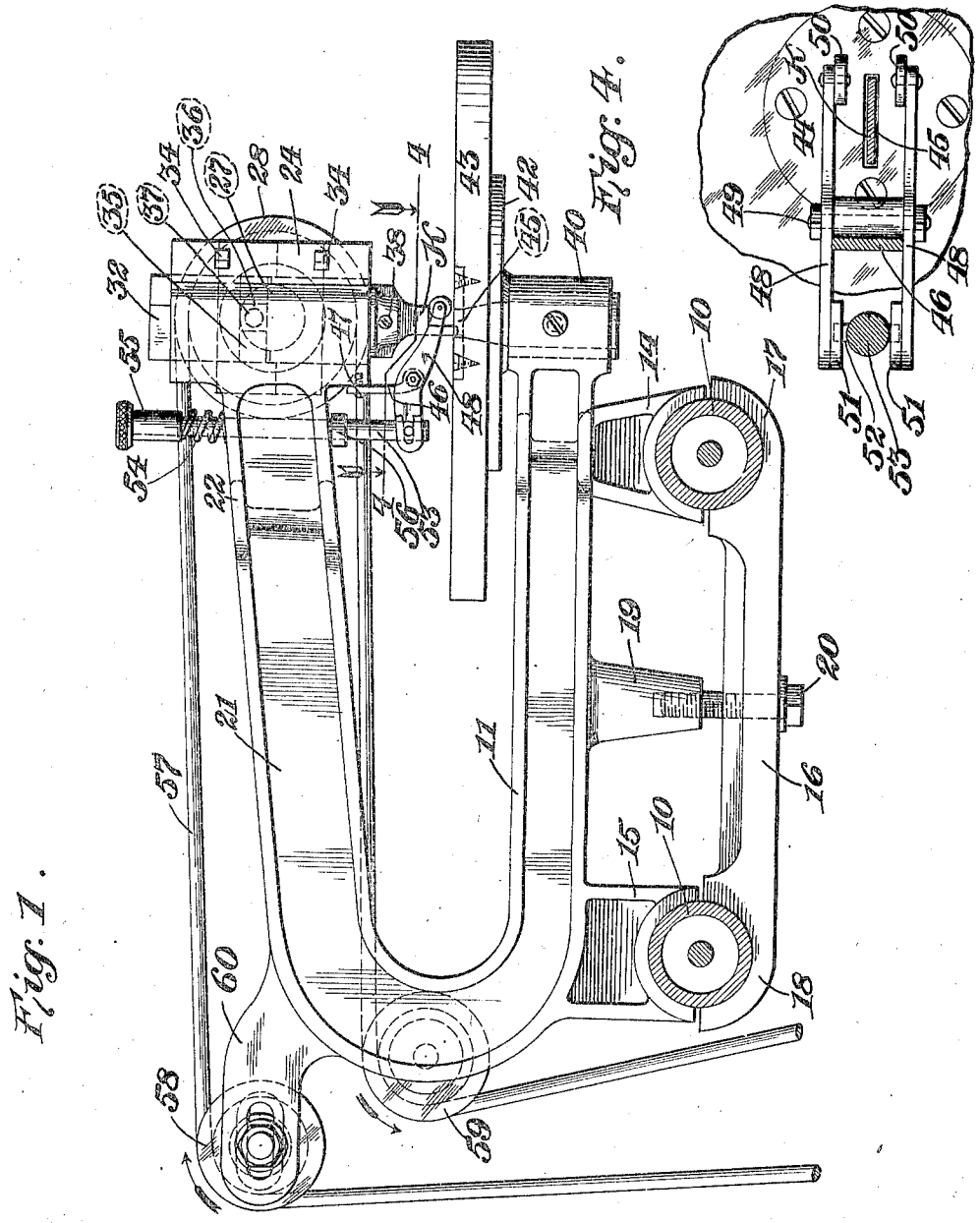


Fig. 1.

Fig. 4.

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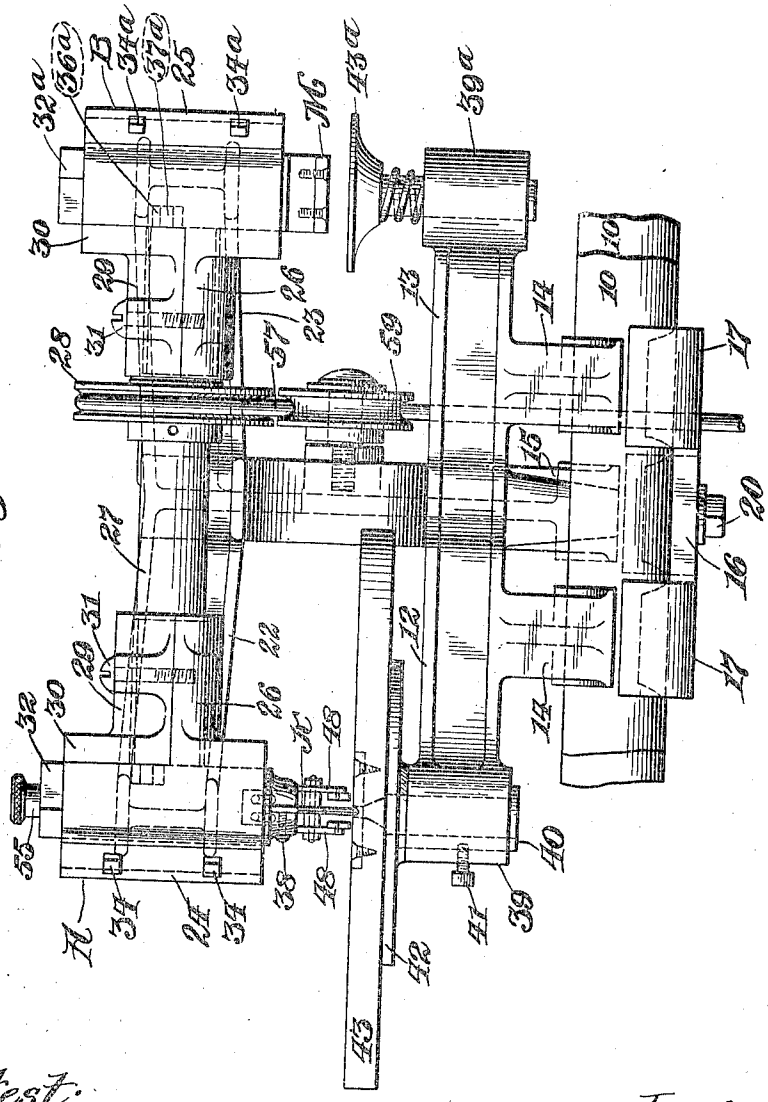
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

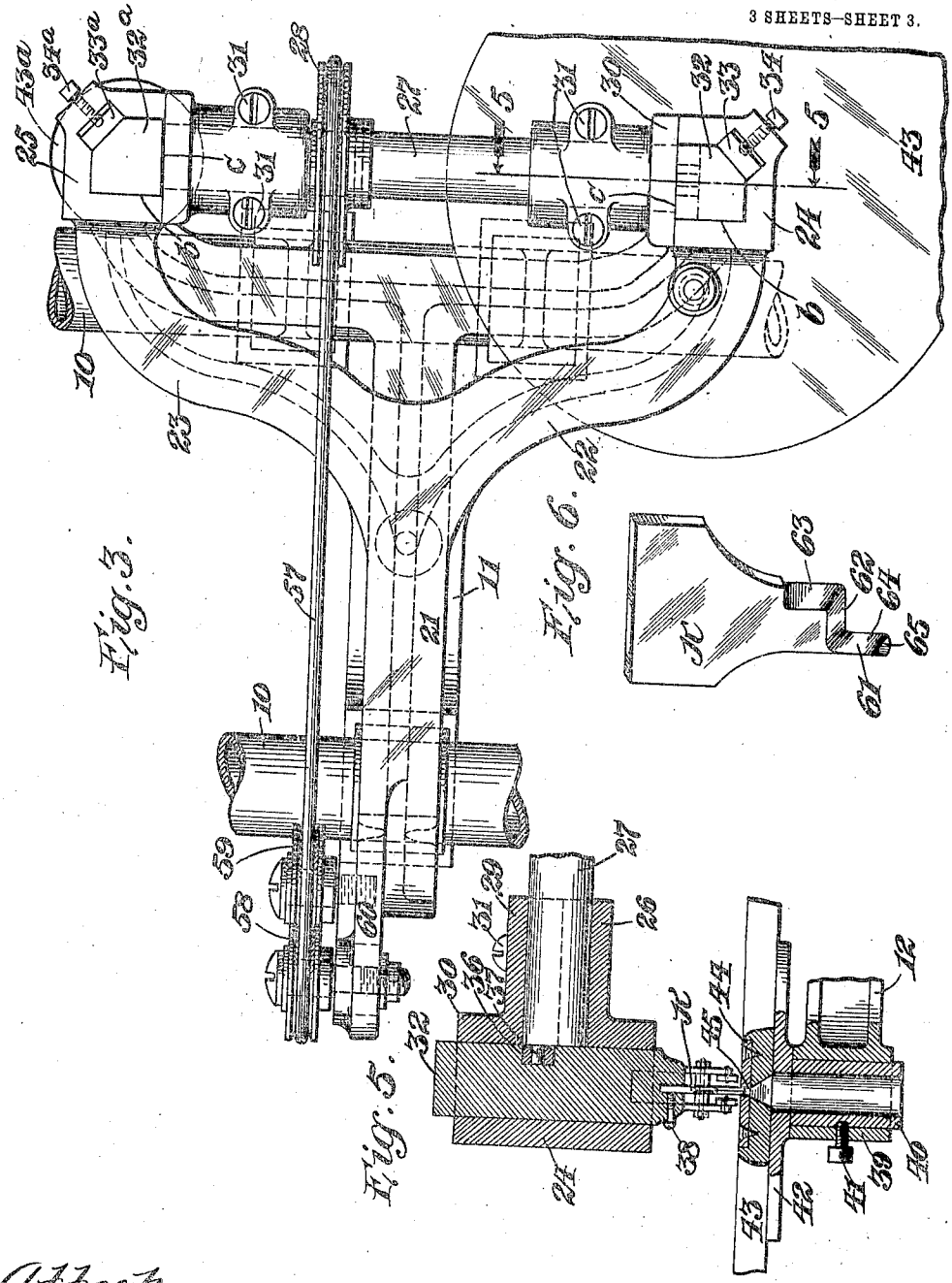


Fig. 5.

Fig. 6.

Fig. 5.

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UNITED STATES PATENT OFFICE.

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LEATHER-WORKING MACHINE.

1,067,165. Specification of Letters Patent. Patented July 8, 1913.

Original application filed November 21, 1910, Serial No. 593,356. Divided and this application filed July 11, 1911. Serial No. 638,042.

To all whom it may concern:

Be it known that I, GEORGE A. DOBYNE, a citizen of the United States, and residing at St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Leather-Working Machines, of which the following is a specification.

This invention relates to leather working machines and is a division of my application Serial No. 593,356, filed Nov. 21, 1910.

In cutting leather, as where the leather is cut to form soles for shoes, the line of cut is often irregular and has curves which are sometimes sharp, necessitating that the work be turned or swung on the cutter while the cutting proceeds. Where the cutter has a cutting edge which is vertically disposed with respect to the table or support for the material, it is necessary to make this cutter narrow in order to permit it to cut around the curves and corners. This however results in reducing the strength of the cutter. Where the cutting edge is vertical it is necessary that the material be forced against the cutter manually where hand feed is employed, or by means of rollers where a mechanical feed is used. This is not only tiresome on the operator, but also places undue strain upon the cutter, necessitating heavy guides and supporting means.

One of the objects of this invention is to construct a machine in which the work can be turned or swung about the cutter so as to permit a cut to be made around sharp curves and corners, at the same time providing a construction in which the cutter will be strong and firmly supported.

Another object is to construct a machine in which the work can be easily fed by the operator, and in which means are provided for governing and controlling the feed of the work during the cutting operation.

Another object is to provide means for supporting the material adjacent the cutter so that the cut will be smooth and the feeding be rendered accurate.

In some classes of machine, two or more machines are mounted on a common base or frame, these machines being adapted to operate upon the material in succession.

One of the objects of this invention is to improve the construction of such combined machines so as to cheapen the construction and enable wear to be taken up.

Another object is to improve the machine as to details of construction, and further objects will appear from the detail description taken in connection with the accompanying drawings in which:

Figure 1 is a side elevation of the machine embodying this invention, Fig. 2 is a front elevation, Fig. 3 is a plan, Fig. 4 is a section on the line 4—4 Fig. 1, Fig. 5 is a section on the line 5—5 Fig. 3, and Fig. 6 is a detail perspective view of the cutter or knife blade.

Referring to the accompanying drawings, 10 10 designate a pair of tubular rails which are supported upon a pair of standards as fully described in the original application referred to. A casting 11 is provided at its front end with a pair of lateral extensions or wings 12 and 13 having feet 14, 14 resting upon and embracing the front rail 10, and the casting is also provided at its rear end with a similar foot 15 resting upon and embracing the rear rail 10. A casting 16 is provided at its front end with a pair of clamping members 17, 17 spaced apart the same distance as the feet 14, 14 and adapted to engage and clamp the front rail. The rear end of the casting is provided with a clamping member 18 adapted to engage the rear rail at a point directly beneath the foot 15. The casting 11 is provided with a threaded lug 19 and a clamping screw 20 extends through the casting 16 and screws into the lug 19 so as to firmly clamp the casting 11 in position on the rails. The casting 11 forms the frame of the machine and has cast integral therewith an overhanging arm 21 which is bifurcated at its front end to form lateral extensions or wings 22 and 23. These extensions terminate in heads 24 and 25 cast integral with said extensions respectively, and each of these heads is machined to provide a vertical guide for a vertically reciprocating slide or tool carrier. Each of the heads has cast integral therewith the lower half 26 of a bearing for supporting a driving shaft 27, which shaft is provided with a pulley 28. Caps 29 are provided with upwardly extending portions

30 cast integral therewith and forming caps or cover plates for the vertical guideways in the heads, and these caps are bolted to the lower halves 26 by means of screws or bolts 31. It will thus be seen that the shaft 27 is supported at its ends for rotation in the bearings 26—29.

The sole cutting machine generally is designated by the reference character A and will now be described in detail.

The tool slide or carrier 32 is mounted for reciprocation in the head 24, and this head is grooved to receive a gib 33 adjustable by means of screws 34 so that wear may be taken up. The carrier is provided with a transverse slot or guideway 35 in which works a block 36 mounted upon a crank pin 37 on the end of the shaft 27. By means of this construction rotation of the shaft will impart a vertical reciprocating movement to the carrier. The carrier is slotted at its lower end to receive a cutter or blade K which is clamped in position by means of a set screw 38.

The machine generally designated by the reference character B is a welt beating machine and is fully described in said original application. The connection between the shaft and the tool carrier of the machine B is similar to that for the machine A and similar parts have been designated by the same reference characters with the exponent "a" added. The tool M is a plate screwed to the carrier 32^a.

The gibs bear against the tool carriers so that adjustment of the gibs will adjust the carriers diagonally toward both bearing surfaces *b* and *c*. The shaft 27 is mounted in its bearings so that its ends extend to the faces *c* with its crank pins working in the transverse guideways, the adjustment of the slides or carriers will therefore not disturb their relation with respect to the shaft. In this way no additional adjustment of the shaft is necessary, and wear between the slides and the shaft will always be taken up.

The extension 12 has formed integral therewith a bearing lug 39 which is bored to receive a hollow post 40 on a plate 42 which supports the table 43 fastened thereto by screws. The table is secured in the lug by means of a set screw 41. A plate 44 is set into the upper face of this table and has formed therein a slot 45 arranged to receive the reciprocating cutter K. The extension 13 is provided with a bearing lug 39^a supporting the table 43^a.

A bracket 46 is adjustably secured to the head 24 by means of screws 47 engaging slots in the bracket, and a pair of arms 48 are pivoted at 49 upon this bracket and are provided at their front ends with rolls 50 adapted to bear upon the material upon both sides of and close to the cutter. The rear ends of the arms are provided with lugs 51 which are slotted to receive a cross pin 52 in the lower end of a shank 53 which is mounted in a bore in the arm 21. A spring 54 is mounted upon the shank and bears at one end against the upper face of the arm 21 and at its other end against an adjustable knurled collar 55 screwed on the shank. A stop collar 56 is mounted upon this shank and is arranged to abut against the lower face of the arm 21 so as to arrest the upward movement of the shank.

Power is transmitted to the shaft 27 in any suitable manner, as by a belt 57 passing over pulley 28, the idler pulleys 58 and 59, and over a pulley on a power shaft as described in said original application. The idler pulley 58 is adjustably mounted on a lug 60 on the arm 21 so that the tightness of the belt may be adjusted.

The cutter K is of novel construction. It is provided with a vertical projection 61 which is relatively narrow and constructed to form a transverse or horizontally arranged cutting edge 62. The edges 62 and 64 and the point 65 are also preferably sharpened as shown in Fig. 6.

The operation of the leather cutting machine will now be described.

Rotation of the shaft 27 will impart a rapid vibrating or reciprocating movement to the tool carrier 32 and its attached cutter K. When the cutter is in its highest position as shown in the drawings, the projection 61 will extend slightly into the slot 45, and when the cutter is in its lowest position the cutting edge 62 will extend below the upper surface of the table and into the slot. The spring 54 will hold the rolls 50 on the work, and therefore these rolls and the mechanism connected therewith form a presser or presser-foot mechanism. After the shaft has been set in operation to vibrate or reciprocate the cutter, the material can be fed to the cutter from the front of the machine. As the material is fed to the cutter the edge 62 will cut through the material, and as the material is pushed back the projection 60 will enter the cut formed in the material and the edge 64 on the projection 61 will form a stop to limit the length of feed between successive reciprocations of the cutter. Since the projection 61 is of relatively small width, the material can be turned and swung about this projection during the feeding operation so that it is possible to cut and accurately guide the material when cutting around sharp curves and corners. Since this projection constantly works in the cut, it will not only guide the material but will also control the rate of feed. In view of the fact that the transverse cutting edge 62 performs the actual cutting operation, the operator is not required to push the material against the knife edge, but he need only

exert a very light pressure to feed the material. The material is supported during the cutting operation by the presser mechanism on both sides of the knife so that the feed and the cut will be positive and accurate, and the presser mechanism can be raised at pleasure by depressing the shank 53. The cutter actuating mechanism is located entirely above the table and thus the cutter can be readily removed and replaced. Any chips that are formed will be discharged by the cutter and discarded through the hollow post.

The machine is so constructed that it can be easily assembled and disassembled. Thus by removing the caps 29 the shaft as well as the tool carriers 32 and 32ª can be removed by a vertical movement. Wear can be taken up by simple adjustment of the gibs 33 and 33ª.

It is obvious that various changes may be made in the details of construction without departing from this invention, and it is therefore to be understood that this invention is not to be limited to the specific construction shown and described.

Having thus described the invention what is claimed is:

1. In a machine of the class described, a vibrating cutter blade having a cutting edge extending transversely of its line of movement and adapted to cut the material fed relatively thereto, and a member positioned in the plane of the cutter blade and rearwardly of the cutting edge adapted to engage the cut portion of the material and guide the same as fed.

2. In a machine of the class described, a vibrating cutter blade having a cutting edge extending transversely of its line of movement and adapted to cut the material fed relatively thereto, and a projection on said blade extending beyond the cutting edge and adapted to engage the cut portion of the material and guide the same as fed.

3. In a machine of the class described, a vibrating cutter blade having a cutting edge extending transversely of its line of movement and adapted to cut the material fed relatively thereto, and a narrow projection extending from the cutter blade rearwardly of and beyond the cutting edge and adapted to engage the cut portion of the material and guide the same as fed.

4. In a machine of the class described, a vibrating cutter blade having a cutting edge extending transversely of its line of movement and adapted to cut the material fed relatively thereto, and a member positioned in the plane of the cutter blade and rearwardly of the cutting edge adapted to engage the kerf made by the cutter and limit the movement given to the material.

5. In a machine of the class described, a vibrating cutter blade having a cutting edge extending transversely of its line of movement and adapted to cut the material fed relatively thereto, and a member positioned in the plane of the cutter blade and rearwardly of the cutting edge adapted to engage the kerf made by the cutter and adapted to permit the material to be turned thereon as fed.

6. In a machine of the class described, a table having a slot therein, a vibrating cutter blade having a cutting edge extending transversely of its line of movement and adapted to cut the material fed on said table, and a projection extending from the cutter blade rearwardly of and beyond the cutting edge and into said slot, said projection engaging the cut portion of the material when the cutting edge disengages therefrom to permit the same to be fed.

7. In a machine of the class described, a table for supporting material, a vibrating cutter blade having a cutting edge extending transversely of its line of movement and adapted to cut the material fed relatively thereto, a member positioned in the plane of the cutter blade and rearwardly of the cutting edge adapted to engage the cut portion of the material and guide the same as fed, and a presser bearing on the material on both sides of said cutter and opposite said cutting edge.

8. In a machine of the class described, a cutter, a pair of levers mounted rearwardly of said cutter and having their ends extending forwardly to bear upon the material on opposite sides of said cutter, a shank connected to the rear end of said levers, and a spring on said shank.

9. In a machine of the class described, a cutter, a pair of levers mounted rearwardly of said cutter and having their ends extending forwardly to bear upon the material on opposite sides of said cutter, a sliding shank, a pin on said shank engaging slots in the rear ends of said levers, and a spring on said shank.

10. In a machine of the class described, a machine head, a shaft bearing therein, a tool carrier guideway in said head extending at right angles to said shaft bearing, a leather working tool on said carrier, and a casting forming caps for said bearing and for said guideway.

11. In a machine of the class described, a table, an arm extending over the table and forming a head having a vertical tool carrier guideway and a horizontal shaft bearing, and a single member forming caps for said bearing and for said guideway.

12. In a machine of the class described, a machine head, a shaft bearing therein, a tool carrier guideway in said head extending at right angles to said shaft bearing, a leather working tool on said carrier, a casting forming caps for said bearing and for

said guideway, and a gib for said guideway mounted on the side opposite said shaft bearing.

13. In a machine of the class described, a frame, a forwardly extending overhanging arm on said frame, a pair of laterally extending wings on said frame, work supports on said wings, a pair of laterally extending wings on said overhanging arm, and tool carriers on said last wings.

14. In a machine of the class described, a frame having an overhanging arm, wings integral with said arm, heads integral with said wings and having tool carrier guides therein, and leather working tools on said carriers.

15. In a machine of the class described, a frame, guides on said frame, tool carriers in said guides, a shaft mounted on said frame and having driving connections at their ends with said carriers, and means for adjusting said carriers toward said shaft.

16. In a machine of the class described, a frame, a pair of forwardly extending wings integral with said frame having heads forming guides, and inwardly extending shaft bearings integral with said heads.

17. In a machine of the class described, a frame, a pair of forwardly extending spaced wings on said frame, vertical guides on said wings, tool carriers in said guides, leather working tools on said carriers, inwardly extending shaft bearings on said wings, a shaft supported in said bearings and having operative connections with said tool carriers, and removable caps for said shaft bearings permitting vertical removal of said shaft and tool carriers.

18. In a machine of the class described, a frame, a pair of forwardly extending spaced wings on said frame, vertical guides on said wings, tool carriers in said guides, leather working tools on said carriers, inwardly extending shaft bearings on said wings, a shaft supported in said bearings and having operative connections with said tool carriers, and removable members forming caps for said bearings and for said guides.

19. In a machine of the class described, a pair of horizontally spaced rails, a machine head having feet embracing said rails and for supporting said head, vertically above and between said rails and means for clamping said head in position.

20. In a machine of the class described, a pair of horizontally spaced rails, a head vertically above and between said rails having feet embracing said rails and for supporting said head, a clamping member adapted to span the rails and engaging the rails below said feet, and means for clamping said member to said head.

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

GEORGE A. DOBYNE.

Witnesses:
J. V. MANNING,
J. H. BRUNINGA.