BEGINNER'S WORKSHOP

Flexible couplings

By. GEOMETER

A FLEXIBLE coupling can be the means of transmitting drive directly between shafts. whose perfect alignment is desirable but difficult or impossible to ensure; or it can serve the same purpose of transmission while taking on the functions of a universal joint-when the coupling is in duplicate, one at each end of a shaft connecting two other shafts that are out of line? or the angle between which vanes. A flexible coupling may also provide for easy assembling and dismantling.

An example of the use of a coupling as a flexible device in transmission is where a motor or engine is mounted on a bed plate to drive a pump or generator in line; the coupling then accommodates a small degree of malalignment. An example of the function as a universal joint is to be found on many older cars, where a coupling at the rear of the gearbox transmits drive to the propeller shaft, and another coupling at the rear axle takes the drive from the propeller shaft to the pinion driving the crown wheel.

An example of providing for assembling and dismantling is on old type Morris Minor and MG engines, on which a flexible metal coupling transmits drive from the vertical dynamo to the overhead camshaft;. taking out two bolts from the coupling releases head and valve gear from the drive.

In addition, a flexible coupling absorbs some shock and requires no lubrication-and, should it be necessary, can without difficulty be made in model sizes.

A typical coupling A is a rubber-and-canvas ring with six holes whose ends are protected by riveted metal plates. Each shaft carries a three-armed " spider " B and the coupling is bolted between these, as at C. The bolts should be a good fit-the nuts pulled up firmly, but not to squeeze the coupling unduly-and split-pinned.

The spiders on the shafts should permit the coupling to lie centrally between them, without drag; and on an engine-pump installation it is a good plan to loosen the pump and retighten with the engine being turned for the drive to align itself.

Important points on a spider are that the bolt holes must be on the same pitch circle, and the faces of the bosses rotate in the same plane. Checking these only requires a scribing block or fixed pointer, and that the shaft carrying the spider be turned. Malalignment may result in rapid deterioration of the coupling, but a faulty spider can sometimes be corrected by bending and/or filing.

Equally important where the coupling serves as a universal joint is that it should be relieved of the function of actually centring the free shaft-the propeller shaft on a car. Without some centring means, true running of the free shaft is dependent on the accuracy of the spacing of the holes in the coupling-which in rubber and canvas may well not be maintained, particularly when the coupling is flexing. Then a wobbling shaft can set up heavy vibration.

Centring can be provided by a ball-ended nut or screw for one shaft, and a plain bore on the other fitting over the ball C. Alternatively, a flanged plate may be mounted on the spider on the free shaft to fit over the ball. Correct assembly is essential,, but not all shafts are provided with this desirable feature.

Instead of rubber-and-canvas, a number of thin steel rings can be used for a coupling ***D*** and ***E.*** Four equally-spaced holes admit of bolting to a yoke on each shaft-and often one of the yokes is keyed and clamped for endwise setting. Shafts for this type of coupling must be reasonably in line or their speed of rotation low otherwise the rings would fail by cracking.

A very simple coupling for light duty, possessing both torsional and axial flexibility, is a piece of rubber-and-canvas hose secured to each shaft ***F*** by a bolt and two semi-circular metal clamps.