PULLERS TO AID DISMANTLING

By GEOMETER

THERE are many components on which force must be used in dismantling-with care, of course, to avoid damage. They include gears and sprockets and pulleys and flywheels, which may be fitted by tapers or light interference fits. Sometimes judicious prising with a pair of levers is enough to draw the components-though we hear the use of levers criticised as a makeshift method. The problem of removing a component may be complicated, too, by inaccessibility or by lack of surrounding space in which to use a robust standard puller.

On occasion, difficulty can be avoided by anticipating the dismantling when the component is produced. Thus a small gear fitted by a taper on a shaft in a casing could provide an insoluble problem when the time came to remove it; whereas, if a thread is made on the front of the boss in construction, a screw-on puller can be used to remove the gear without difficulty. This can be done with other parts, such as pulleys and small flywheels, if their thin or slender spokes are likely to be distorted by using pullers over the rims.

For genera1 work, many simple but efficient pullers can .be made from pieces of standard-section material in the workshop. After they have been faced to length, marked-off, and drilled, bolts may be used to clamp them together; the necessary machining can then be done in the lathe. The simplest construction is advisable for efficiency and to save time when a puller is merely a means to an end.

An example of an unusual puller, which is easily made as described, is the type employed for drawing a shaft complete with ball race from a casing, when, as often happens, it is not possible to drift the shaft from inside it. As at A, the puller consists of two pieces of square mild steel bar, bolted and machined to clamp to the shaft, each being drilled and tapped for a setscrew, *WX*, by which pressure can be applied to the casing.

Preliminary operations on the puller are straightforward: To machine the pieces to grip the shaft, you can clamp them together and mount them on the faceplate, using opposite slots, with screws *WX* fitted from the back. Wood packing may be used to the faceplate to allow end-clearance for the boring tool. When the bore has been opened, the pieces can be separated by washers or packing, to avoid machining a full semi-circle in each, which would demand larger material.

By providing tapped holes in the web of a flywheel, you remove it from its shaft with a bar-type puller, as at *B*. Doubts about the strength of the web are resolved by leaving extra thicknesses where the bolts will be fitted. A spoked wheel may be drawn with the same puller; use plates to bridge the spokes on the further side, and longer bolts with nuts.

An alternative to a thread on the boss of a gear or flywheel is a groove, as at to take a well-fitting puller with jaws. This one is made from two pieces of rectangular mild steel, YZ, which form a square. They are bolted together, are mounted in the independent chuck to be faced, centred, drilled and tapped, and are then finished with a boring tool. YOU will find it very suitable for small gears when it is made to fit right over them.

Bushes are often difficult to remove from components, thin-walled ones in particular having small end-surfaces on which to apply pressure. Sometimes a full-diameter pad must be of considerable diameter; but a plate, as at *D, serves* equally well, and can be machined in the independent chuck with another plate bolted to the back.

When a tapped dowel secures a bush, it can be drawn with a screw and stirrup, as at *E*. A soft bush in a blind hole can often be extracted after its end has been burred over the head of a well-titting bolt. When there is clearance in the hole, another method, as at *F*, employs an eccentric bush and bolt with an eccentric head to pull on the end of the bush. ❑