

# CIRCULAR CLIPS

**A**LTHOUGH OBTAINABLE in variety, commercial clips for circular sections do not meet all needs—either because of size or type so, on occasion, it is necessary to make such items.

The widest variety in commercial clips is, perhaps, those for rubber, joints and one of the best known is the "worm drive" type. This consists essentially of a band with shallow teeth on the outside; one end is fixed to a small housing and the other is pulled through the housing by a screw or "worm" engaging with the teeth.

In another type of clip the band is much thinner, making two turns; the free end passes through the slit of a substantial split pin and tightening is effected by rolling the band round the pin—turning this with a punch through the eye. Clips may also consist of bands of springy wire provided with eyes to accept screws or bolts.

Simple clips can be made from flat strip of suitable thickness and width—if necessary cut from sheet material in small sizes. For a clip as at **A**, the depth of the small lug is set with pliers, the strip rolled round a bar to shape it; then the other lug is set, leaving a length for a supporting piece if required. The hole for the bolt is drilled with the clip off the bar and the lugs are clamped together. The clip at **B** can be made in similar fashion. This type with two bolts or screws avoids the necessity for springing open to fit it—if free access to slip it on from the end of the circular section is not available. A simple clip can have support from a stud or bolt as at **C**.

For a single supporting clip used on a flat surface an important feature is the turned-over "lip" at the free end of the lug, **D**. With this, tightening the bolt pulls the clip firmly on the circular section, providing secure support.

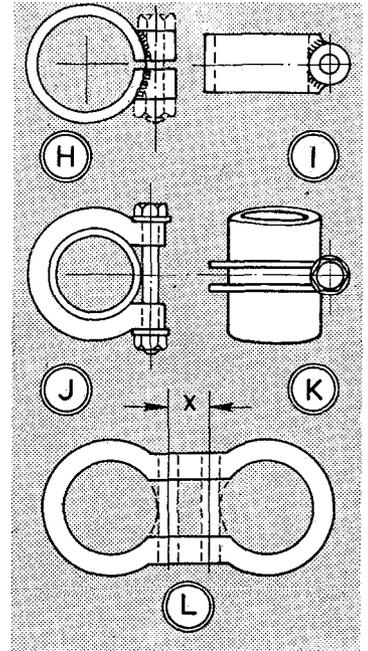
## Duralumin hint

A clip for a true machined circular section can be made from rectangular bar stock as at **E**. In duralumin, it is not too heavy or laborious to make. The bore is drilled in the bar, and reamed if possible, or the cut off piece can be machined in an independent chuck. The cross hole for the bolt is drilled, and careful work with a slitting saw—not hacksaw—produces a neat slit. Corners can be rounded as required.

Light clips for holding a pair of wires or steadying two pipes can be arranged as **F** and **G**, turning from strip or sheet metal, and using a single screw or bolt for fixing. When attaching to thin metal, work a self-tapping screw can be used after drilling the core hole.

When heating is available for brazing or welding very accurate, light and powerful steel clips can be fabricated from tube or washers—depending on the width required. Such clips can be in sizes from the smallest upwards.

Tube or washer should be of the



internal diameter required or bored out in a lathe to size. The boss for bolt or screw can be smaller tube or rod drilled out, the hole being continually cleared or tapped halfway for a setscrew. Filed on the outside to suit the diameter of tube or washer the boss is then brazed or welded on. Finally, boss and tube are cut through. Diagrams H and I show end and plan views of a clip made from steel tube. One from a washer would be narrower, with the boss overlapping the sides.

Either clip must be fitted from the end of the circular section to be clamped, since opening the clip would spoil it. The alternative—permitting easy assembling and dismantling—is bosses each side of the clip, using two bolts, as for that at **B**.

At **J** and **K** are end and plan views of a clip from sheet metal, while **L** depicts the opened-out shape before bending. Marked with dividers the outside is sheared and filed, and the inside carefully chain drilled and filed.

Distance from the centre of the clamping bolt when the clip is bent is equal to the diameter of the bolt plus the thickness of the material multiplied by 1.57. Splaying is prevented by using washers under the bolt and nut.

