

SIMPLE MACHINE ADJUSTMENTS

EXPERIENCE indicates that unless design has arranged for it to be unnecessary, lack of suitable means of adjustment can be a handicap in producing good work on a machine, or set a limit to the useful life of certain of its parts.

Consequently, commencing with the simplest lathe, various means of adjustment are common to a wide variety of machine tools—to ensure accurate fitting, smooth and rigid working, correct alignment, to accommodate wear or take end-thrust loads.

One of the simplest means of adjustment of journal bearings is as **A**, a slit at one side through which the bore can be closed slightly to provide the desired degree of fit of the spindle, or take up wear. This may be used for the spindle of a drilling machine, the mandrel bearings of a small lathe, and on occasion is employed on the tailstock of a lathe for clamping the barrel—with a handle instead of nuts on the stud.

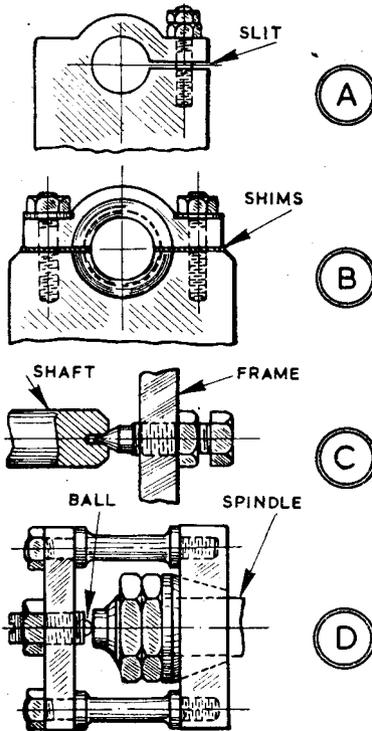
Fitting shims

A normal split bearing with a cap and liners or brasses is as **B**. Several thin shims each side, or one thick one, may be the means of adjustment—a thin shim or shims being extracted, and the thick ones rubbed down as necessary on a smooth file or sheet of abrasive cloth on a flat surface.

If, after rubbing down thick shims, the spindle is gripped too tightly, a thin metal shim or strip of paper of suitable thickness can be inserted, since the caps of such bearings should be pulled tight to the housings or body portions. Thus, with a little trouble, bearing adjustment can be regulated to a nicety, as is necessary for smooth running of a drilling machine spindle or production of chatter-free work on a lathe.

A simple bearing for light duty, and with the advantage of taking both journal and thrust loads, is the coned type, **C**, which is employed for countershafts, overhead shafts and treadles, mostly of older lathes.

Each end of the shaft has a normal countersink, or is fitted with a hardened disc containing the countersink. The hardened pointed screw passes through the machine frame and is held by a locknut. In amateur workshops bearings of this type can last literally



a lifetime, with occasional lubrication and slight adjustment.

For thrust loads only, as on a drilling machine, or a lathe with a solid spindle a ball may be employed in a hardened screw. This type of thrust is used on old-type lathes with opposed cone journal bearings. These bearings can be adjusted for play by locknuts on the spindle at the far end from the chuck, but the ball thrust is essential or the bearing nearest the chuck will run tight or seize under the thrust of cutting. The principle is as **D**.

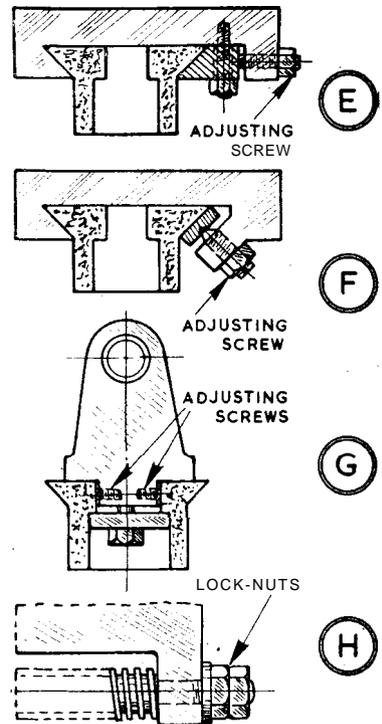
SLIDE ADJUSTMENTS

No less important than adjustment of spindles is that of carriages and slides. For slides on the normal flat-topped guide or lathebed, adjustment is normally made through an angled strip or gib piece, **E**, which can be adjusted to the vee by a number of screws, then held by setscrews or studs—these, of course, have to be slightly loosened to make adjustment. Actuated by its screw or feed, the slide

should move reasonably freely, and without shake.

A simpler fitting on some small machines and lathes is as **F**, where instead of being angled the strip is parallel and adjusted to the vee by a number of pointed screws which serve to locate and hold it. This means of adjustment is less effective than the other for controlling play and vibration in cutting.

Some lathes with flat-topped beds and headstocks located from central guide faces have a means of head-



stock lateral adjustment as at **G**. The tongue portion of the headstock fits with slight clearance between the guide faces, and has two adjusting screws each end which can be turned outwards to wedge between the faces. Thus, by regulating the screws, the headstock can be trued laterally to produce true turning or boring in the chuck.

On feedscrews, locknuts and a washer are normal means of effecting adjustment and taking thrust, **H**.