

WORK STOPS for CHUCKS

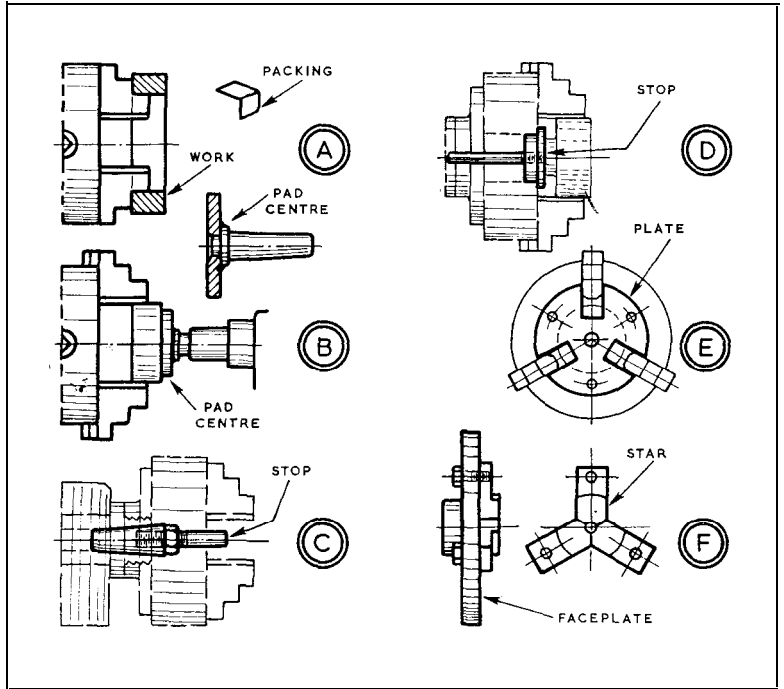
By GEOMETER

Most turners would agree that a lathe is not fully equipped for general work unless they have two chucks—a three-jaw self-centring chuck and a four-jaw independent, so that one or other can be used according to need. In fact, most of all work machined on a lathe is set up with the use of these chucks; and if one is not to hand, the turner must on occasion devise another means of mounting which takes time and may not be so satisfactory.

The three-jaw self-centring chuck is quicker and more convenient than the four-jaw independent for holding round and hexagon sections, with the additional advantage that it will grip smaller ones. On the other hand, the four-jaw independent chuck will grip a far greater variety of shapes and sizes of work, its jaws being independently adjustable and reversible.

With both, the capacity is extended by the steps in their jaws by which a wide range of hollow work can be gripped in the bore. Reversal of the jaws of the independent chuck admits of holding diameters that are larger than the chuck itself. Providing that the large work is narrow, like a pulley or flywheel, it can be safely set up in the chuck alone; but if it is long, its free end must be supported by the tailstock centre or the fixed steady. One or other of these is essential in the circumstances, for every fraction of an inch of unsupported length increases the chance of mishap. It may be a simple dig-in by the tool, with the work moving in the chuck, or it may be the more serious mishap when the work is jerked right out.

Besides extending the capacity of chucks, the steps in their jaws locate the work endwise, so that a finished face should spin truly if it is pushed to the jaws as the work is gripped. This will be so, as at A, if the faces of the steps spin truly. If they do not, the face must be trued as the work is set up. Of course, if it is parallel work its outer face can be trued to a tool point or indicator; but if this face has yet to be machined, the setting up must be done from the



other face—the one to the steps of the jaws. In that event, a tool point or indicator may be run between the jaws for testing facial truth, although a better way is to test the faces of jaws before the work is mounted, and then pack them as necessary. This can be done with shimstock to one or two jaws, each piece being bent to a right-angle and fixed to its jaw with a strip of adhesive tape over the top.

Another way to achieve the facial truth of chucked work is to grind the steps of the jaws. On the lathe, all can be done together with a grinding attachment from the slide, and using back gear, so that the chuck turns slowly. Alternatively, jaws can be individually ground on a surface grinder, after they have been tested for wobble, so that the surplus can be removed from the projecting ones.

Some work may be trued with a pad centre, as at B. This is pushed up with the work lightly chucked, to

be squared before it is fully gripped. The centre can be made with the shank pressed and brazed in the pad; after cleaning the shank, face the pad in the spindle. A pad centre serves on occasion as a faceplate for small work.

A stop for work in the chuck, as at C, consists of a taper mandrel, tapped for a rod which is set with a locknut. In repetition work, each component is located to the stop and, with tools positioned, operations can be performed without loss of time.

Another stop is as at D—a flanged disc in the chuck body. It is drilled and tapped, and held by a drawbolt. The plate shown at E is similarly held, but is larger for improved location, and is slotted for the chuck jaws. It can be in aluminium or duralumin. Mild steel can be used for a welded-up star, as at F, which works in the same way. For machining steps to fit the chuck body, it can be mounted on the faceplate by setscrews.