Tool and slide setting

By GEOMETER

HOWEVER good a lathe, it is virtually impossible for it to have all its controls arranged exactly as one would like, and everything in the way of equipment. Consequently, there is always scope for the user to evolve or use dodges and devices which either speed the production of work or improve its quality.

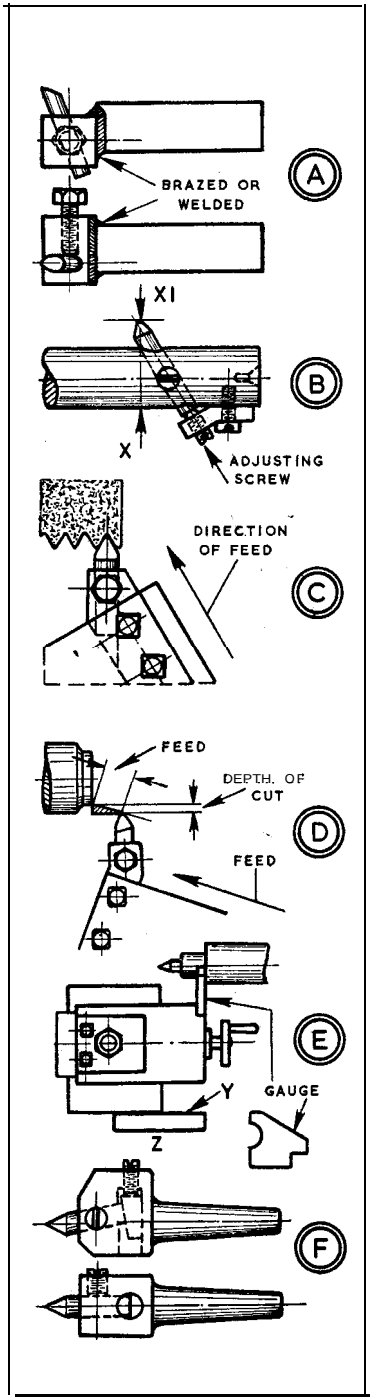
If the machine is no longer in its youth, these 'principles acquire extra force, for it will almost certainly be lacking fittings and features which have since become standardised. And added to the problems thus presented are those which inevitably occur with wear, causing slackness and malalignment.

One of the ever-present problems for the lathe user is height adjustment of tools-which should preferably be expeditious, for with the work set up, and the tool ground and ready, there only remains its setting for the job to begin. A cradle or boat-type tool-post is a convenience in this respect; though for many lathes, with a simple turret or clamp on the top slide, reliance must be made on packing of various thicknesses.

Quick height setting

A holder, however, mounting a tool at an angle, as at ***A,*** provides for quick height setting of a tool for many plain external turning and facing operations. Using square or rectangular mild steel bar of a size suitable for the lathe,. the holder can be made from two pieces brazed or welded to provide the necessary drop from the top slide. Then the hole for the tool can be drilled and reamed at an angle from the top, and the hole for the holding screw drilled and tapped in the side away from the chuck.

Setting a tool to radius in a boring bar presents a problem that can be solved in various ways. It can be a double-ended type, ground to diameter and set spinning truly, or a single-ended tool set in vee-blocks on a surface plate, using a surface gauge and indicator. Again, some vee-blocks can be used on the bar on the lathe-or a piece of radius packing can be employed to support the anvil of a micrometer.



Easier than any of these solutions is to arrange the tool as at B, at an angle, and provide a removable bracket with an adjusting screw. Then the tool can be set to micrometer measurement over X-Xl. It should be a good fit in its hole; and if the feed is such that spring could increase diameter on roughing cuts, the setting should leave enough for finishing.

Combined feed

In screwcutting threads, an alternative to straight in-feed of the tool which can lead to digging in and tearing is combined side and in-feed, given by applying top-slide and cross-slide feeds in suitable sequence and proportions. Another method which combines the two movements in one, is to set the top-slide at half the thread angle, as at C, and use top-slide feed only, with the tool cutting always on the advancing flank of the thread.

Using the top slide at a slight angle serves to provide a small depth of cut for a long feed, as at ***D.*** This can be the solution on some lathes, lacking micrometer collars, to the problem of fine finishing cuts; for the slide can be set to give any required in-feed, such as 0.C005-in, depth of cut for a half-turn of the handle.

Resetting a top-slide parallel with the lathe axis (or sufficiently so for most jobs) is another problem the solution to which is a gauge in mild steel plate, as at ***E.*** It should fit between the tailstock barrel and the end of the slide when this is right back, and the cross-slide is positioned to a mark Y scribed on the saddle to a straight-edge Z. For the initial setting, the slide is trued, the gauge fitted, and then the line scribed to the straight-edge.

An adjustable tailstock centre for set-over or accurate between-centre work can be as at ***F,*** the holder machined from rectangular mild steel bar, with a hardened silver steel centre adjusted by a wedge-the point having been turned with the holder in the spindle. El