NUTS and SPANNERS

Beginner's Workshop

GEOMETER comes forward with some *useful ideas for those beyond-finger-reach situations*

THOUGH there may be sound reasons-design or commercial-for the extraordinary locations of some nuts, bolts, setscrews and small detachable components, one may in moments of impatience attribute a certain lack of foresight to manufacturers. They have seen to it, of course, that assembly was a logical sequence, slick and straightforward and in reverse dismantling would probably be equally simple, though it may be quite different when a component has to be detached on its own.

Apart from a natural tendency to inaccessibility in complicated assemblies, the main cause of most difficulties seems to be the reduction to minimum dimensions of such features as flanges, bosses, lugs and pitch circles of bolts and studs. Of course, it makes for compactness and adds to strength. But often one could wish for just that little extra space-for example, round bolts on spot-faced seatings close to the adjoining mass of components.

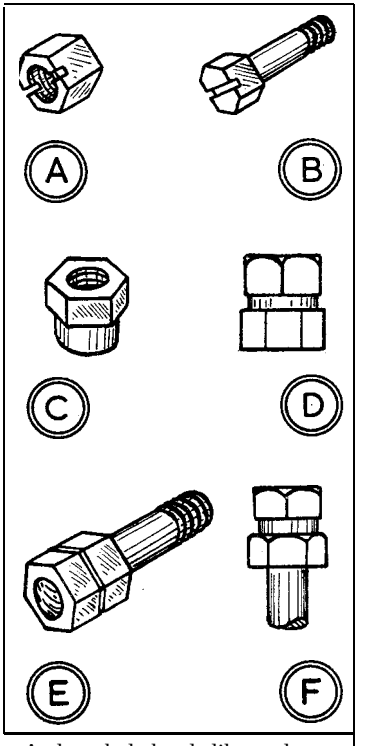
There are situations in which it is sufficiently easy to perform the initial loosening or final tightening of a nut or bolt with an open spanner, the removing or fitting proving tedious. Then a screwdriver slot cut with hacksaw or slotting saw across the end of nut or bolt, A and B, may prove helpful-for a screwdriver can often be used, particularly at an angle where a tubular box spanner cannot.

In other awkward situations, tubular box spanners may permit nuts to be fitted easily. If the corners of such a spanner foul the component they should be reduced just to clear by careful grinding or filing.

Given a lathe, hexagon bar, drills and taps, the type of nut at C can be substituted for ordinary ones too deeply sunken on spot-faced seatings and much subsequent trouble will be avoided.

The nut at ***D*** is a " double-hexagon off-set " type intended to permit assembly with open spanners where because of space restriction, angular movement is very limited and in situations in which ring spanners cannot be used-and where even the jaws of open spanners will not pass properly from one flat to another.

Round bar of over-the-corners diameter is used, drilled, tapped, reduced centrally with a parting tool. The corners of the hexagons are marked out of line (a flat to a corner) then the hexagons are carefully filed and, finally, the nut is parted off. In tightening or loosening, the spanner is shifted from one hexagon to the other, required angular movement thus being reduced by half.



A deep bolt head, like a deep nut is often all that is required to facilitate assembly and dismantling. Special bolts can be turned from hexagon bar, a somewhat lengthy and deterring process, and another method, quicker and generally equally effective, is to braze an ordinary nut on top, ***E.*** If the double-hexagon principle is required a nut as C can be used on the bolt somewhat shortened, ***F.***

For sparking plugs of car engines which demand a tubular box spanner the modification at G to the standard spanner is very useful. This permits an open or ring spanner or the ratchet jack handle to be used-with the advantages of small angular movement and working at the most convenient position.

From round mild steel, a stem or neck piece is machined to push into the tubular spanner. It is then drilled for lightness and given a filed hexagon on top to take whatever spanner is used. The piece is brazed in.

Half the normal angular movement on tubular box spanners can be obtained by drilling another cross hole, as H, in line with the corners of the hexagon when the original is across flats. Another method, to the same effect, is to bend the tommy bar slightly, I-and the two can, of course, be combined.

An " avoiding " spanner for projections can be made as J from a tubular box spanner. A piece of stout rectangular bar is turned U-shape deep enough for clearance, then the cut-off spanner is brazed on one end and a piece of hexagon bar on the other. Thus any suitable spanner can be used.