BY GEOMETER

Wheel and shaft pullers

TAPERS and light driving or force fits are common ways of securing components firmly to shafts and other parts-yet admitting of dismantling when required. Normally, no problems are encountered in assembling, as there is usually a nut, setscrew, or series of such, by which parts can be pulled together. It is their dismantling which occasions difficulty-or even damage, if the right methods and tools are not employed.

Tools with which dismantling is effected are called pullers, drags, or drawers: and take a variety of forms. Some components can be dismantled with universal tools covering a range of sixes, while others demand special tools for each purpose.

The common type of puller, A, consists of a beam carrying a pressure screw and slotted for a pair of jaws which can be adjusted to fit over components-flywheels? pulleys, sprockets, gears. Adaptations of this puller are those incorporating a three-armed beam with link and screw adjustment for three jaws; and those in which the beam is a circular plate, slotted for *jaw* attachments to three, four, and five stud fittings-these for drawing wheel hubs.

Out-of-the-ordinary pullers

On very heavy commercial pullers, the screw is often of large diameter with a fine thread and incorporates a hydraulic device which provides a very powerful extracting force. On pullers intended for vee-belt pulleys, the jaws, instead of being square, are tapered to fit the vee-groove, thus obviating damage. Such jaws would be incorrect for ordinary use because of a tendency to " ride up " under pressure.

When the component-usually a flywheel, sprocket or gear-has threaded holes for extractor studs, a simple puller can on occasion be used without a pressure screw, as at B, employing the nuts on the studs for tightening, then freeing the component by striking centrally on the bar with hammer and punch.

The shock of such a blow is generally sufficient to free the component and the same is true when a pressure screw is fitted-though in all cases it is necessary to consider what may be further along the shaft, so damage is not done by the blow. If possible, levering behind the component before striking is advisable.

When there are special reasons, such as restriction by adjacent parts, slenderness in a pulley or hub flange, or other inherent weakness against extraction force, the boss of the component is provided with a thread to take a screw on puller, C, a type which is straighforward to use, but which must be screwed up fully-not on just a few threads.

It will be seen the pullers described are fairly straightforward to make from mild steel, using B.S.F. bolts in commercial sizes. Type B is particularly easy, requiring only two holes drilled through the bar, and two studs for attachment. Type C can be made where a lathe is available-and material of sufficient size.

Other equally easy-to-construct pullers appear at ***D, E*** and ***F.*** That at ***D*** is intended particularly for small sprockets and consists simply of three suitable bolts and a bar. The latter is drilled clearance, centrally for the pressure bolt, and at suitable spacing for the bolts acting as jaws to lie holding firmly in the sprocket teeth.

The type at ***E,*** slightly more complicated, can be used with a pressure bolt like the other, or with a tapped hole for a screw as shown. This puller is intended for drawing inner members of ball bearings, and holes are drilled in the top and bottom plates for the two bolts passing through to hug tightly in the semi-circular track of the race member. Two bolts also attach the endplate for the pressure screw or bolt.

The type at ***F,*** known as an impact puller, is employed for drawing axle shafts and bearings, and differs from the others in functioning by shock instead of pressure. It is threaded at the end to screw on the shaft, and the weight is bumped to the opposite end. ❑