Slide mounted angle plates

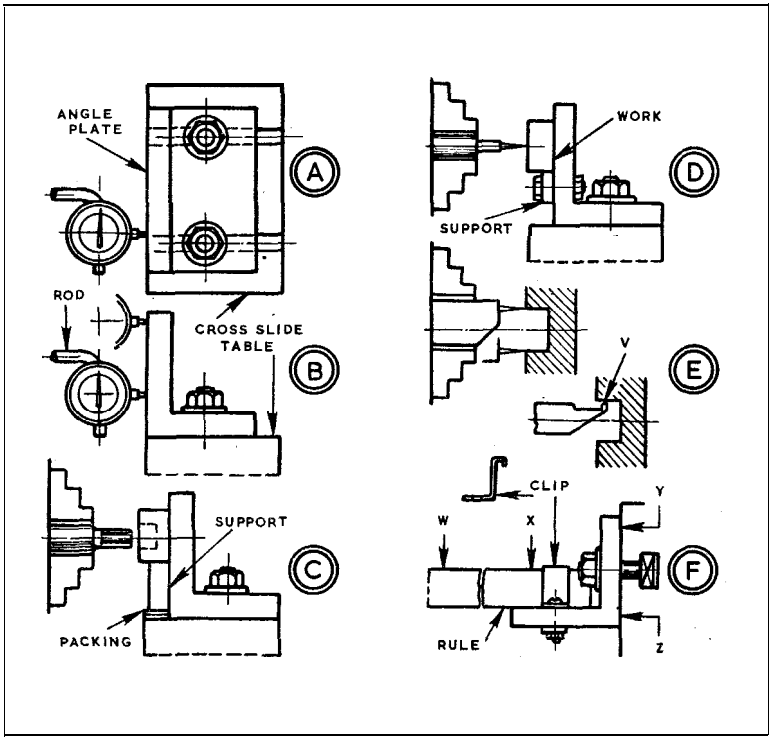
By GEOMETER

ACCORDING to whether it is mounted on the cross-slide table or the vertical slide of a lathe, an angle plate provides a convenient vertical or horizontal face on which work can be set up for milling operations. Cutters with shanks can be held in the chuck or fitted in chucked mandrels. Those with bores can be gripped between shoulders and collars on arbors-which can be run between centres, or held one end in the chuck with the other supported by the tailstock centre.

In normal work, which broadly is the kind that does not carry unusual angles, the first requirement for the angle plate on either of its mountings is that its face shall be square or parallel in all imaginable ways in relation to the run of the slides and the axis of the spindle. All conditions cannot always be satisfied, of course, if there are small fundamental errors in the lathe itself-though often particular errors which could become functional on a given set-up can be counteracted in making it.

The second requirement is accurate setting up of the work on the face of the angle plate, sometimes with means for putting on cuts, and, when this cannot be done, by operating feed-screws.

Basic accuracy for an angle plate mounted on the cross-slide table to set up work for milling from the chuck is obtained as at ***A*** and ***B.*** An indicator on a rod as shown (held in the chuck) is a help in making the setting as it reveals errors in thous. But a piece of rod in the chuck (cranked for the test at ***B)*** is almost as good, given careful observation, or use of feeler gauges or strips of paper.



Traversing the cross-slide table, a steady reading should be shown by the indicator-or there should be, all the way, the same small gap between the end of the rod and the face of the angle plate. The condition is easily brought about by adjustment.

For checking the face in a vertical plane, the chuck with the indicator, or cranked rod, is rotated, and again there should be a steady reading or a uniform gap. If not, the error is corrected by loosening the angle plate and packing between it and the cross-slide table (near the face or away from it) with strips of shimstock or paper.

The principle of checking by moving a slide applies for setting the face of the angle plate parallel to the lathe bed-at right-angles to the cross feed, the indicator or rod being mounted on an arbor, and the saddle moved along the bed. For this setting, vertical alignment is usually of no importance.

Accurate setting up of work, with means for putting on cuts, can often be arranged as at C. The support block or bar, previously machined to width (height), stands on the cross-slide table with flat strips of packing, which can be added to or subtracted from for adjusting the setting of the work-unclamped for so doing.

Accurate setting to a scribed line on work can be done as at ***D.*** A needle in a holder is set with its point spinning truly, and the line on the work is carefully adjusted to it. On occasion, a piece of material is marked off with a surface gauge specially for making the setting, and a support bar arranged so that the work, when substituted, will be located.

By off-setting a needle point in a holder in the independent chuck, and swinging it, the edges of a slot can be aligned, as at ***E,*** to be equal distances above and below the lathe axis. Both needle and work must be adjusted. Alternatively, a piece of material can be shaped to enter the slot, and adjustments made so that there is a small gap, V, at both top and bottom edges.

The principles of setting an angle plate apply when it is attached to a vertical slide, as at F, a horizontal check being made on a steel rule fixed by a clip. If points ***Wand*** X are not the same height, packing must be fitted at Y or Z. El