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Tool holder for metal turning lathes.

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To all whom it may concern:

Be it known that I, OLOF NILSSON RIKOF, a subject of the King of Sweden, residing at London, England, have invented certain improvements in Tool-Holders for Metal-Turning Lathes, of which the following is a specification.

Tool-holders for metal-turning lathes are sometimes provided with means whereby a cutter of angular cross-section can be adjusted about its axis into various positions for giving the cutting edge the proper angle relative to the work and to the direction in which the cutter is moved. Thus for instance it is known to arrange a cutter between two packing pieces which are grooved for its reception, the packing pieces being semi-circular and held in a round slot in the holder which is contracted by means of a clamp-screw. It is also known to clamp the cutter, by means of an angular clamping bar and a clamp-screw bearing at right angles against said bar, to different sides of an angular slot. Semi-circular cutters are also arranged together with a semi-circular clamping bar or packing piece in a cylindrical slot carried obliquely and longitudinally through the holder and held in position by means of the wedges and screws.

Finally it is known to arrange a round cutter in a groove in a packing piece together with which it is held in a shank in a substantially vertical position, the packing piece having at its upper end a shoulder which supports both elements on the shank.

The tool-holder most commonly in use is the one in which the cutter is fitted in a slot carried obliquely and longitudinally through a steel shank and held in position by means of a clamp-screw set at right angles to the cutter.

The object of the invention is to modify this type of tool-holder so that a cutter of angular cross-section can, without in the least impairing the stability of the tool, be easily adjusted about its axis into various angular positions according to the nature of the work and to the movement of the tool. This object is achieved by adapting the tool slot to accommodate a semi-circular packing piece below and an angular clamping bar above the cutter, the clamping bar, which determines the position of the cutter, being exchangeable and reversible and adapted to cooperate with the clamp-screw for holding the cutter in position.

The invention is illustrated in the accompanying drawings, Figure 1 representing a front view of the holder, and Fig. 2, a sectional side view of the same.

The holder a, which may have any of the usual shapes, has a slot b which is carried obliquely through the head in a longitudinal plane and which serves to receive the cutter c.

According to the invention, the slot b is made cylindrical throughout and it is preferably widened in the head of the holder for the reception of a packing piece d of semi-circular or nearly semi-circular cross-section. This packing piece, which can be adjusted in the slot about its axis into various angular positions, has on its flat side a longitudinal groove of a cross-section corresponding to that of the cutter e which is accommodated in the groove. For holding the packing piece and the cutter in the desired position, a clamping bar f is provided, which is guided in a key-way adjoining the upper part of the slot b. The usual clamp-screw j preferably at right angles to the upper surface of the bar f against which it bears with its flat lower end a.

If the face of the cutter is to be held in a transversely horizontal position, a clamping bar is used whose lower surface is parallel to the upper one. If a transverse inclination of the face is required, for instance as shown in Fig. 1, the lower surface of the clamping bar is cut at the desired angle relative to the upper one. In this case, the advantage is obtained that a mere reversal of the clamping bar in the key-way, sets the tool for cutting in the opposite direction. In either instance the cutter will be held firmly in position, a rotary displacement being positively prevented by the clamping bar e. It is preferable slightly to arch the lower surface of the bar e as well as the inside and outside of the piece d, as indicated in Fig. 2, so that the pressure is exerted on the ends of the elements. By this arrangement a chattering of the tool is effectively prevented. Should it be desired to vary the angle of the inclination, several clamping bars with differently inclined under surfaces must be provided. Any angle of inclination can be obtained by the provision of a corresponding bar.
The packing piece is made of steel so as to resist wear, and it is formed at the front with a shoulder which holds the same in its proper longitudinal position and which lends additional support to the cutter.

A slot is made in the shank of the holder so as to admit, in case of need, a thin wedge behind the clamping bar and facilitate its removal.

The arrangement allows the cutter to be made of half the usual cross-sectional area, since the reduction in the strength thus incurred is compensated for by the clamping bar and the packing piece. In order not to diminish the face area of the cutter when the size of same is thus reduced, the cutter is preferably made of triangular or trapezoidal cross-section, the groove in the packing piece being made to correspond.

I claim:

1. A tool holder of the character described, comprising a shank having an oblique cylindrical longitudinal tool slot, a semi-circular packing piece arranged in the front part of said slot so that it can be adjusted about its axis into various angular positions, said packing piece having a groove in its plane side in which to accommodate an angular cutter, an angular clamping bar fitted in the shank in a key-way adjoining the slot for determining the angular position of the latter and the packing piece, and a clamp-screw fitted in the shank so as to bear against said clamping bar for holding the elements in position.

2. A tool holder of the character described, comprising a shank having an oblique cylindrical longitudinal tool slot, a semi-circular packing piece arranged in the front part of said slot so that it can be adjusted about its axis into various angular positions, said packing piece having a groove in its plane side in which to accommodate an angular cutter, an angular clamping bar fitted in the shank in the key-way adjoining the slot so that it can bear against the cutter, and a clamp-screw fitted in the shank so as to bear against said clamping bar, the upper surface of said clamping bar being at right angles to the clamp-screw, the lower surface of the clamping bar being cut so as to determine the inclination at which the cutter and the packing piece are to be held relative to their axes, the clamping bar being reversible for inclining the tool in either direction and exchangeable for varying the angle of inclination.

3. A tool holder of the character described, comprising a shank having an oblique cylindrical longitudinal tool slot, a semi-circular packing piece arranged in the front part of said slot so that it can be adjusted about its axis into various angular positions, said packing piece having a groove in its plane side in which to accommodate an angular cutter, an angular clamping bar fitted in the shank in a key-way adjoining the slot so that it can bear against the cutter for determining the angular position of the latter and of the packing piece, and a clamp-screw fitted in the shank so as to bear against said clamping bar for holding the elements in position, the packing piece having at its front end a shoulder for determining its angular position and for offering additional support to the cutter.

4. A tool holder of the character described, comprising a shank having an oblique cylindrical longitudinal tool slot, a semi-circular packing piece arranged in the front part of said slot so that it can be adjusted about its axis into various angular positions, said packing piece having a groove in its plane side in which to accommodate an angular cutter, an angular clamping bar fitted in the shank in a key-way adjoining the slot so that it can bear against the cutter for determining the angular position of the latter and of the packing piece, and a clamp-screw fitted in the shank so as to bear against said clamping bar for holding the elements in position, the lower bearing surface of the clamping bar and both bearing surfaces of the packing piece being arched so that the pressure is exerted on the ends of these elements, substantially as and for the purpose set forth.

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Witnesses:
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