Aug. 8, 1944. J. A. HONEGGER 2,355,072

MULTIPLE TOOL HOLDER FOR LATHES

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Fig. 1

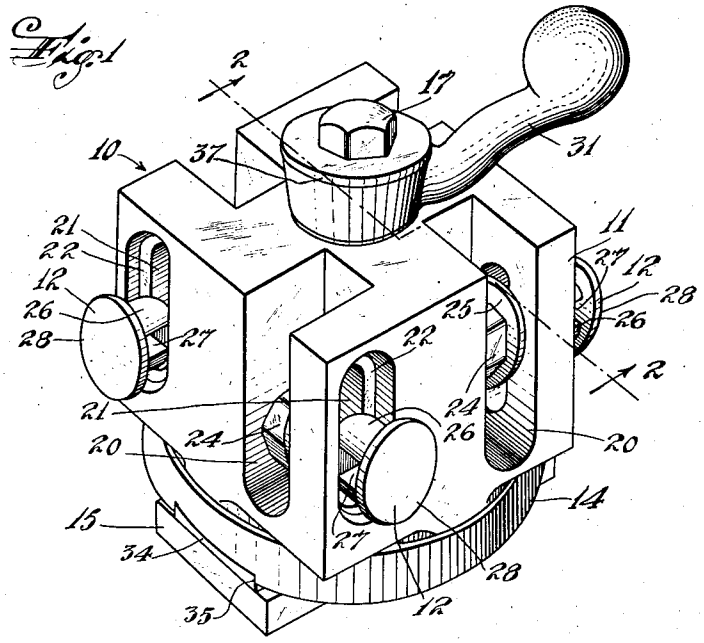
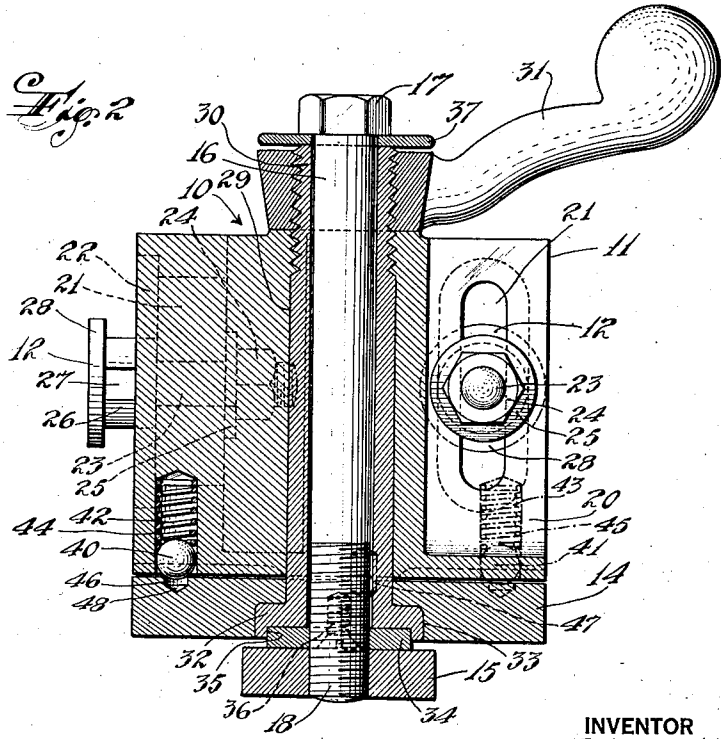


Fig. 2



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MULTIPLE TOOLHOLDER FOR LATHES

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5 Claims. (Cl. 29—48)

The present invention relates to lathes, and more particularly to an attachment for mounting a plurality of tools.

The present invention aims to provide a toolholding attachment which is particularly adapted to be used in connection with turning lathes and the like, and which is adapted to be mounted on the cross slide of any of the well known makes of machinists' lathes.

An object of the present invention is to provide an improved, simple and inexpensive toolholding attachment for lathes, which is rugged in construction and has a wide range of adaptability.

Another object is to provide an attachment for mounting a group of tools which are adapted to be selectively moved into their work engaging position in a convenient manner.

Another object is to provide a toolholding attachment which has a minimum number of parts for accomplishing the functions of a tool turret for a variety of sizes and types of work.

A further object consists in the combination and arrangement of the parts of the attachment, whereby the foregoing objects may be accomplished.

Other and further objects of the invention will be obvious upon an understanding of the illustrative embodiment about to be described, or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

A preferred embodiment of the invention has been chosen for purposes of illustration and description and is shown in the accompanying drawing, forming a part of the specification, wherein:

Figure 1 is a perspective view of a turret tool holder embodying the invention.

Figure 2 is a sectional view taken substantially along the line 2—2 of Figure 1.

In the drawing, there is shown a toolholding attachment 10, comprising a body or turret member 11 provided on each of its four sides with a tool clamp 12. The turret member is mounted for rotation on a base plate 14 which has secured adjacent thereto a slide or T-slot block 15 adapted to slidably fit into a correspondingly T-shaped groove on the cross slide of a lathe. The attachment is adapted to be held in clamping relation with respect to the cross slide by means of a bolt 16, having a head portion 17 at one end. The bolt 16 extends through the body member 11, and its other end is threadedly secured to the block 15 at 18.

Referring now to the attachment in greater detail, the body or turret member 11 may be a substantially cubical casting formed with a vertically arranged slot 20 in each of its side walls adjacent a corner of the body member. The slots 20 extend to the upper surface of the body or turret member and are substantially U-shaped at the lower end thereof. The slots 20 are symmetrically arranged and provide vertical web or rib-like portions adjacent the corners of the body member.

The rib-like portions are each provided with a vertical slot or elongated aperture 21 which extend from the respective side wall of the body or turret member 11 to the respective slot 20 formed in an adjacent side wall. The slots 21 are formed with substantially straight, vertical sides disposed at right angles to the side walls of the slots 20. The slots 21 may be semi-circular at their upper and lower ends, and may be enlarged at the side walls of the body member 11 to form recesses 22.

Each pair of the slots 20 and 21 are adapted to accommodate one of the tool clamps 12. Each of the tool clamps 12 may be formed with a shank or bolt portion 23 which extends through the slot 21 into the slot 20, and is threaded to receive a nut 24. A washer 25 is placed on the shank portion beneath the nut 24 and is adapted to abut and bear against the wall of the slot 20 adjacent the slot 21.

The other end of the tool clamp is enlarged to form a toolholding head 26, which may be round and may have an outside diameter corresponding substantially to the width of the recesses 22 to enable the heads 26 to be seated in the recesses 22. The head 26 may be square when rotative adjustment thereof is not required.

The head 26 is provided with a rectangular aperture 27 extending diametrically therethrough for the reception of a correspondingly shaped tool shank. The head 26, terminates in a flange or enlarged portion 28 adapted to provide a good holding surface for the tool and to facilitate the handling of the tool clamp 12.

The body or turret member 11 is supported on the base plate 14 and is adapted to be rotated with respect thereto about an axially disposed bushing 30 or the like (Figure 2) which extends through an aperture 29 in the turrent and which has a threaded end projecting outwardly of the turret to receive thereon a locking lever 31. The bushing is provided with an enlarged and re-

cessed end 32 extending through the base plate 14 and into a recessed portion 33 thereof. The assembly is held together by the rectangular key member 34 which fits into the recessed end 32 of the bushing 30 and extends across the base plate in a corresponding recess 35 thereof. The key member 34 may be fastened to the base plate by means of screws 36 (Figure 2) disposed substantially at each end of the key member 34.

The T-slot block 15, as referred to hereinabove, may be held adjacent the key member 34 by the bolt 16 which extends through the bushing 30 and is freely rotatable and movable therein. A washer 37 may be provided between the head 17 of the bolt 16 and the threaded upper end of the locking lever 31.

In order to facilitate proper alignment of the turret member and the tools carried thereon with respect to the lathe, an indexing arrangement may be provided between the turret member and the base plate. This arrangement may comprise one or more ball bearings 40 and 41 disposed in recesses 44 and 45 at the bottom face of the turret member adapted to be urged toward the base plate by springs 42 and 43 disposed within the recesses 44 and 45. The balls 40 and 41 are adapted to index with suitably placed recesses 46 in the base plate, so that the lateral walls of the turret member may be square with respect to the key member 34, that is, with respect to the cross slide.

In use, the toolholding attachment is adapted to be secured to the cross slide of a lathe by first loosening the bolt 16 in the T-slot block 15, and by sliding the members 15 and 34 into the T-slot of the cross slide. The bolt 16 is then screwed tight whereby the block 15 is raised on the bolt to clamp the attachment to the cross slide. The required tools are inserted into the respective apertures 27 of the four tool clamps 12 and are secured therein by tightening the nuts 24 against the side walls of the slots 20. The tool is thus clamped between the inside of the flange 28 and the adjacent side wall of the turret member. As will be apparent from the construction hereinabove described, the tool clamps 12 are arranged to be fully rotatable, as well as being adjustable vertically within the slots 21, so that the tools may be held in any desired working angle and be placed at any height within the vertical range permitted by the slots 21.

It is to be understood that the tool clamp 12 may be varied in its construction to conform to the respective tools which may be required to be used therewith, and that it may take the form of an adapter for the accommodation of other tool holders.

Each of the tools may be placed selectively and successively into work engaging position by loosening the locking lever 31 on the bushing 30. As the locking lever is loosened, the springs 42 and 43, which are rather strong, raise the turret member 11 from the base plate 14, permitting an easy rotation of the turret into a desired position. The turret member may then be secured in place by screwing down the locking lever, which causes the turret member to be pressed downwardly toward the base plate against the force of the indexing springs, and to force the balls into their respective recesses 44 and 45. A pair of dowel pins 47 placed on a diameter of the lower face of the turret member at right angles to that of the index or detent balls serves to securely position the turret member on the base plate by extending into recessed portions 48 of the detent recesses 46 when the turret member is pressed down on the base plate by the locking lever.

From the foregoing description it will be seen that the present invention provides an improved toolholding attachment for increasing the utility of lathes. The attachment is simple and rugged in construction and permits of a wide range of adjustments in the working height and angles of the tools. The attachment also provides an improved tool clamping arrangement.

As various changes may be made in the form, construction and arrangement of the parts herein, without departing from the spirit and scope of the invention and without sacrificing any of its advantages, it is to be understood that all matter herein is to be interpreted as illustrative and not in any limiting sense.

It is also to be understood that the following claims are intended to cover all the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

I claim:

1. A lathe attachment of the class described, comprising a solid unitary tetragonal tool carrier having one vertical slot on each side thereof adjacent each corner and a second vertical slot adjacent each of said corners on the other side thereof intersecting said first slot, a tool clamp removably secured in each of said first named slots for vertical and rotative adjustment extending into said second named slot, fastening means for said clamp in said second named slot, means for rotatably mounting said carrier secured thereto, and supporting means for said attachment.

2. A lathe attachment of the class described, comprising a solid unitary tetragonal tool carrier having one vertical slot on each side thereof adjacent each corner, a tool holder secured in each of said slots for vertical adjustment, means for rotatably mounting said carrier secured thereto, spring means disposed between said carrier and said mounting means to urge apart said carrier and said mounting means, a member on said mounting means extending through said carrier to permit rotation of the carrier with respect thereto, a threaded member on said first member to releasably clamp said carrier to said mounting means against the force of said resilient means, supporting means for said attachment having a clamping member, and a bolt extending through said first and said second member adapted to threadedly engage said clamping member and to abut said first member.

3. A lathe attachment of the class described, comprising a unitary polygonal tool carrier having one vertical slot on each side thereof adjacent each corner and a second vertical slot adjacent each of said corners on the other side thereof intersecting said first slot, a tool clamp removably secured in each of said first named slots for vertical and rotative adjustment and extending into said second named slot, and fastening means for said tool clamp in said second named slot.

4. A lathe attachment of the class described, comprising a substantially polygonal tool block having a series of side walls, said side walls having a vertical slot therein adjacent another of said walls, and vertical web portions formed by said slots having an elongated vertical aperture therein extending from one side wall to one

of said slots formed in an adjacent side wall and adapted to receive tool clamping means.

5. A lathe attachment of the class described, comprising a substantially polygonal tool block having a series of side walls, said side walls having a vertical slot therein adjacent another of said walls, vertical web portions formed by said slots having an elongated vertical aperture therein extending from one side wall to one of said slots formed in an adjacent side wall, and tool clamping means mounted in said apertures for vertical and rotative adjustment.

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