Aug. 25, 1959 C. M. SWEET 2,900,704

ADJUSTABLE TOOL MOUNTING FOR LATHES

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FIG. 1.

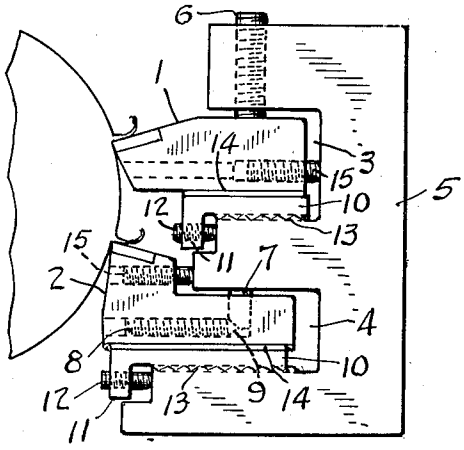


FIG. 2.

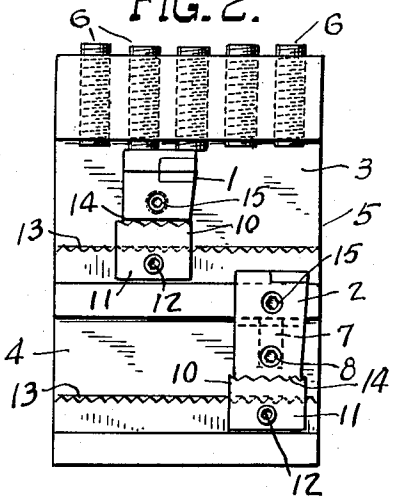


FIG. 3.

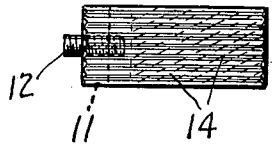
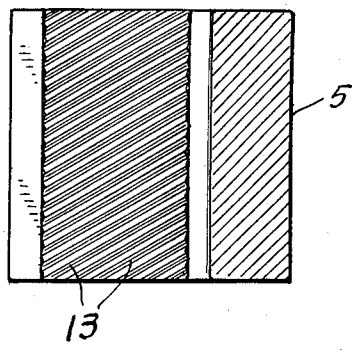


FIG. 4.



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FIG. 5.

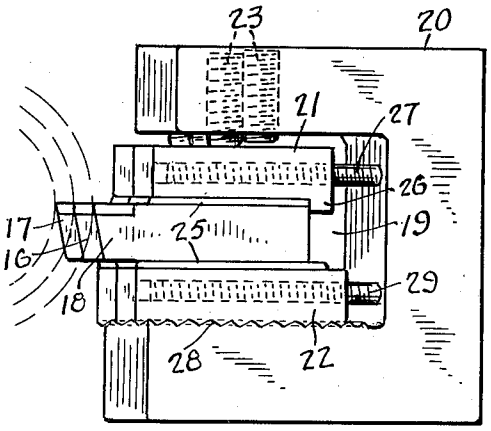


FIG. 6.

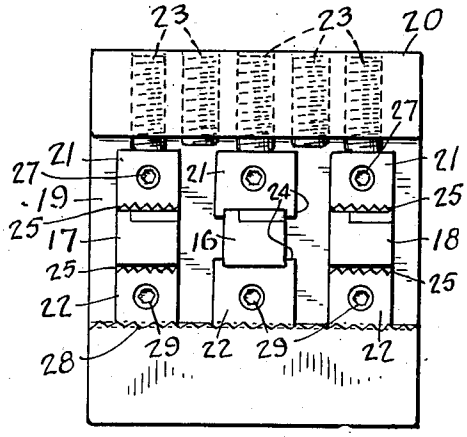


FIG. 7.

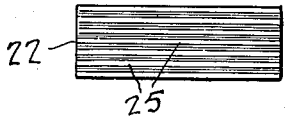


FIG. 8.

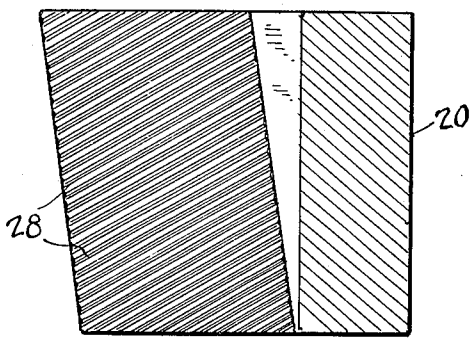
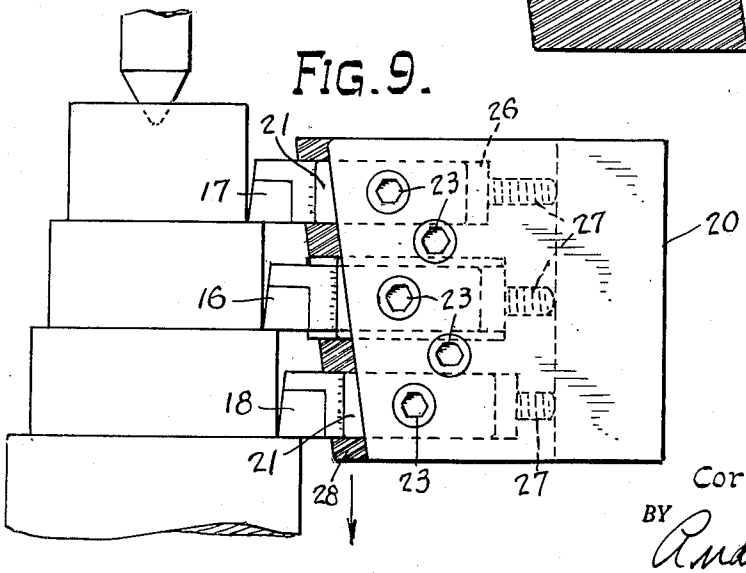


FIG. 9.



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ADJUSTABLE TOOL MOUNTING FOR LATHES

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Application April 22, 1957, Serial No. 654,248

5 Claims. (Cl. 29—96)

This invention relates to an adjustable tool mounting for lathes and provides a means for adjusting one tool relative to another where multiple cutting tools are employed either in tandem, as in ordinary turning or facing, or side by side as in step turning or facing.

Heretofore, as illustrated in applicant's copending application, Serial No. 264,548, filed January 2, 1952, now abandoned, it has been proposed to provide an adjustable tool with supporting means having separate lateral and longitudinal ways of adjustment of the tool in the holder. In such instances both a lateral and a longitudinal adjustment screw is employed for adjusting the screw.

Where it is desired to avoid the use of lateral adjusting screws as where a plurality of tools are to be mounted side by side, or where there is no member of the tool block through which a lateral adjustment screw may be threaded, it is desirable to provide other means for laterally adjusting the tool.

The present invention solves this problem by providing a diagonal way supporting a guide block upon which the tool is supported and by adjusting the guide block along the diagonal way by an adjusting screw threaded generally longitudinally of the tool. The lateral adjustment of the tool is accomplished along the diagonal way without disturbing the longitudinal adjustment of the tool which determines the depth of cut. For this purpose the tool and its supporting guide block have mating surfaces providing a longitudinal way, and the longitudinal position of the tool relative to the tool holder is determined by an adjustable abutment between the tool and holder and which generally consists of an adjustment screw extending longitudinally of the tool.

The accompanying drawings illustrate various embodiments of the invention presently contemplated to be the best mode of carrying out the invention.

In the drawings:

Figure 1 is a schematic outline in side elevation of a tandem tool set in side elevation;

Fig. 2 is an end elevation of the construction of Fig. 1;

Fig. 3 is a plan view of a guide block of Fig. 1;

Fig. 4 is a plan view of the supporting way for the guide block of Fig. 1;

Fig. 5 is a side elevation similar to Fig. 1 of another embodiment of the invention;

Fig. 6 is an end elevation of the construction of Fig. 5;

Fig. 7 is a plan view of a guide block of Fig. 5;

Fig. 8 is a plan view of the supporting way for the guide blocks of Fig. 5; and

Fig. 9 is a top plan view of a tool holder showing a step turning operation.

In the construction of Figs. 1 to 4, inclusive, a pair of cutting tools 1 and 2 are separately clamped in corresponding individual transverse recesses 3 and 4 in the face of the tool holder 5. The upper tool 1 is clamped by means of one or more of the holddown screws 6 threaded downwardly through the top of the holder 5 and into engagement with the tool. The lower tool 2 is clamped by means of the upwardly pressed pin 7 in its shank and

which is actuated into clamping engagement with the upper wall of the recess 4 by a screw 8 threaded longitudinally in the tool and having an inclined cam end 9 engaging a complemental lower end of the pin.

Each tool 1 and 2 is supported on a guide block 10 which in turn is supported on the tool holder 5. Each guide block 10 has a downward flange 11 at its outer end which carries an adjusting screw 12 threaded therethrough and adapted to engage the front of tool holder 5.

The lower surface of each guide block 10 and the corresponding supporting surface of the tool holder 5 are serrated diagonally as illustrated in Fig. 4, and are complemental to provide ways 13 extending diagonally of the tool to provide for lateral adjustment of the tool in the holder by turning of the adjusting screw 12.

The engaging surfaces of each guide block 10 and the tool carried thereby are serrated longitudinally of the tool, as illustrated in Fig. 3, to provide longitudinal ways 14 for adjustment of the corresponding tool longitudinally to determine the depth of cut. Adjustment of the tool on ways 14 is effected by an adjusting screw 15 threaded longitudinally through the tool and into abutment with the face of the tool holder 5.

As indicated in Fig. 2, the recesses 3 and 4 extend across the face of the tool holder 5 and provide locating the tools 1 and 2 either in tandem, or spaced laterally apart to provide for step turning. If desired, several tools may be disposed side by side in each recess.

This construction also provides for overlapping of the tools whereby step turning and chamfering may be provided with cuts spaced less than the width of a tool without interference between the tools.

Figs. 5 to 8 illustrate a mounting providing several tools 16, 17 and 18 mounted in a single recess 19 extending across the face of tool holder 20. In this construction each tool is clamped between an upper guide block 21 and a lower guide block 22 by means of a holddown screw 23 threaded downwardly through the top of tool holder 20 and into engagement with the upper guide block.

Each tool is held against lateral displacement relative to its guide blocks 21 and 22 as by longitudinal flanges 24 on the guide blocks illustrated for tool 16 or by longitudinal serrations 25 on the interface between the tool and the guide blocks illustrated for tools 17 and 18. In either construction a longitudinal way is provided for free longitudinal movement of the tool relative to the guide blocks.

The upper guide block 21, in each instance, is provided with a shoulder or abutment 26 adapted to engage the outer end of the tool shank to hold the tool against the work. Adjustment of the upper guide block 21 in and out by means of the adjustment screw 27 threaded therethrough and into engagement with the tool holder 20 at the back of recess 19, determines the depth of cut for the tool.

The lower guide block 22 is supported on the tool holder 20 at the bottom of recess 19 by a diagonal way 28 provided by complemental mating serrations extending diagonally of the meeting surfaces of the guide block and tool holder. A screw 29 is threaded longitudinally through the lower guide block 22 and into abutment with tool holder 20 at the back of recess 19 to provide for adjustment of block 22 along the way 28.

The tools 16, 17 and 18 may be placed as close to each other or as far apart as may be desirable. A fine adjustment of the relative position of the tools is effected by the screws 29.

In all cases, since the tool is free to retract until its abutment screw 15 or 27 stops it and determines the depth of cut, lateral adjustment of the tool and its guide block 10 or guide blocks 21 and 22 will not alter the depth of cut or require a new adjustment therefor. The

tools can be disposed close to one another without interference by lateral adjustment means.

Since both the longitudinal or depth of cut adjustment and the lateral adjustment of the tool is made by a corresponding longitudinally extending screw abutment, the back pressure on the tool from the cutting action retains both the tool and the guide block in a position of tight engagement of the abutments at all times. For this purpose, where the feed of the tool is substantially at an angle to the depth of cut, it is desirable to have the diagonal ways extend toward the workpiece in the general direction of feed, as shown in Fig. 9.

Where infinite lateral adjustment of the tool is not needed, it is possible to utilize an adjustment by increments corresponding to the pitch of the diagonal serrations of way **13** or **28**. For this purpose the adjusting screws **12** and **29** might be eliminated. If it be desired to obtain a finer increment adjustment than the pitch of the serrations of ways **13** and **28**, it is possible to provide a finer pitch for the corresponding serrations of the longitudinal way **14** or the serrations **25**, as the case may be. In this way a finer increment adjustment equal to one half the pitch of the serrations may be provided without reducing the pitch or size of the serrations by moving the guide block one serration in one direction and the tool one serration in the opposite direction.

Various embodiments of the invention may be employed within the scope of the accompanying claims which particularly point out and distinctly set forth the subject matter regarded as the invention.

I claim:

1. An adjustable tool mounting for lathes, comprising a tool holder having a recess therein for receiving a tool, a tool and guide block assembly adjustably clamped in said recess, a longitudinal way between the tool and guide block to provide for longitudinal adjustment of the tool and prevent relative lateral movement between the tool and guide block, longitudinal abutment means between the tool and tool holder determining the depth of cut position of the tool, a diagonal way between the guide block and tool holder to provide for lateral adjustment of the guide block and the associated tool, and means to adjust the guide block along said diagonal way to effect lateral adjustment of the tool.

2. An adjustable tool mounting for lathes, comprising a tool holder having a recess therein for receiving a tool, a tool and guide block assembly adjustably clamped in said recess, a longitudinal way between the tool and guide block to provide for longitudinal adjustment of the tool and prevent relative lateral movement between the tool and guide block, longitudinal abutment means between the tool and tool holder determining the depth of cut position of the tool, a diagonal way between the guide block and tool holder to provide for lateral adjustment of the guide block and the associated tool, and a screw abutment between said guide block and tool holder disposed to adjust the guide block along said diagonal way to effect lateral adjustment of the tool.

3. An adjustable tool mounting for lathes, comprising a tool holder having a recess therein for receiving a tool, a tool and guide block assembly adjustably clamped in said recess, a longitudinal way between the tool and guide block to provide for longitudinal adjustment of the tool and prevent relative lateral movement between the tool and guide block, longitudinal abutment means between the tool and tool holder determining the depth of cut position of the tool, a diagonal way between the guide block and tool holder to provide for lateral adjustment of the guide block and the associated tool, and a screw abutment between said guide block and tool holder disposed to adjust the guide block along said diagonal way to effect lateral adjustment of the tool, said diagonal way extending in a direction toward the feed of the tool to the work.

4. An adjustable tool mounting for lathes, comprising a tool holder having a recess therein for receiving a tool, a tool and guide block assembly adjustably clamped in said recess, a longitudinal way between the tool and guide block to provide for longitudinal adjustment of the tool and prevent relative lateral movement between the tool and guide block, longitudinal abutment means between the tool and tool holder determining the depth of cut position of the tool, and a diagonal way between the guide block and tool holder to provide for lateral adjustment of the guide block and the associated tool, said ways being provided by parallel serrations disposed with the serrations of one way of different pitch than the serrations of the other way whereby a predetermined increment adjustment is provided for the lateral position of the tool for a given depth of cut and which is less than either pitch of the serrations.

5. An adjustable tool mounting for lathes, comprising a tool holder, a guide block supported by said holder, a tool supported on said guide block, a grooved way between said guide block and tool holder providing for adjustment of the block in a predetermined direction relative to the holder, a grooved way between said tool and said guide block for adjustment of the tool in a predetermined direction relative to the block, said ways being provided by parallel interlocking serrations with the serrations of one way of different pitch than the serrations of the other way whereby a predetermined increment adjustment is provided laterally of said serrations and which is less than either pitch of the serrations.

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