

# A CASE FOR IMPROVEMENT

## Swivel Bearings & Universal Couplings

THE Swivel Bearing, Part No. 165, and the Universal Coupling, Part No. 140, differ from nearly all other listed Meccano parts in that they are not 'original' parts in themselves, but are both made up from other components. These components are the Small Fork Piece, Part No. 116a, a 'spider' which is like a Collar, but with four threaded holes, sold separately only as Electrical Part No. 500, and a special shouldered bolt which is not listed separately at all by Meccano Limited, though it is available from Everything Meccano (M.W. Models) of Henley-on-Thames.

Although often mistaken for an ordinary set screw, this shouldered bolt differs considerably in having a) below the head, a short plain section 5/32" diameter which is a free-running fit for the holes in the arms of the Fork Piece and, b) between this and the threaded section, a narrow groove. This groove actually serves no useful purpose and I suspect it results from the shouldered bolts being produced on a lathe, unlike the standard Bolts which have the threads rolled on to them. The shouldered bolts make useful items and, in purchase of second-hand Meccano, it is worthwhile looking very carefully through the Nuts and Bolts, and all the wheels with set screws, for them.

Both the Fork Piece and the shouldered bolt require modification before the assembled parts will function properly. The arms of the Fork Piece are curved, viewed from the end. When the spider is swivelled, it comes against the turned down edges, so it cannot swivel far. The arms should be flattened as shown in Fig. 1 and this can be done with smooth-jawed pliers, or by putting a piece of 1/4" or 3/8" square bar in a vice and hammering the arms on to this. The space between the arms must be kept just enough for the spider, or any other Collar, to pass freely into the gap with very little play.

When a Swivel Bearing is re-assembled, the

tips of the shouldered bolts will be found to project into the central hole of the spider. The tips must be filed short until they do not project and the Rod can be passed freely through the spider. If such a Rod is to be secured, this should be achieved by a Grub Screw in one of the unused holes of the spider. If an unmodified shouldered bolt is driven into a central rod, the groove mentioned above will still show outside the spider, and the arm of the Fork Piece will rest very loosely in it.

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When a Universal Coupling is re-assembled with unmodified shouldered bolts, the tips of the bolts will be found to clash in the centre, so that one or more of them has the groove visible and the Fork Piece is a sloppy fit in it. In this case, only one opposite pair of bolts needs to be filed short, or if all four are filed, a smaller amount of metal need to be taken off each. I have previously seen it recommended that a Universal Coupling should have a short piece of axle rod (sawn off, 1/4"-3/8" long) put in the centre for all the shouldered bolts to be driven on to, and I did for a while support this advice. However, I now realise that this is the wrong approach; what keeps the bolt firm in the spider should be that it is driven until the smooth section is hard against the outer surface of the spider.

A useful tool for any model-builder (except a

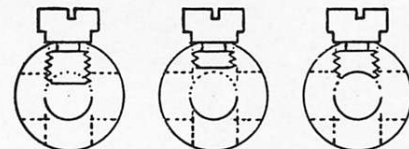
whiter-than-white purist) is a fine rat-tailed file, maximum diameter just under 5/32". When things are a tight fit even after you've done your best with the Drift, it is better to 'ease' with this file than ram a bolt through and damage the thread. If such a file is available, it may be used for correcting the shouldered bolts. Each bolt in turn is driven firmly, its tip marked by a few strokes of the tip of the file, then taken out and finished as shown in Fig. 2. This removes less metal and is a really neat job! However, a bolt treated in this way belongs only to the hole to which it has been made, e.g. in a Universal Coupling which will be kept assembled permanently. But if you keep changing about between Swivel Bearings, Universal Couplings, and other arrangements (e.g. if you have two Universal joints in series, two Strips spaced 3/8" apart can take the place of two Small Fork Pieces and the rod joining them) file the tips of all your shouldered bolts flat, so they are inter-changeable.

By Alan Partridge

Fig. 1



Fig. 2



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