

DIE-CUTTING and TAPPING THREADS in the lathe

By GEOMETER

For speed as well as accuracy, die-cutting and tapping threads in the lathe can be recommended for material and parts which can be held in the chuck or which are already set up.

At the beginning, the firm pressure which can be applied from the tailstock to die or tap eliminates the lack of bite and the tendency which either may have to skid when commencing its cut as a hand operation in the vice. There is elimination, too, of the necessity for "sighting" tool and work from two positions at right-angles, later advisable in a hand operation to ascertain whether the thread is running squarely. And, of course, following from this, there is never need to correct an out-of-square thread by sideways manipulation of the die or tap. It does not occur and the total is, done properly, a slick, accurate operation.

Often there is no objection to using

an ordinary die-holder for producing threads in the lathe, when it is presented with one of its handles to top-slide, and backed up by a flat centre or a pad centre in the tailstock barrel. It can be advanced and kept square, while the chuck is pulled round slowly by hand, gripping the body or with the key inserted. If the thread on the work ends at a fairly large shoulder, however, an ordinary die-holder calls for the die to be changed for its second pass.

Open die-holder

On its first pass, the die should advance with its larger or throat diameter on to the work-and this will not leave a full-depth thread to the end. Consequently, the die must finally be used from the opposite side, but merely turning the die-holder over results in its shoulder coming to that on the work, before the end of the thread is reached. So the die must be taken out and turned. The alternative, which is not recommended, is for the die to be fitted throat-to-shoulder for the first pass, though this will leave a portion of unthreaded work to be encountered by the square end of the die on its second pass-perhaps to the detriment of its end teeth.

To save time and risk, an open die-holder, as at A, can be made for use on the lathe. It should have the usual three adjusting screws, and one or two screw-in handles, the extra one being useful to "feel" the cut unrestrictedly by raising the other off the slide. The body can be in mild steel, the width of the die, and bored to usual size, about 0.010 in. over nominal size.

Such a die-holder can be used either side to a pad centre, as at B, the die having been squared in the holder after adjustment by gripping lightly in a vice. Alternatively, a flat centre to back up the die which is slightly smaller than its outside diameter will ensure squareness.

A self-aligning die-holder to slip on the tailstock barrel can be as at C-though with this, as with all such holders, the die must be turned for the second pass to a shoulder. A single handle may engage the slide

or the centre of the lathe bed. The sleeve portion can be bored to an easy fit on the tailstock barrel, and the body fixed with screws or by brazing. Afterwards, to finish the bore in the body truly, a mounting can be made as at D, with a plug in the sleeve for a firm hold by the chuck jaws.

An ordinary die-holder to be advanced by a pad centre must be true on the back-not unmachined or with raised marks. If handles are removable, the body can be faced pressed on a stub mandrel in the chuck. But if handles are fixed and will not clear the bed, a stub mandrel in the spindle, as at E, will admit of facing in the gap.

No problems are involved in presenting a tap to work. If centred, it can be supported and advanced with a pointed centre, or with a hollow centre if it is solid; while a tap wrench, or a carrier fitted as at F, will prevent it from turning.

