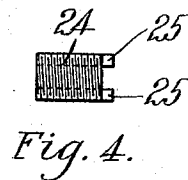
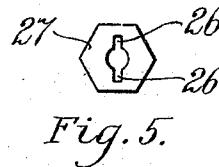
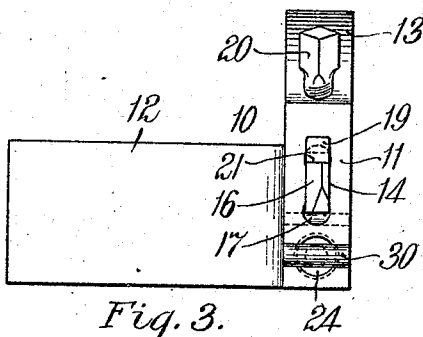
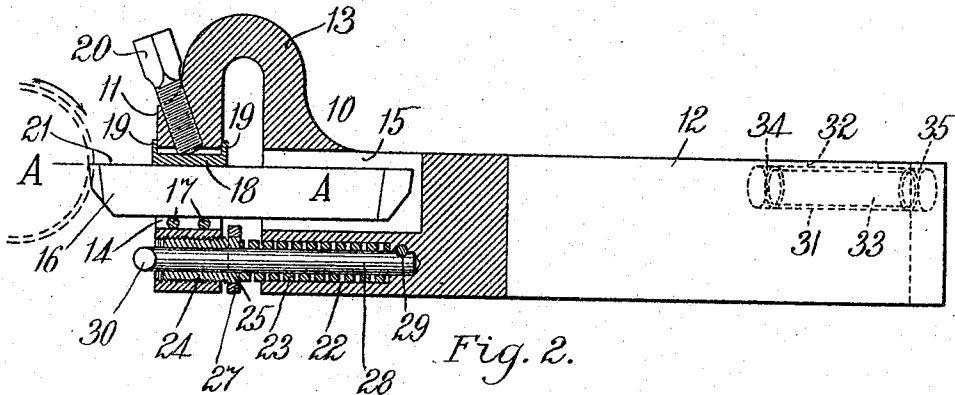


932,576.



Sydney C. Taft by his attorney

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UNITED STATES PATENT OFFICE.

JOSEPH D. RAMSEY, OF DORCHESTER, MASSACHUSETTS.

LATHE-TOOL.

932,576.

Specification of Letters Patent.

Patented Aug. 31, 1909.

Application filed September 24, 1908. Serial No. 454,588.

To all whom it may concern:

Be it known that I, JOSEPH D. RAMSEY, a citizen of the United States, residing at Dorchester, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Lathe-Tools, of which the following is a specification.

This invention relates to improvements in lathe tools and particularly to that class of lathe tools in which the tool proper is removably mounted in a holder.

In turning very hard steels it is desirable that the point of the tool shall be adapted to yield very slightly in the direction of rotation of the work and heretofore it has been proposed to form a tool holder in two relatively movable parts connected by a yielding connection, one of said parts supporting the tool and to provide a spring tending to move the part which supports the tool away from the other part in such a manner that the spring is opposed to the resistance offered by the chip being removed from the rotating work, there being provided means to vary the tension of said spring. Such tools, especially when employed in tool cutting, have this disadvantage that when the tension of the spring is varied the upper face of the tool which should lie exactly in a horizontal plane containing the axis of the work is moved out of said plane and the thread which is cut by the tool is consequently inaccurately formed.

One of the objects of my invention is to overcome the difficulty just described and in the attainment of this object I have provided means to limit the movement of the tool upwardly so that the tension of the spring may be varied without moving the upper face of the tool out of its proper plane.

Still other objects and advantages will appear hereinafter.

The invention consists in the combination and arrangement of parts set forth in the following specification and particularly pointed out in the appended claims.

Referring to the drawing: Figure 1 is a plan of a lathe tool embodying my invention. Fig. 2 is a sectional elevation taken on line 2—2 of Fig. 1. Fig. 3 is a front elevation of the tool, as viewed from the left of Figs. 1 and 2. Fig. 4 is a detail side elevation of the adjusting screw for adjusting the tension of the spring. Fig. 5 is a detail

end elevation of the hexagonal head for the adjusting screw shown in Fig. 4.

Like numerals refer to like parts throughout the several views of the drawing.

In the drawing, 10 is a holder having two parts 11 and 12 connected by a yielding connection 13 which is preferably U-shaped in form and which is preferably formed integral with said parts. The part 12 constitutes a shank which is adapted to be fitted into a tool post of a lathe and secured therein, said shank being suitably off-set, as shown after the fashion of many lathe tools. The part 11 is provided with a hole 14 extending therethrough in the same general direction as the shank of the holder and the part 12 is provided with a corresponding hole 15, said holes being provided for the reception of a tool 16 which rests upon two pins 17, 17 passing through the hole 14 and terminating at opposite ends, respectively, thereof in the part 11. A plate or block 18 located in the hole 15 is provided with two lugs 19, 19 extending upwardly in contact with opposite faces, respectively, of the part 11, said lugs preventing said block from slipping out of said hole while the tool 16 is in place.

A set screw 20 having screw-threaded engagement with the part 11 bears against the upper side of the block 18 and is adapted when rotated in the proper direction to force said block against the upper side of the tool 16 to rigidly clamp said tool against the upper face 21 of the tool 16. The tool 16 is provided with the usual cutting edge formed by the intersection of the upper face 21 with one or more other faces of the proper arrangement, such tools being too well known to require further description. The opposite end of the tool 16 may also be provided with a cutting edge, if desired, so that the same may be reversed.

In practice, the holes 14 and 15 are formed by drilling holes into the holder from the left hand side thereof and broaching out the material between the drilled holes. By reason of the provision of the pins 17, 17, it is unnecessary to broach the lower side of the holes 14 and 15 so as to form square corners and there is consequently a considerable saving in the cost of manufacture. The part 12 is provided with a recess 22 in which is located a helical compression spring 23 which may be formed of wire which is rectangular

in cross section, said spring bearing at one end against the inner end of said recess and bearing at its other end against an adjusting screw 24 having screw-threaded engagement with the part 11, said screw having formed thereon two lugs 25, 25, as seen in Fig. 4, said lugs being located in notches 26, 26 formed in a head 27. The head 27 is formed separately from the screw 24 so as to make it possible to assemble the device, it being necessary to screw the adjusting screw into place first from the left hand end of the tool and then slip the head 27 into place.

The spring 23 bears partly against the lugs 25, 25 and partly against the head 27, thereby holding said head in place on the screw 24. By applying a proper wrench to the head 27 which may be hexagonal in form, the screw 24 may be rotated to vary the tension of the spring 23 so as to oppose a greater or less resistance to the action of the rotating work which is indicated in dotted lines in Fig. 2, the direction of rotation being indicated by the arrow. A rod 28 is secured at one end to the part 12 by means of a pin 29 passing through said part and being located in a corresponding depression formed in said rod, said rod extending through the spring 23 and through the adjusting screw 24 which is made hollow for this purpose. The rod 28 has formed thereon a stop 30 which extends transversely thereof and which bears against the outer face of the part 11, said stop serving to limit the movement of said part toward the left with relation to the part 12. Therefore, no matter how great the tension of the spring 23, the upper face 21 of the tool 16 when once adjusted so as to lie in a plane A—A containing the axis of the work will not be carried above said plane. This is a very important feature of my invention inasmuch as in screw cutting if the upper face of the tool rises above a horizontal plane containing the axis of the work it is fatal and the thread will consequently be spoiled.

In working on some grades of steel it is desirable to have a slight tension opposed to the action of the rotating work, while in other cases it is desirable to have a greater tension and it will be understood that the tension of the spring 23 may be varied through a wide range so as to suit all of the varying conditions, yet without impairing the accuracy of the tool. It will also be understood that the U-shaped connection 13 in itself constitutes a powerful spring supplementing the spring 23.

Heretofore in leveling a tool of this character after the same has been placed in the tool post of a lathe, it has been customary to employ a surface gage to test the level of the upper face of the working portion of the tool, which in this instance is the face 21. Such manner of adjustment is necessarily

quite difficult and in addition is apt to be inaccurate owing to the fact that the portion of the surface 21 which projects from the holder is comparatively short. In order that this adjustment of the tool may be easily, quickly and accurately effected, I provide the shank 12 with a hole 31 extending thereinto from the right hand end thereof and provide also a hole 32 leading thereinto from the upper side and placing into the first mentioned hole a spirit level 33 preferably interposed between two cork plugs 34 and 35.

In the manufacture of the tool holder, the same is placed in a jig so that the hole 31 may be drilled in such a manner that its axis will lie in a plane parallel to a plane tangent to the pins 17, 17 so that when the tool 16 is in place, the upper face 21 thereof which is parallel to the lower face will also lie in a plane parallel to a horizontal plane containing the axis of the hole 31. Therefore, when the shank 12 of the tool is placed in the tool holder the bubble of the spirit level 33 will always accurately indicate the level of the surface 21. This is of great practical advantage and results in a great saving of time over other methods hereinbefore employed for accomplishing this result and the adjustment is furthermore much more accurate than has heretofore been possible.

It will be noted that the tool 16 bears against both of the lateral faces of each of the holes 14 and 15. This feature is of great practical advantage since it prevents lateral yielding of the part 11 with relation to the part 12 in performing work in which there is a thrust which tends to move the part 11 laterally with relation to the part 12. Having thus described my invention, what I claim and desire by Letters Patent to secure is:

1. The combination in a device of the class described of a holder having two relatively movable parts, one of which is adapted to support a tool and the other of which is adapted to be rigidly secured to a tool post, a stop adapted to limit the movement of one of said parts with relation to the other in one direction, and a spring adapted to hold one of said parts against said stop.

2. The combination in a device of the class described of a holder having two relatively movable parts, one of which is adapted to support a tool and the other of which is adapted to be rigidly secured to a tool post, a stop adapted to limit the movement of one of said parts with relation to the other in one direction, a spring adapted to hold one of said parts against said stop, and means to vary the tension of said spring.

3. The combination in a device of the class described of a holder having two relatively movable parts, one of which is adapted to support a tool and the other of which is adapted to be rigidly secured to a tool post,

a stop secured to one of said parts and adapted to limit the relative movement of said parts in one direction, a spring adapted to hold one of said parts against said stop, and a screw adapted to be rotated to vary the tension of said spring.

4. The combination in a machine of the class described of a holder having two relatively movable parts, one of which is adapted to be rigidly secured to a tool post, a tool supported on the other of said parts, a yielding connection between said parts, a stop adapted to limit the movement of one of said parts with relation to the other in one direction, and a spring adapted to hold one of said parts against said stop.

5. The combination in a device of the class described of a holder having two relatively movable parts, one of which is adapted to be rigidly secured to a tool post, a tool supported on the other of said parts, a substantially U-shaped connection between said parts, a stop adapted to limit the movement of one of said parts with relation to the other in one direction, and a spring adapted to hold one of said parts against said stop.

6. The combination in a device of the class described of a holder having two relatively movable parts, one of which is adapted to support a tool, and the other of which is adapted to be rigidly secured to a tool post, a yielding connection between said parts, a stop adapted to limit the movement of one of said parts with relation to the other in one direction, a spring adapted to hold one of said parts against said stop, and means to vary the tension of said spring.

7. The combination in a device of the class described of a holder having two relatively movable parts, one of which is adapted to support a tool, and the other of which is adapted to be rigidly secured to a tool post, a yielding connection between said parts, a spring interposed between said parts and tending to force one of said parts away from the other, a stop adapted to limit the movement of said parts away from each other, and means to vary the tension of said spring.

8. The combination in a device of the class described of a holder having two relatively movable parts, one of which is adapted to be rigidly secured to a tool post, a tool supported on the other of said parts, means to secure said tool to said part on which the same is supported, a yielding connection between said parts, a spring interposed between said parts and tending to force one of said parts away from the other, a stop adapted to limit the movement of said parts away from each other, and means to vary the tension of said spring.

9. The combination in a device of the class described of a holder having two relatively movable parts, a tool supported on one of said parts, a yielding connection between

said parts, a helical compression spring tending to force one of said parts away from the other, a rod fast to one of said parts and having thereon a stop adapted to limit the movement of said parts away from each other, and means to vary the tension of said spring.

10. The combination in a device of the class described of a holder having two relatively movable parts, a yielding connection between said parts, a helical compression spring tending to force one of said parts away from the other, a hollow screw having screw-threaded engagement with one of said parts and adapted to be rotated to vary the tension of said spring, and a rod fast to one of said parts extending through said spring and screw and having thereon a stop adapted to limit the movement of said parts away from each other.

11. The combination in a device of the class described of a holder provided with a hole, two rigidly supported pins extending transversely through said hole, a tool located in said hole resting upon said pins, and means to clamp said tool against said pins.

12. The combination, in a device of the class described, of a holder having two relatively movable parts, a tool supported on one of said parts, a yielding connection between said parts, a helical compression spring tending to force one of said parts away from the other, and a rod fast to one of said parts and having a stop thereon adapted to limit the movement of said parts away from each other.

13. The combination, in a device of the class described, of a holder having two relatively movable parts, a tool supported on one of said parts, a helical compression spring tending to force one of said parts away from the other, and a rod fast to one of said parts and having thereon a stop adapted to limit the movement of said parts away from each other.

14. The combination, in a device of the class described, of a holder having two relatively movable parts, a helical compression spring tending to force one of said parts away from the other, a hollow screw having screw-threaded engagement with one of said parts and adapted to be rotated to vary the tension of said spring, and a rod fast to one of said parts extending through said spring and screw and having thereon a stop adapted to limit the movement of said parts away from each other.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOSEPH D. RAMSEY.

Witnesses:

LOUIS A. JONES,
SADIE V. MCCARTHY.