TYPES OF TOOL HOLDER

By GEOMETER

A FEW standard tools will perform many operations on the lathe when there is nothing exceptional in the shape or dimensions of parts. Many machinists have favourite tools with which they do most of their work, though obviously there are limits to their practical or proper use. A boring tool, for example, must be appropriate to the diameter of the hole; and a turning tool which will machine a cast-iron flywheel is not suitable for turning small brass or duralumin fittings.

On small jobs, there can be difficulties with standard holders, which may be awkward to set or physically obstructive, even when tool bits have been altered-and this, though often practical, can be wasteful, especially when large bits must be adapted to jobs that are much below their normal capacity. Obviously, it is much better if tools and holders suit the lathe and the job.

The simplest tools are. round ones -commercial bits in special alloy, pieces of silver steel, perhaps drill shanks. All are sold in various sizes to meet particular needs. Silver steel is especially suitable for small tools and light work. It is accurate to size, is reasonably easy to turn and file, and can be hardened and tempered in any workshop. It is therefore the natural choice for the amateur.

A two-piece holder from mild steel rectangular bar can be used to mount round tools, as at Al and 2, for boring or turning operations. The pieces are faced to depth and width for the toolpost or turret, and are drilled and reamed on the line of their abutting faces. These are lightly filed for the tools to be gripped. The facing is done in the four-jaw independent chuck with two of the jaws reversed.

For mounting small boring tools, the depth of the bottom piece of the holder X, should be the distance to centre height from the toolpost or turret. This obviates packing, and with the mounting exactly at centre height, facilitates machining very small tools from silver steel rod. Turned with concentric shanks, they will enter small drilled holes without rubbing.

For mounting turning tools, the holder can be lower, and so their cutting edges are not at their centre lines. Thus, the other part of the two-piece holder can be of reduced depth, as shown. The holder is inverted for the mounting of turning tools.

Another simple holder is as at B. Like the other, it is from mild steel rectangular bar .in a size to suit the lathe. This holder, too, mounts a round shank boring tool at centre height. The drilling is done with the bar mounted in the toolpost or turret and the drill running in the chuck. Feed is applied from the top slide or saddle. Afterwards a hole is drilled and tapped for a clamping screw, and then the bar is slit endwise.

For light work. a turning tool can be clamped to the side of a holder, C left. It can be set to height, and drawn further out if necessary. The holder has a drilled hole which is recessed for the head of the clamping screw.

With a taper hole in a holder, a special form tool can be mounted-C right. The one illustrated is for cutting threads, is in cast steel with a vee profile, and is hardened and tempered. Once made, this tool gives long service and is easily sharpened by grinding on the flat.

The holder at D is intended for mounting a small boring tool on a large lathe. It is itself mounted in a split holder. The outside is eccentric with the bore to admit of height adjustment, and the front end is slit for the tool to be held through a clamp.

Tool bits can be mounted in large mild steel holders as at El, 2 and 3, according to clearance available to work the tool. A simple holder for a turning tool can be as at F, mounted on the slide for drilling from the chuck, with the block sweated on for this operation. ❑