Feb. 24, 1931. O. SEVERSON 1,793,564

TOOL HOLDER WITH DOVE TAIL LOCK

Filed June 8, 1927

Fig. 2.

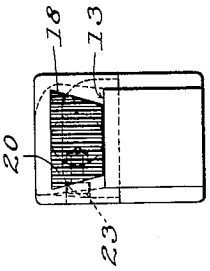



Fig. 3.

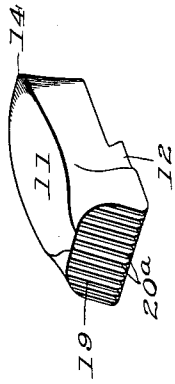



Fig. 1.

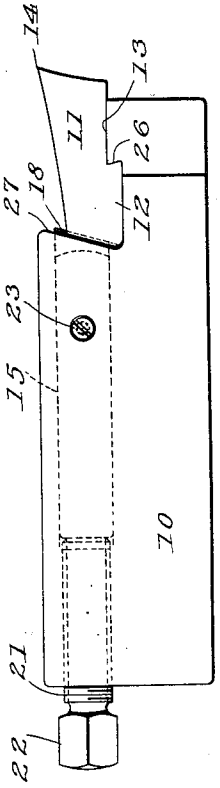



Fig. 5.

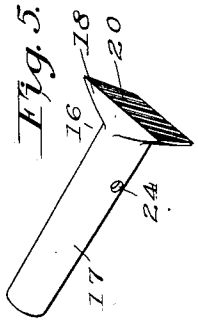



Fig. 4.

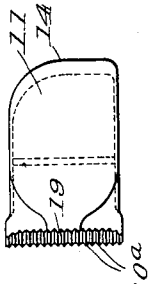
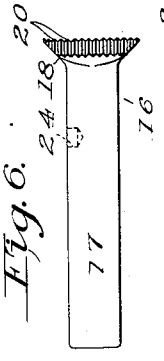



Fig. 6.




Inventor

Ole Severson

By Attorney

Nathan & Bowman

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# UNITED STATES PATENT OFFICE

OLE SEVERSON, OF SHELTON, CONNECTICUT, ASSIGNOR TO THE O. K. TOOL COMPANY, INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

## TOOL HOLDER WITH DOVETAIL LOCK

Application filed June 8, 1927. Serial No. 197,322.

In the art of cutting tools it was found to be a relatively simple matter to make a solid single piece cutting tool and supporting shank therefor of sufficiently large proportions as to withstand all normal strains to which it may be subjected. With the advent, however of the various high speed alloy steels especially adapted for the immediate cutting edges it became the practice in accordance with various novel discoveries to form the cutting tool of two primary elements comprising a supporting body member or shank of mild steel and a cutting member mounted thereon of alloy steel, each having properties well adapted to the functions they are normally required to perform, and the arrangement permitting the cutting tool to be replaced by others of the same or different type or shapes.

In order, however, that the rigidity of the tool would not be materially sacrificed by such an arrangement means for securely locking the cutting member on its holder were required and various ingenious devices for this purpose have been discovered. Foremost among these are constructions which include a projecting portion on the cutting tool member proper adapted to fit in a corresponding transverse slot in the holder permitting the tool to be adjusted therealong, and having combined therewith a locking member adapted to engage the tool to hold it in position.

This invention has for its objects the provision of means for positively and rigidly holding the cutting tool member against movement along the transverse slot such means comprising, specifically, vertical serrations on the cutting tool and locking member adapted to intermesh when the locking member is caused to firmly engage therewith.

The objects also contemplate the provision of coacting locking means in combination with the serrations for securely locking the tool against movement in any other direction and this is accomplished by inclining the sides of the slot and the corresponding surfaces on the cutting tool and locking plunger so that the cutting member is dovetailed to the holder and operation of the plunger at right angles to the slot serves to draw the cutting member into firmer engagement with the horizontal supporting surfaces, while the serrations prevent any side movement during such locking operation.

Other objects and advantages will be in part indicated in the following description and in part rendered apparent therefrom in connection with the annexed drawings.

To enable others skilled in the art so fully to apprehend the underlying features hereof that they may embody the same in the various ways contemplated by this invention, drawings depicting a preferred typical construction have been annexed as a part of this disclosure and, in such drawings, like characters of reference denote corresponding parts throughout all the views, of which:—

Figure 1 is a view in elevation of the complete assembled tool holder and cutting tool member mounted thereon. Fig. 2 is an end elevational view looking from the right in Fig. 1 but with the cutting tool removed. Fig. 3 is a perspective view of the cutting tool. Fig. 4 is a top plan view thereof. Fig. 5 is a perspective view of the locking plunger and Fig. 6 is a bottom plan view of the locking plunger.

The drawings disclose a body member 10 upon which a cutting tool is adapted to be mounted for supporting the tool in the proper position on ordinary machine tools such as lathes, planers and shapers. The cutting tool member is indicated at 11 and as shown has a projecting portion 12 adapted to fit in a transverse slot in the body member 10, the outer end of the cutting tool receiving a bearing upon the horizontal platform surface 13. The cutter bit 11 is shown as of a conventional type having a cutting edge 14, it being understood that various other tools may be substituted therefore dependent upon the particular type of work to be operated upon.

The holder 10 has a longitudinal bore 15 therein extending substantially at right angles to the direction of the recess in the outer end of the holder.

Mounted in the longitudinal bore 15 is the plunger 16 having the cylindrical portion 17 and the head portion 18 adapted to be moved into direct engagement with the adjacent side

face 19 of the cutting tool. The plunger 16 as shown is provided with vertical serrations or corrugations 20 adapted to engage with and intermesh with the serrations 20* on the adjacent face 19 of the cutting tool. The plunger 16 is forcibly moved outwardly by the means of a screw bolt 21 threaded into the outer end of the bore 15. The bolt 21 is provided with a squared end 22 for manipulation thereof by suitable wrench means.

A set screw 23 is provided in a side face of the holder adapted to extend into the opening 24 of the plunger 16, the opening 24 being of such dimensions as to permit of the plunger 16 receiving a sufficient movement in the holder under the action of the screw bolt 21 to engage the cutting member or to permit the plunger to be withdrawn into the holder in order that the serrations will be disengaged permitting the transverse adjustment of the cutting member.

The sides of the transverse slot or recess are inclined as shown at 26. Likewise the forward face of the shoulder 27 and the forward face of the plunger head 18 as well as the corresponding side faces on the cutting member are inclined resulting in a dovetailed construction for rigidly holding the cutting member on the body member 10 against outward or vertical movement while the serrations which are preferably provided along the rear face of the tool but which in the alternative or in addition may be provided along the inclined sides 26 securely lock it against any transverse movement along the slot.

The various elements of the construction co-act to securely and positively force the cutting tool 11 into engagement with its supporting surfaces on the holder whereby the cutting member is rigidly held against movement in any direction and is able to withstand extreme forces applied to the cutting edge thereof.

As may be apparent from the disclosure the forward movement of the plunger head 18 causes the serrations to intermesh whereby the ordinary forces incurred will not cause the cutting tool to be moved along the transverse slot and at the same time such forward movement of the plunger head by reason of the inclined surfaces causes the cutting member to be more securely forced into engagement with the inclined faces 26 and the horizontal supporting surfaces.

A slight turning of the screw bolt 21 permits the head 18 to be retracted a sufficient amount to enable the cutting tool to be quickly moved transversely of the holder to provide for grinding of the cutting tool or its repositioning or the substitution of a different shape of cutting tool in accordance with particular operations to be performed.

Without further analysis, the foregoing will so fully reveal the gist of this invention that others can, by applying current knowledge, readily adapt it for various utilizations by retaining one or more of the features that, from the standpoint of the prior art, fairly constitute essential characteristics of either the generic or specific aspects of this invention and, therefore, such adaptations should be, and are intended to be, comprehended within the meaning and range of equivalency of the following claims.

Having thus revealed this invention, I claim as new and desire to secure the following combinations and elements, or equivalents thereof, by Letters Patent of United States:—

1. A cutting tool and holder combining a body member having at its forward end a horizontally disposed platform and a horizontally disposed transverse slot adjacent said platform; a cutter bit having one portion fitting in said slot, another portion seated on said platform and a cutting edge, said platform extending substantially to the cutter edge of the cutting bit and adapted to receive the major cutting forces acting transversely to said slot, the sides of said slot and cutter bit portion being tapered to form a dove-tail permitting transverse movement of said cutter bit; a locking member positioned along one side of the slot; means for adjusting said member transversely to said side and directly into engagement with said cutter bit and interfitting complemental formations on a side of said portion and the adjacent supporting surface to lock the cutter bit against transverse movement.

2. A cutting tool and holder comprising an elongated body member having a cut-away portion at the outer end thereof forming a lowered platform supporting surface and a transverse recess at the rear thereof; a cutter bit arranged to rest on said platform surface whereby the major cutting forces imposed on the cutter bit are resisted thereby, and said cutter bit having a portion extending into and transversely adjustable in said recess, said recess and portion being shaped to provide a dove-tail lock for the cutter bit; a locking member adjustable into engagement with the rear of said cutter bit in selective adjusted positions of the latter; and a series of complemental formations on a side of said portion and the adjacent supporting surface to lock the cutter bit in transverse positions.

In witness whereof, I have hereunto subscribed my name.

OLE SEVERSON.