Some types of punches

By GEOMETER

ALTHOUGH the larger and more orthodox types of punches for use with hammers may convey the general impression that such tools have no great adaptability, yet the specialised varieties render quite easy many jobs which would be awkward or even impossible without them.

Pin punches of appropriate size, for example, are used for driving out taper pms or tight rivet shanks, and may be employed, too, for tapping down heads of small nails or tacks where final hammer blows would be visible on surfaces. Stepped punches or drifts with reduced spigot ends are for driving out bushes or valve guides; and flat-ended punches in brass, copper or aluminium, avoid damage to threads, ends of bushes, or other parts which would burr relatively easily.

A pin punch which is parallel and perfectly flat at the end may be used for punching holes in thin metal when this is laid on a block of lead, and may even be used for punching flat spring steel, like clock spring material, when pieces are being put to other uses and must be held by screws or bolts. However, for such work, a punch with a slight reverse taper for a distance from the end is advisable, as at ***A,*** and is easily machined from silver steel rod, then hardened and tempered to dark straw colour.

A flat-ended hollow punch or hold-up backed by a piece of heavy metal or hammer head gives support when a pin or rivet is being driven from a flexible mounting or bracket (a cotter pin from a cycle crank, for example); and such a punch may be slipped over a rivet shank to enable sheet material to be driven into close proximity, before a set is used to form the head on the rivet. A sharp hollow punch of suitable size is the best tool for cutting bolt or screw holes in making gaskets of paper, cork, fibre, or asbestos-base materials, with these laid on the end grain of a flat hardwood block.

In riveting, suitable punches promote generally better results, and give a consistent appearance to work which would often be marred without their use. This is particularly so in the case of making and fitting eyelets. In making them, lengths of soft well-annealed tubing are stood one at a time in a ring on a hold-up as at B, and the shaped punch is driven on the end. If, from a tendency to splitting, each whole head cannot be formed at once, it can be half-turned, and the tubmg then re-annealed before the second operation. Heating brass to red and dropping in water anneals it.

In fitting eyelets, as at C, the head-forming punch becomes the hold-up for mounting in the vice. A simple turning punch is used on the shank, when a washer has been fitted and pressed down with a hollow punch. Given finished eyelets, the head hold-up and the turning punch can easily be machined with a round-nosed tool in the lathe.

Using a strong steel vice, various flanged or shallow formed parts can be made with punches, in some instances employing rubber to take the reverse shape of a die. Au annealed disc of copper may be flanged, as at ***D,*** using a punch with rounded corner, and a die consisting of a steel ring bored out (slightly larger than punch diameter plus twice material thickness), and flared for entry. Tapping the ruckling and shaping edge of the disc down with a hammer, re-annealing and final steady force on the vice will form, for example, a small boiler end.

Discs of very thin material, like brass shimstock, may be flanged, provided with ribs or depressions on the surface, or penetrated with holes, using a shaped punch, a piece of steel tubing, a rubber disc, and a flat-ended punch to apply pressure, as at E. Ends of small floats may be formed in this way; but as in all rubber press-work, the pressure required is considerable.

Parallel-shank, taper-ended punches can be used effectively to bring out-of-line holes into coincidence; but for a car spring eye and bracket, an alternative punch is as at ***F,*** with an eccentric end to enter at X, and a hole for a tommy-bar, so that by turning the punch the holes are pulled positively into alignment-when the punch can be tapped through. ❑