

## FITTINGS FOR SMALL LATHES By GEOMETER

**M**AKING a lathe more convenient to use, or more precise in operation, is a process that most owners pursue, more or less, persistently through the years, according to their inclinations or the work which they have in hand.

No lathe maker, of course, can foresee every individual circumstance of use. A cheap lathe cannot include all the refinements, and consequently there is usually scope for modifications and additions, as solutions to specific problems, or simply in anticipation of future needs.

On a small lathe, it is often possible to speed tailstock clamping by modifying the arrangement and substituting a handle for a nut—which can be a considerable convenience in routine operations like centring and drilling, when the tailstock may have to be brought up and moved away immediately afterwards.

Where the clamping is by a plate and nut on the far side of the tailstock, a handle can be fitted, **A**, to work like the one on a production lathe. A new plate may be needed to carry the gib piece or guide which bears on the bed, and two reaction screws X-Y can be fitted in place of one. They are tapped into the plate and fitted with locknuts, and their ends bear in dimples drilled in the tailstock body. Through them, minor adjustments are made to keep the handle in a good clamping position, and the rear one, X, acts as a stop for the handle when it is loosened back.

The handle itself can be plain rod, or turned taper from the solid with a ball end, and then brazed or welded to a boss which is tapped for the main stud. Here a Whitworth thread gives extra axial movement for clamping and freeing, compared with a finer BSF thread—although the BSF may be used for the end of the stud in the tailstock. Initial major setting of the handle is done by facing the boss, and the final setting through the reaction screws.

On a small lathe, where the bed is near to the chip tray, easy operation of the handle for the clasp nut to the leading screw is sometimes obstructed. This can be a drawback in screw-cutting, and can cause delay whenever the saddle is to be positively located for facing operations. However, an extension, **B**, on the drum for the clasp nut permits operation outside the chip tray.

To reduce work on the fitting, the cap and the spindle are machined separately, the spindle having a stem to rivet or screw to the cap. Then they are brazed together inside the cap, cleaned up, and polished. The original handle is removed, and the ball end of the spindle drilled for the substitute to come conveniently into one's hand-fingers over the spindle.

For very small work, an auxiliary faceplate has advantages over the one supplied with a lathe because small work needs to be placed where the end of the spindle comes in the normal faceplate. It is true that one can

sometimes overcome the difficulty by mounting the work on a piece of parallel plate and clamping this to the faceplate. But the convenience is not comparable to that offered by an auxiliary faceplate, **C**, mounted on the regular one. With access to the back, nuts can be fitted to the bolts of small clamps, while a screwed fitting can be directly held by a nut.

A disc or square of plate about 1/4 in. thick can be secured by studs or countersunk screws (to keep the working face clear of bolt heads), the studs or screws passing through parallel distance pieces. Set up, the plate can be faced true, and reference marks made for future fitting. A circular plate can be trued concentrically from the outside, while a removable plug will serve the same purpose in a square one.

Loosening tight chucks is a problem that can be solved in various ways. Back gear may be engaged and the drive pulled in reverse to bump a jaw to a block on the bed. Alternatively, the backplate can be drilled radially for a tommy bar, or in the face for a large pin spanner, **D**.

