

Sept. 12, 1944.

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2,357,918

TOOL HOLDER

Filed Feb. 19, 1944

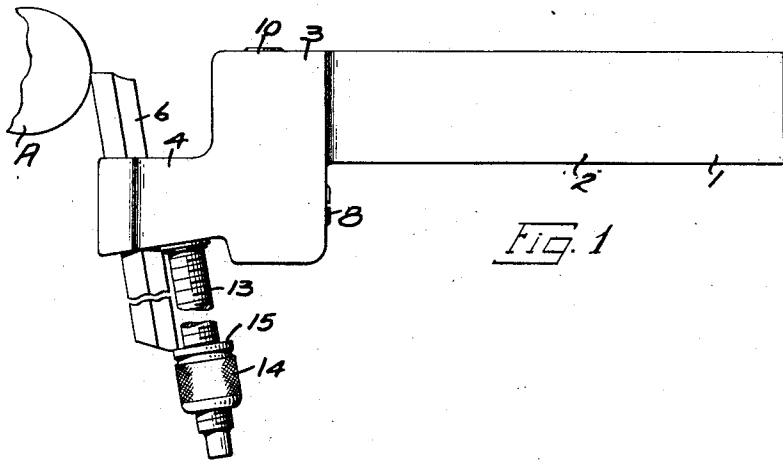


Fig. 1

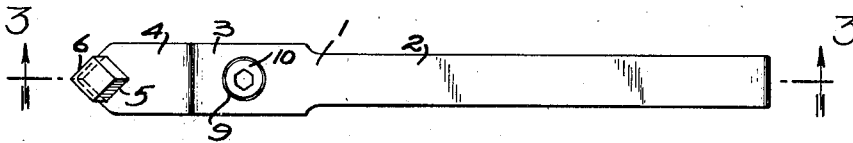


Fig. 2

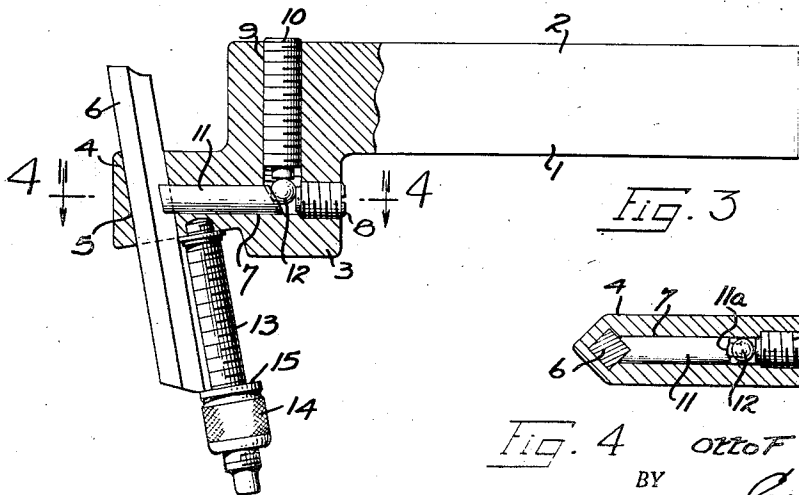


Fig. 3

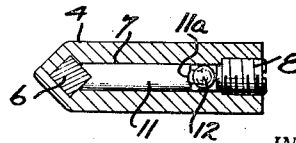


Fig. 4

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2,357,918

TOOLHOLDER

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Application February 19, 1944, Serial No. 523,063

4 Claims. (Cl. 29—96)

This invention relates to improvements in toolholders for conventional tool bits. At the present time it is customary to provide holders from which such bits project in a substantially horizontal plane. These tools are frequently employed on lathes which are operated by unskilled or semi-skilled help who feed the slide on which the holder is secured to a stop by which time a cut of the required depth has been taken. However each time after the bit has been removed and reground it must be so reset in the holder that it projects a predetermined distance otherwise the depth of the cut taken when the slide is again fed to its stop is incorrect. It is an object of this invention to provide a toolholder wherein the bit is supported substantially vertically so that slight variation in the distance which the bit projects makes no material difference to the depth of the cut taken under the conditions above mentioned, that is when feeding to a stop. Again even a relatively unobservant operator can readily see if the top of the bit is in substantial alignment with the axis of the work, where it must be if the tool is to function satisfactorily.

Another object of the invention is to provide such a tool holder wherein means are provided for supporting a conventional tool bit in a substantially vertical position with its cutting edge located midway of the height of the shank, because in many types of older lathes only few adjustments are provided and it is therefore necessary to maintain the cutting edge of the bit at substantially the height at which a horizontal bit would be held by a conventional type of holder.

A further object of the invention is to provide a toolholder including an axially movable tool bit engaging member for holding the bit immovable, and means for moving the said member into firm engagement with the tool bit.

Another object of the invention is to provide such a toolholder with means for supporting the underside of a tool bit irrespective of the length of the latter and the distance which it projects from the holder, thereby supplementing the grip exerted upon the tool bit by the axially movable engaging member.

Having thus briefly and broadly stated some of the objects and advantages of the invention, I will now proceed to describe a preferred embodiment thereof with the aid of the accompanying drawing, in which:

Figure 1 illustrates a side view of the invention, and

Figure 2 is a plan view thereof.

Figure 3 is a section on the line 3—3 of Figure 2, and

Figure 4 is a section on the line 4—4 of Figure 3.

Referring to the drawing, 1 designates a toolholder having a shank 2 integral with which at its

front extremity is a head 3 of increased depth, and forming a portion of the head is a forward projection 4 which extends upwardly from adjacent the bottom of the said head to substantially the same level as the underside of the shank 2.

Formed substantially vertically through the projection 4 is a slot 5 through which a tool bit 6 is freely slidable. Extending rearwardly and horizontally through the projection 4 and the head 3 from the slot 5 to the back of the head is an aperture 7 the rear extremity of which is closed by a plug 8. Formed vertically downward in the head 3 from the top thereof and terminating in the aperture 7 immediately in front of the plug 8 is a threaded opening 9 having a set screw 10 in engagement therewith. Axially slidable in the aperture 7 is a locking member 11 the front extremity of which is formed to engage a portion of the periphery of the tool bit 6 and its rear extremity is downwardly and rearwardly inclined and spaced in front of the plug 8. The locking member 11 and the plug 8 are both preferably hardened.

Resting partly against the plug 8 and partly against the inclined rear extremity of the locking member 11 so that it is supported above the bottom of the aperture 7 is a ball 12. By downward movement of the set screw 10 pressure is exerted upon the ball 12 by which the locking member 11 is forced forward into engagement with the tool bit 6 so that the latter is held immovable between the said member and the opposite side of the slot 5. In order to prevent lateral movement of the ball 12 between the plug 8 and the engaging member 11 a substantially vertical groove 11a may be formed in the inclined rear face of the said member to receive a portion of the ball periphery.

Extending downwardly from the underside of the projection 4 is a threaded stem 13 in engagement with which is a nut 14 upon the upper margin of which an annular seat 15 is provided to support the underside of the bit 6, so that after the latter has been set at the required height the nut 14 may be tightened against its underside to further support the bit. Removal of the latter is facilitated by upward rotation of the nut 14 after the set screw 11 has been loosened, as this movement of the bit causes sufficient rearward movement of the member 11 to permit the bit to travel freely in its slot.

The slot 5 is preferably forwardly and upwardly inclined at an inclination of about 7 to 10 degrees to the vertical to provide additional clearance between the tool bit 6 and the work A, and the stem 13 is mounted parallel with the axis of the slot 5. Moreover to facilitate attachment of the stem 13 to the projection 4 the underside of the latter is usually forwardly and downwardly

inclined at 90 degrees to the axes of the slot 4 and the said stem.

While in the foregoing the preferred construction of the invention has been described and shown it is understood that alterations and modifications may be made thereto, provided they fall within the scope of the appended claims.

What I claim is:

1. A toolholder including a shank having a head at one extremity, said head having a substantially vertical slot therethrough, a tool bit slidable through the slot, said head having a horizontal aperture therein extending rearwardly from the slot and closed at its opposite extremity, a tool bit engaging member axially movable in said aperture having its rear extremity inclined, a ball resting on one side against the inclined extremity of the member and on the other side against the closed end of the aperture, the head having a threaded opening therein extending at right angles from the aperture and opposite said ball, and a screw in threaded engagement with the opening adapted to exert pressure against said ball and thereby move the engaging member toward said tool bit and hold the latter immovable between said member and the opposite side of the slot.

2. A tool holder including the combination set forth in claim 1, including a threaded stem projecting from the head parallel with the tool bit and adjacent thereto, and a nut on said stem for adjustment against the underside of the tool bit.

3. A tool holder including a shank having a head at one extremity, said head having a substantially vertical slot therethrough, a tool bit slidable through the slot, said head having a horizontal aperture therein extending rearwardly from the slot, a plug closing the opposite end of the aperture, a tool bit engaging member axially movable in said aperture having its rear ex-

5 tremity downwardly and rearwardly inclined, a ball in the aperture above the base thereof resting on one side against the inclined extremity of the member and on the other side against the inner extremity of the plug, the head having a vertical threaded opening therein extending into said aperture opposite said ball, and a screw in threaded engagement with said opening adapted to exert pressure against said ball and thereby move the engaging member toward said tool bit and hold the latter immovable between said member and the opposite side of the slot.

4. A toolholder including a shank having a head at its front extremity projecting below the shank, a forward projection on the lower portion of the head, the top of the projection being materially lower than the top of the shank, the projection having a substantially vertical slot therethrough, a tool bit slidable through the slot, 15 said projection and head having a horizontal aperture therethrough extending rearwardly from said slot, a plug closing the rear extremity of the aperture, a tool bit engaging member axially movable in said aperture having its rear extremity downwardly and inwardly inclined, 20 said member being spaced from said plug, a ball resting against the inclined end of the member and against the inner extremity of the plug, said head having a vertical threaded opening therein terminating in the aperture opposite said ball, a screw in threaded engagement with the opening adapted to exert pressure upon said ball whereby the member is forced into engagement with the tool bit and the latter is held immovable between said member and the opposite side of the slot, a threaded stem extending downward from the projection, and a nut on said stem having an annular seat thereon to support the underside of the tool bit.

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