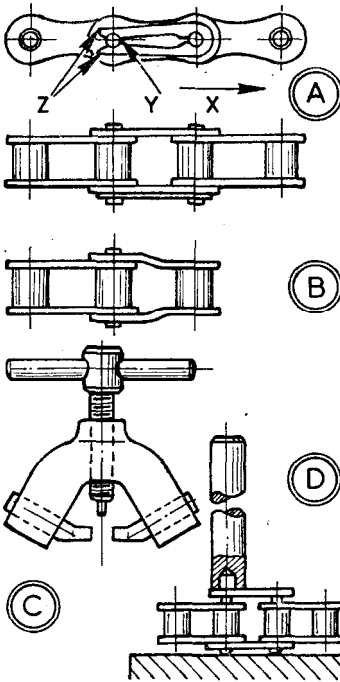# ROLLER CHAINS and SPROCKETS

By GEOMETER

PRESENT-DAY DEMAND being for simple drives, the choice often falls on roller chains and sprockets and, of numerous applications, those on cycles, motorcycles and cars-camshaft drives-are perhaps the most common.

Not least of the virtues of chains and sprockets is their high " mechanical efficiency "-power transmission with small friction loss-which is particularly valuable on pedal cycles. Drive, moreover, is non slip and, unlike gears, does not demand precise centre distances between shafts. Often too, chains and sprockets are more silent than gears and will withstand more abuse on open drives.

A typical roller chair: A. consists of links with rollers and links with pins. Those with rollers each comprise two sideplates in which bushes are pressed for the roller to turn on the outside and for the pins of the other links to find a bearing inside. Links with pins consist merely of a pair of sideplates and pins.

When assembled a chain is permanent, but it can be opened or shortened by pressing the pins out of a sideplate. Often to permit removal a chain has a spring link, *A,* this having longer pins than the others, a sideplate to push on, and a clip to fit in grooves in the pins. A tapped link is sometimes used on cycle chains; this has a threaded sideplate taking a small screw secured by a lock-nut. A chain being permanently riveted, as on a car camshaft drive, both sprockets are drawn evenly to effect removal.

In applications where a chain of standard links is too long and it is impracticable to shorten to the extent of a whole link of two rollers? a special " half link " or cranked Iink, *B* can be used. This should not be dismantled more than illustrated. Four rollers are removed from the chain, and three inserted, shortening it by one.

The clip of a spring link, *A,* should be fitted with the closed end to the direction of travel, X-any contact pushing the clip on. Removal is best effected with the link on the sprocket, using square-nosed pliers, getting a grip on the pin at Y, on the legs at Z, and holding a finger over the clip to prevent it springing away.

For dismantling, a chain punch, *C,* is necessary for sideplates cannot be satisfactorily prised off nor pins tapped out. The punch jaws grip round a roller and the screw forces the pin back.

To assemble, links should be on a flat metal surface, the sideplate tapped on, then driven down with a hollow punch, D-a piece of rod drilled to clear the end of the pin. Afterwards the link should move freely. Old and new links should not be used together in a chain or it will run tight and loose.

There are various tests for wear in a chain. On a large sprocket it can be pulled at the mid point of the wrap round and should not lift away to any noticeable extent. Removed, a chain can be held sideways, *E,* when considerable " bowing " indicates wear. Play can be felt in the individual links and the sum of wear-lengthening-can be seen by laying or hanging new and old chain side by side.

On sprockets, observation should be made for " hooked " teeth, *F,* those on the left of the centre line being correct unworn shape.

Cleaning and adjusting

Cleaning can be done with paraffin and a brush, and for lubrication grease or oil can be used-cycle oil for cycle chains, engine oil for motorcycles. On occasion, the latter are immersed for a few minutes in a tin of warm grease, then hung up to drain. In adjusting chains, sprockets should be turned several times to check there are no tight spots, and at the tightest spot the chain should just be free. On a motorcycle a tight primary chain can cause the clutch to drag.

Where there is possibility of misalignment, G (as on a back wheel) care should be taken to adjust evenly and squarely with the line of the chain and sprockets " sighted "-or, if possible, a straightedge placed along. This latter method is employed on car camshaft drives, H, where the crankshaft sprocket may require to be shimmed out level with the other.

HOOKED TEETH

SHIMS

STRAIGHTEDGE