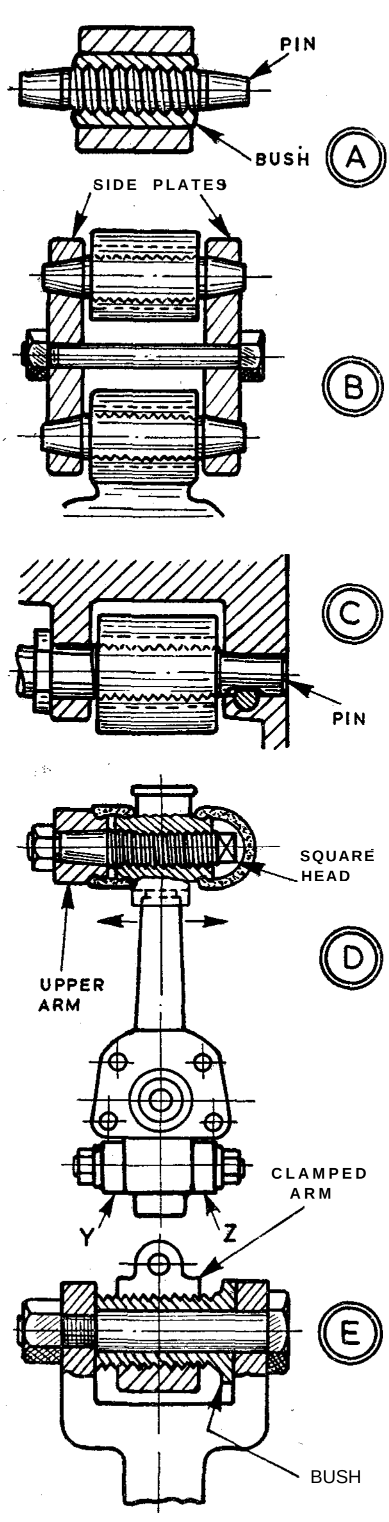

Beginner's Workshop

Screwed pins and bushes

By Geometer

ALTHOUGH it is bad practice to employ screwed or threaded pins in plain holes where movement is to occur, yet properly designed assemblies of screwed pins and bushes can, where applicable, provide certain advantages by simplifying construction and furnishing means of particular types of adjustment.

Screwed pins in plain holes are bad practice, of course, for the reason that bearing surfaces are considerably reduced, only the crests of the threads touching in the bores to carry the bearing loads. Wear and play speedily occur as the bores become grooved and the tops of the threads flattened; and this applies to some extent even where there is no intended relative movement between pins and bores. For best results, therefore, screwed pins (or screws and bolts) should always have a plain part to fit in bores-unless the assemblies are otherwise designed.

To permit the use of screwed pins and bushes, assemblies must work with a limited oscillating or to-and-fro movement, and be able to accept a small amount of side movement. Movement through any more than a reasonable arc would result in too great displacement sideways-of pins or bushes. Some side movement is inevitable, of course, and assemblies must be able to accept it.

Given this, however, screwed pins and bushes automatically provide side location on the threads, and can carry thrust loads which would otherwise demand fairly substantial shoulders or thrust surfaces. Depending, also, on how pins and bushes are screwed together, some initial or subsequent adjustment is possible.

Assemblies most commonly employing screwed pins and bushes are the road springs, suspension and steering systems of cars; but such pins and bushes need not be exclusively confined to these applications: and as they are obviously capable of withstanding fairly severe duty, there are probably many other assemblies where it would be unusual but not necessarily incorrect practice to employ them.

A screwed pin and bush for a leaf spring is as at *A*. Both pin and bush are of hardened steel, the pin having taper ends to fit in the shackle side plates, while the bush is pressed into the eye of the spring. A similar pin and bush assembly is fitted to the axle or chassis, and the whole then appears as at *B*.

Side plates fitting on the taper ends of the pins are held together by a central bolt. Generally such assemblies may be dismantled with ease, the centre bolt merely being removed and the side plates prised or tapped off-with the weight of the vehicle taken on jacks. Each pin has a greaser at the end, not shown.

Where. there is no shackle incorporated, but the spring eye is mounted direct on a pin on the axle (quarter elliptic spring), the fitting may be as at C. The pin is then screwed into the bush in the spring, and has plain diameters fitting in bores in the axle bosses, with a cotter for security. Flats on the flange on the pin, or a hexagon flange, enable a spanner to be used for removal, for the pin cannot be driven out.

Care is required in fitting the bush to the spring, to maintain the eye approximately central, with the pin in the attitude for fitting the cotter -as the pin can only be rotated whole turns of threads, which may displace the eye too far one way or the other.

At *D* is a screwed pm assembly for the upper swinging arm of an independent front suspension (Morris). The lower arm is forked with bosses Y,Z. A taper and nut secure the pin to the upper arm; and a square head at the opposite end-with rubber cover--enables setting before fitting to obtain correct castor angle.

At *E* is a screwed bush fitting for a similar purpose. The bore is plain and the outside threaded, so the setting can be varied in the end of the clamped swinging Eccentricity between outside and bore of the bush also permits varying camber angle. ❑