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MULTIPLE TOOL SLIDE FOR MACHINE TOOLS

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2 Sheets-Sheet 1

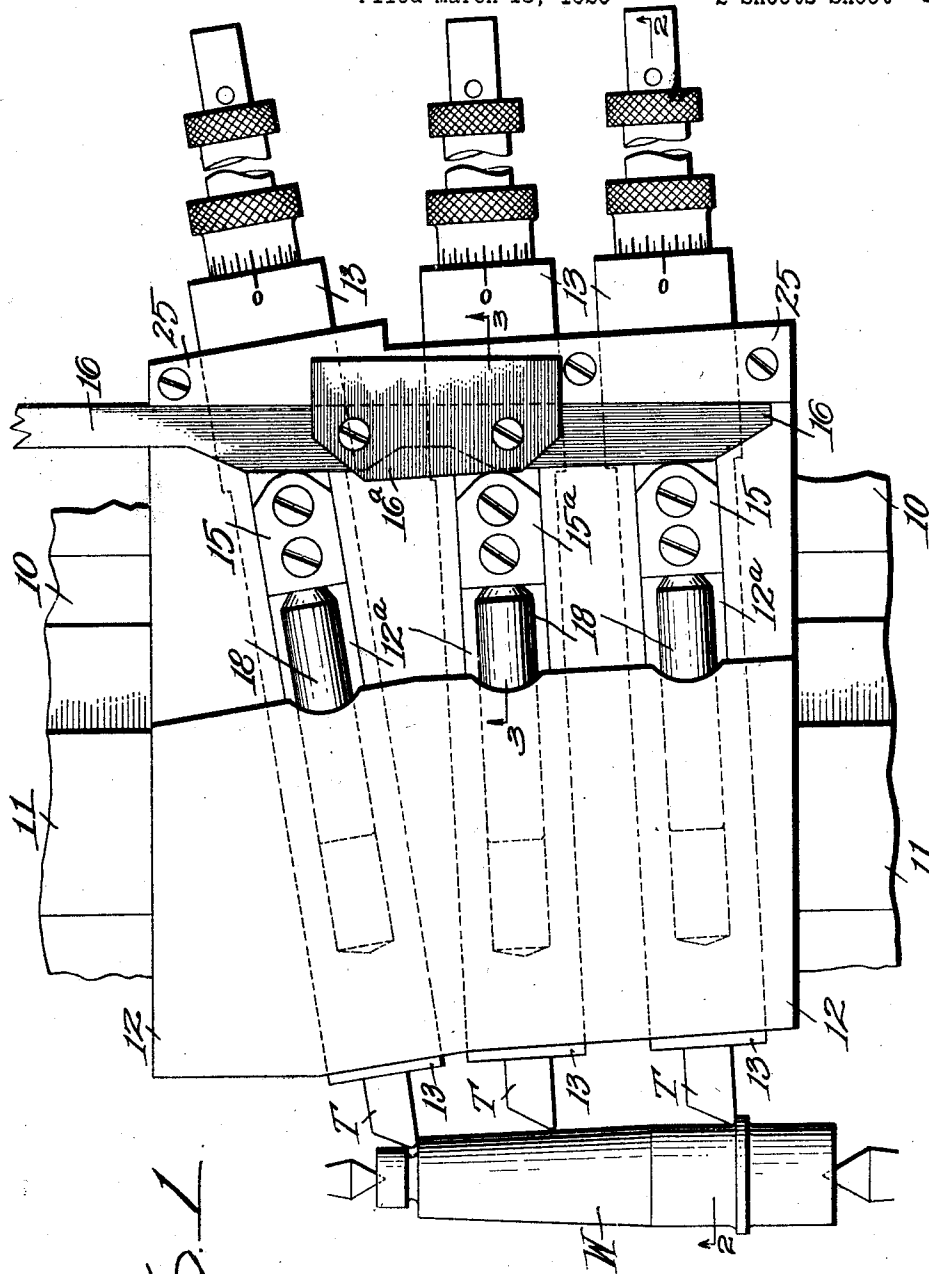


FIG. 1

Witness
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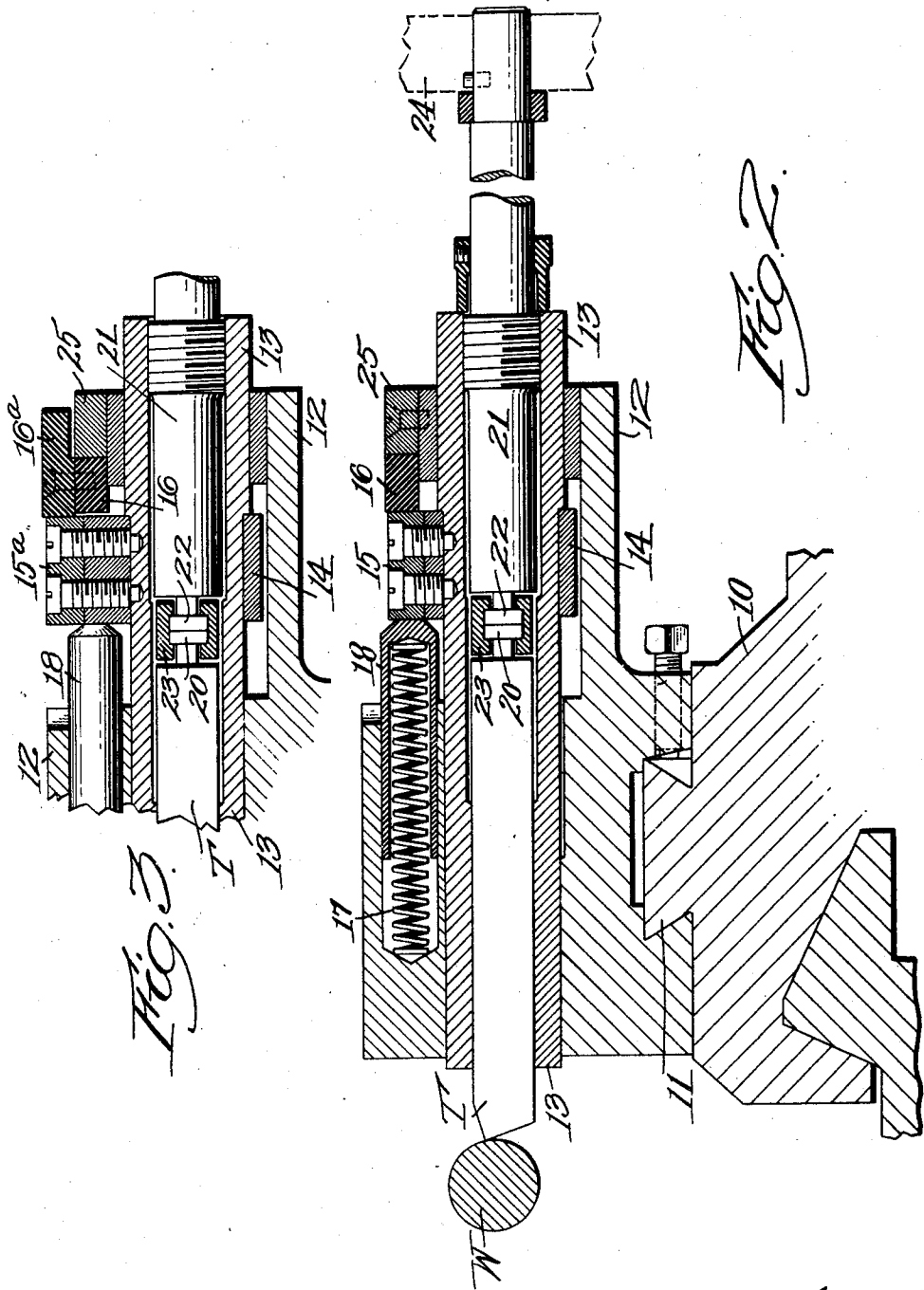
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2 Sheets-Sheet 2



Witness
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UNITED STATES PATENT OFFICE.

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MULTIPLE TOOL SLIDE FOR MACHINE TOOLS.

Application filed March 18, 1926. Serial No. 95,779.

This invention relates to engine lathes or similar machine tools in which a plurality of tools are to be given independent movements toward and from the work. It frequently happens that the tools must be positioned closely adjacent each other and in such cases the provision of suitable independent operating mechanism for each tool is attended with considerable difficulty.

It is the general object of my present invention to provide improved operating mechanism for multiple tool slides, such that closely adjacent tools may conveniently be given independent movements as the tools travel along the work.

In the preferred form, my invention contemplates the provision of a templet bar or cam bar of special construction by which the advantages above described may be attained.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of the invention is shown in the drawings, in which

Fig. 1 is a plan view of a portion of a lathe embodying my invention;

Fig. 2 is a sectional elevation taken along the lines 2—2 in Fig. 1, and

Fig. 3 is a detailed sectional elevation taken along the line 3—3 in Fig. 1.

Referring to the drawings, I have shown a frame 10 having guide ways 11 for a tool carriage 12 which is moved axially of the work W along the frame 10 by any convenient operating mechanism (not shown).

A plurality of turning or cutting tools T are mounted separately in tool slides 13, each slide being separately movable in the tool carriage 12. If it is desired to have the tools T operate closely adjacent to each other, the tool slides 13 may be angularly disposed as shown in Fig. 1.

Each tool slide 13 has bearings at the front and rear portions of the tool carriage 12, and is provided with a sleeve or casing member 14 on which is mounted a templet block 15. Each block 15 also cooperates with a slot 12^a in the carriage 12 to prevent angular displacement of the tool slide. The templet

blocks 15 engage a templet bar 16 extending axially of the machine and held from longitudinal movement therein.

The templet bar 16 is preferably provided with cam portions lying in different planes, this result being conveniently attained by mounting an auxiliary cam plate 16^a on the upper surface of the templet bar 16. The templet blocks 15 of certain of the tool slides cooperate with the cam face of the templet bar 16, while one or more other templet blocks 15^a, as shown in Fig. 3, are disposed at a higher elevation so that they will cooperate with the cam plate 16^a.

In this manner I am able to separately actuate tool slides positioned closely adjacent to each other, and in cases when the travel of the tool carriage is greater than the distance between adjacent slides. A spring 17 and plunger 18 are provided for each tool slide, these springs and plungers being mounted in the tool carriage 12 and engaging the rear sides of the templet blocks 15 or 15^a forcing the blocks yieldingly against the templet bar 16 or cam plate 16^a.

The tools T may be adjusted in the tool slides 13 by any convenient mechanism, but as shown herein each tool T is provided with a head 20 at its rear end and an adjusting screw 21 is provided with a similar head 22. The heads 20 and 22 are held in close relation by a sectional recessed collar 23. The screw 21 is threaded in the tool slide 13 and a suitable handle 24 is furnished, by which the tool may be conveniently adjusted.

A bearing member 25 is secured to the front of the tool carriage 12 and provides a reinforcement for the templet bar 16, taking the forward thrust of the spring plungers 18.

Having thus described my invention and the advantages thereof, the method of operation will be readily apparent. As the tool carriage 12 moves axially of the work W, the templet blocks 15 and 15^a cooperate with the templet bar 16 and cam plate 16^a to separately and selectively advance the tool slides toward the work, and to thereafter permit retraction thereof by the pressure of the springs 17. The tools T may be adjusted relatively to each other by the adjusting

means above described and the entire mechanism is found to be very efficient and reliable for the purpose described.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed otherwise than as set forth in the claims, but what I claim is:—

1. In a machine tool, a frame, a tool carriage slidable longitudinally of the work on said frame, a plurality of directly actuated tool slides mounted for transverse movement in said tool carriage toward and from the work, a templet bar held from longitudinal movement and having cam portions in different planes, and templet blocks on said tool slides, each block being in one of said planes and cooperating with a cam portion in the same plane.

2. In a machine tool, a frame, a tool carriage slidable longitudinally of the work on said frame, a plurality of directly actuated tool slides mounted for transverse movement in said tool carriage toward and from the work, and a templet bar fixed to said frame and having upper and lower cam portions thereon, certain of said tool slides having templet blocks cooperating with the lower cam portions of said templet bar and the remaining tool slides having templet blocks cooperating with the upper cam portions thereof.

3. In a machine tool, a frame, a tool carriage slidable longitudinally of the work on said frame, a plurality of directly actuated tool slides mounted for transverse movement in said tool carriage toward and from the work, said tool slides each having a templet block with the blocks on adjacent slides positioned in different planes, and fixed cam members positioned in corresponding planes and cooperating therewith.

4. In a machine tool, a frame, a tool carriage slidable longitudinally of the work on said frame, a plurality of directly actuated tool slides mounted for transverse movement in said tool carriage toward and from the work, a templet bar held from longitudinal movement and having a cam portion thereon, a supplemental cam element mounted on said

templet bar in a different plane from said cam portion, and templet blocks on said tool slides, certain of said blocks cooperating with said cam portion of said templet bar, and other blocks cooperating with said supplemental element.

5. In a machine tool, a frame, a tool carriage slidable longitudinally of the work on said frame, a plurality of directly actuated tool slides mounted for transverse movement in said tool carriage toward and from the work, adjacent slides having cam followers in different planes, and a templet bar having cam portions cooperating with said followers and in corresponding planes.

6. In a machine tool, a frame, a tool carriage slidable longitudinally of the work on said frame, a plurality of directly actuated tool slides mounted for transverse movement in said tool carriage toward and from the work, a templet bar held from longitudinal movement and having cam portions in different planes, and templet blocks on said tool slides, each block being in one of said planes and cooperating with a cam portion in the same plane, said templet bar having also a straight face and said carriage having a bearing member adjacent said straight face and acting as a guide and bearing for said templet bar.

7. In a machine tool, a frame, a tool carriage slidable thereon, a plurality of directly actuated tool slides mounted on said tool carriage for movement in nonparallel paths toward and from the work, and cam means to separately operate each tool slide.

8. In a machine tool, a frame, a tool carriage slidable thereon, a plurality of directly actuated tool slides mounted on said tool carriage for movement in non-parallel paths, and cam means to separately operate each tool slide, said cam means comprising a fixed templet bar, a templet block on each tool slide, and a plurality of spring plungers on said carriage, each engaging one of said slides and causing the corresponding templet block to yieldingly engage said templet bar.

In testimony whereof I have hereunto affixed my signature.

RICHARD A. ASHTON.