Small lathe-tool holders

By GEOMETER

IN turning small parts on which there are numerous different features, quick, easy and accurate production calls for a variety of tools which are easy to set up, adjust, remove, sharpen or change. There is then no waste of time or material in regrinding tools to shapes in accordance with component requirements-and the temptation is virtually eliminated to " make do " with a tool which is not quite the type needed, or one whose cutting edge has dulled.

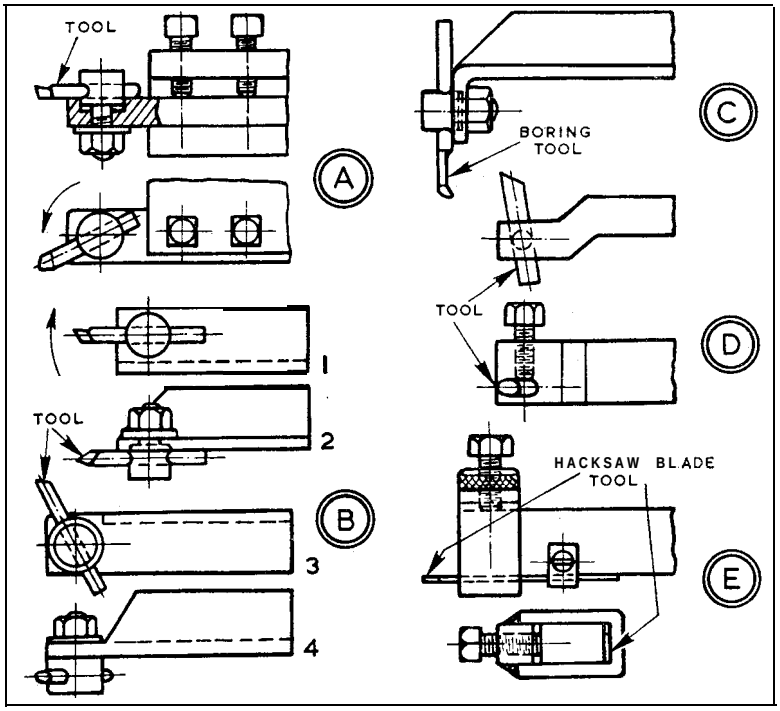
Tool bits most satisfactorily meet these general requirements if there are holders in which they can be swung at angles, set for height, and gripped firmly enough for the light operations on soft metals, wood and plastics! for which they are particularly intended-as, of course, heavy operations such as machining cast iron or rough-turning steel demand substantial rigidly-mounted tools.

As for these tool bits, they can be conveniently made by the amateur or model engineer from silver steel rod, or in some cases from the shanks of broken drills, which are otherwise of little use; and with a suitable holder, pieces of all-hard hacksaw blades can be employed for narrow grooving and small parting-off operations.

Round-tool holders

Holders for round tool bits can be of rectangular or angle-section steel, each with a hole for a bolt to clamp the tool bit. They can be mounted on the topslide or in the turret if this is not to be turned, although angle-section holders for straight turning and boring tools can be mounted in the turret in the normal way.

For small tool bits to be adjusted in a horizontal plane-for turning, facing, grooving and boring, a holder of rectangular steel can be as at A, drilled for the clamping bolt, and slightly recessed to let in the head. Tools may be round to permit twisting when setting-or if a particular type has to be located this can be done through a flat on the underside. Of course, the thickness of the holder and the diameter of the' tool settle vertical height, which may be too great for all turrets, but generally acceptable for topslides.



A holder of angle-section material to use in a turret and admit of setting tool edges to centre height, can be as at ***B,*** 1 and 2. The flat side of the holder stands vertically with nothing lower than the clamping face of the turret to obstruct rotation. Tool clamping is similar to that of the other holder.

Allowing for heavy rake

For tools on which considerable rake is required, as for turning wood and other soft materials, and where at the same time height adjustment is an advantage, the holder can be as at ***B,***. 3 and 4. Here the flat side depends from the clamping face, and so obviously may obstruct rotation of a turret to other positions. But in most instances that is an objection of small importance beside the convenience of easy height adjustment for tools, and the variation of rake which is possible without special grinding. Tool clamping may be as before-or as shown on the principle of a clamp on a surface gauge, with a sleeve over the head of the bolt.

Modifying an angle-section holder, as at C, a small boring tool can be set up-twisting in the clamp for rake, and inclining slightly up or down for centre height. The clamping bolt should be at centre height, to obviate need for undue inclination which would obstruct the tool in small holes. The right-angle bend on the holder can be made in the vice with the metal heated to red-the other side, of course, having been hacksawed off.

A fixed-angle holder for round tool bits, admitting nevertheless of height adjustment, can be as at ***D.*** Square-section steel bar may be milled or shaped to provide the " cranking "; and such a holder with a bit, say, fin. dia. can be used for moderately heavy work.

To use pieces of hacksaw blade as tools, a holder can be as at the shank from straight rectangular bar with a small screwed on plate to resist the upward thrust of the tool, and the yoke built up from flat material with a boss for a clamping screw brazed or welded in. ❑