May 17, 1932. K. TESSKY 1,858,754

LATHE

Filed Dec. 10, 1930

Fig. 1.

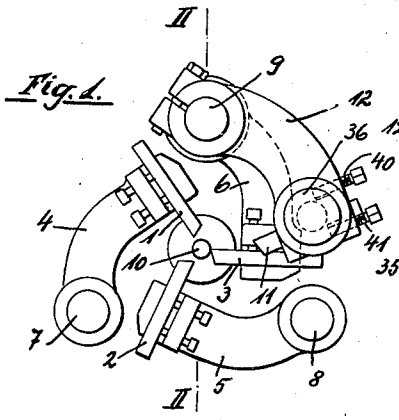


Fig. 6.

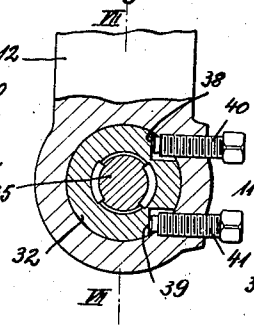


Fig. 7.

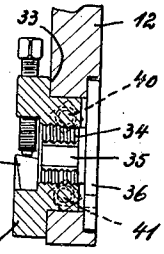


Fig. 3.

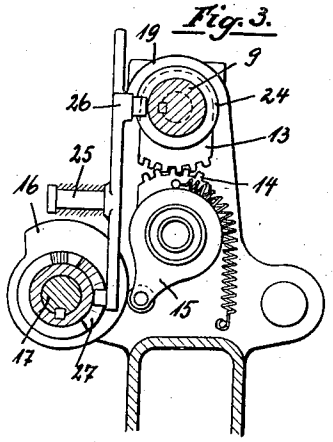
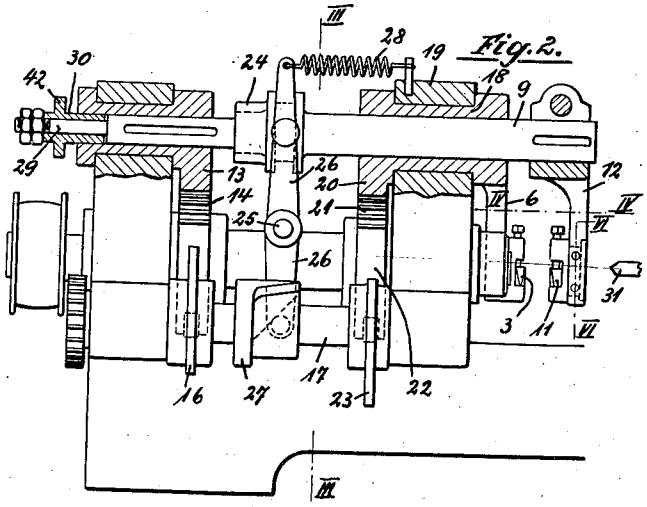


Fig. 2.



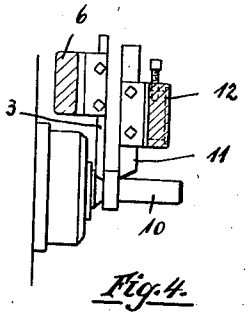


Fig. 4.

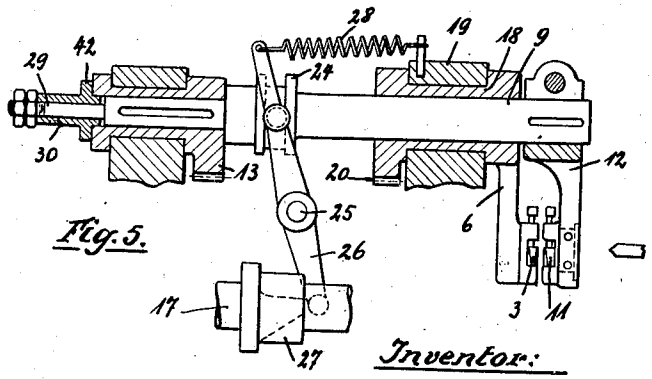


Fig. 5.

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UNITED STATES PATENT OFFICE

KARL TESSKY, OF ESSLINGEN-ON-THE-NECKAR, GERMANY

LATHE

Application filed December 10, 1930, Serial No. 501,370, and in Germany December 20, 1929.

My invention relates to lathes and more particularly to lathes having rocking tool holder arms. Such rockers are old in lathes and particularly in automatic lathes in which the several tools are moved into operative relation to the work by rocking them.

Heretofore, as a rule, only three rockers could be provided, for if more had been arranged, they would have interfered or the tools would not have been accessible to a sufficient extent. In many cases, however, it is desirable to have a further tool, or further tools available for certain operations, and such tool, or tools should also be supported by a rocker.

According to my invention this is effected in a manner which is not disadvantageous either with respect to the action of the tools or with respect to the accessibility of the parts. To this end the rocker for the additional tool is mounted to rock about the axis of one of the other rockers, which are arranged in the usual manner.

In the drawings affixed to this specification and forming part thereof a lathe embodying my invention is illustrated diagrammatically by way of example.

In the drawings

Fig. 1 is an end elevation of the rockers viewed in the axial direction of the work,

Fig. 2 is an elevation showing a portion of the lathe, partly in section on the line II—II in Fig. 1,

Fig. 3 is a section on the line III—III, and

Fig. 4 is a section on the line IV—IV in Fig. 2,

Fig. 5 is a section showing only the upper portion of Fig. 2, with a different adjustment of parts,

Fig. 6 is a section on the line VI—VI in Fig. 2, drawn to a larger scale, and

Fig. 7 is a section on the line VII—VII in Fig. 6.

Referring to the drawings and first to Figs. 1, 4, 5 and 6 are three lever-like tool holder arms or rockers, 1, 2 and 3 are the tools chucked in the respective rockers, and 7, 8 and 9 are the shafts of the rockers.

According to my invention I provide an additional tool 11 in an additional rocker 12 mounted to rock about the axis of the shaft 9. The rocker is adapted to be shifted with, and may be detachably mounted on, the shaft 9.

Fig. 2 shows the rocker 12 secured on the shaft 9. In order to impart movement to the rocker the shaft 9 is rotated by a toothed sector 13 on the shaft and a corresponding sector on a lever 15. The lever 15 is equipped with a roller at its free end and cooperates with a cam 16 on a control shaft 17 in the usual manner. 18 is the boss or hollow shaft of the rocker 6 which serves as a bearing for the shaft 9 and is held in a bearing block 19 against axial displacement. The boss 18 is equipped with a toothed sector 20 which is engaged by a sector 21 on a lever 22 cooperating with a cam 23.

By the cooperation of the cams 16 and 23 with the respective levers 15 and 22 the rockers 12 and 6 are operated so as to present the tools 11 and 3 to the work 10, as required.

If, for instance, the tool 11 on the rocker 12 is a normal cutter which moves along the axis of the work, and the tool 3 is a cutting-off tool, provision for displacing the tool 11 is made by mounting the shaft 9 to slide in the boss 18 of the rocker 6. To this end a neck collet 24 is fitted on the shaft 9 on which acts one end of a double-armed lever 26 mounted to rock about a fixed pin 25. The opposite end of the double-armed lever 26 cooperates with the edge of a cam 27 on the control shaft 17. 28 is a pull-back spring attached to the lever 26.

The shifting of the shaft 9 may be limited by an annular check 42, which is exchangeable and seated on a pin 29 at the end of the shaft 9 opposite the rocker 12. This check may be part of a reversible sleeve 30, so that when the sleeve is reversed as shown in Fig. 5 the shaft 9 and its rocker 12 are held against axial displacement, but the shaft 9 is still free to rotate in the boss 18. In this position of the shaft 9 the lever 26 is beyond reach of the cam 27.

As will appear from Figs. 2 and 5 only comparatively little space is available for the rocker 12 with the tool 11, intermediate the rocker 6 and its tool 3, and the normally present other tools which act on the work

in axial direction, and their tool holders. One of such tools is indicated at 31.

In order to permit ready exchanging of the tool 11 without detaching the rocker 12 from the shaft 9 and thereby varying its position, the tool holder 32 is detachably mounted in the rocker 12 as shown in Figs. 6 and 7. The tool holder 32 is a sleeve having a shoulder 33 and a female thread 34. 35 is a threaded pin having a flat head 36 and engaging in the thread 34. The head 36 is preferably arranged in a suitable depression of the rocker 12, so that its outer face is flush with the side of the rocker 12. Preferably the thread of the pin 35 is cut away at certain points, in the present instance at two diametrically opposite points, for an angle of 90 degs., in order to facilitate rapid insertion and removing of tool holder 32 and pin 35. When the chuck and the pin have been assembled by means of the unthreaded portions of the pin, only a partial rotation is required for engaging the threads and for clamping the parts, and similarly only a partial rotation in the opposite direction is supplied for disengaging the threads whereupon the tool holder 32 may be extracted in axial direction.

The tool-holding means in the tool holder 32 may be designed as desired. By way of example a set screw 37 is shown in Fig. 7.

Preferably the tool holder 32 is so arranged that it may be adjusted in the rocker 12 by rotating it. To this end it is equipped with two shoulders 38 and 39 with which cooperate set screws 40 and 41 in threaded holes of the rocker 12. The shoulders and screws must be so arranged that by setting one of the screws torque is exerted in opposite direction to the torque exerted by the other screw.

The means for moving the rocker 12 may be varied without departing from my invention. My invention may also be applied to machine tools in which not all the tools on the rockers are cutting tools. For instance, one of the rockers might be equipped with a check for the work, or with a gripper for moving a partly tooled blank to another station, for instance, when it is desired to saw a slot in the head of a screw, to drill one or more holes, to tap a nut which has been bored and trimmed off, etc.

By the described combination of two rockers 6 and 12 to move about the axis of the same shaft 9 which obviously might also be provided for the shafts 7 and 8 of the rockers 4 and 5, as required by the shape of the work, or by the number of tools, I obtain a very compact arrangement of several tool holders and their tools without interference of the tools with each other and without detracting from their accessibility and ready adjustability.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

In the claims affixed to this specification no selection of any particular modification of the invention is intended to the exclusion of other modifications thereof and the right to subsequently make claim to any modification not covered by these claims is expressly reserved.

I claim:

1. A lathe comprising rocking tool holder arms, and a hollow shaft on one of said holder arms, another holder arm mounted in said hollow shaft for rotation, one of said two holder arms being arranged to be rocked only, while the other is arranged to be rocked and displaced.

2. A lathe comprising rocking tool holder arms, a hollow shaft on one of said holder arms, another holder arm mounted in said hollow shaft for rotation, and displacement, and a check adapted to be connected to said shaft in two positions so that the shaft is free to be displaced within limits in one position of the check, and is held against displacement in its other position.

3. A lathe comprising rocking tool-holder arms, a hollow shaft on one of said holder arms, another holder arm mounted in said hollow shaft for rotation, one of said tool-holder arms being arranged to be rocked only, while the other arm is arranged to be rocked and displaced, a tool holder in a bore of said tool holder arm which is arranged for rocking movement and displacement, the bore extending in parallel to the axis about which it rocks, means for securing said holder in the bore of said arm, interengaging threads in said tool holder and on said tool-holder securing means, said threads being cut away for part of the inner and outer perimeters of said tool holder and said securing means, respectively, and two set screws in said tool-holder arms arranged at both sides of the axis of said tool holder for rotating it in opposite directions.

In testimony whereof I affix my signature.

KARL TESSKY.