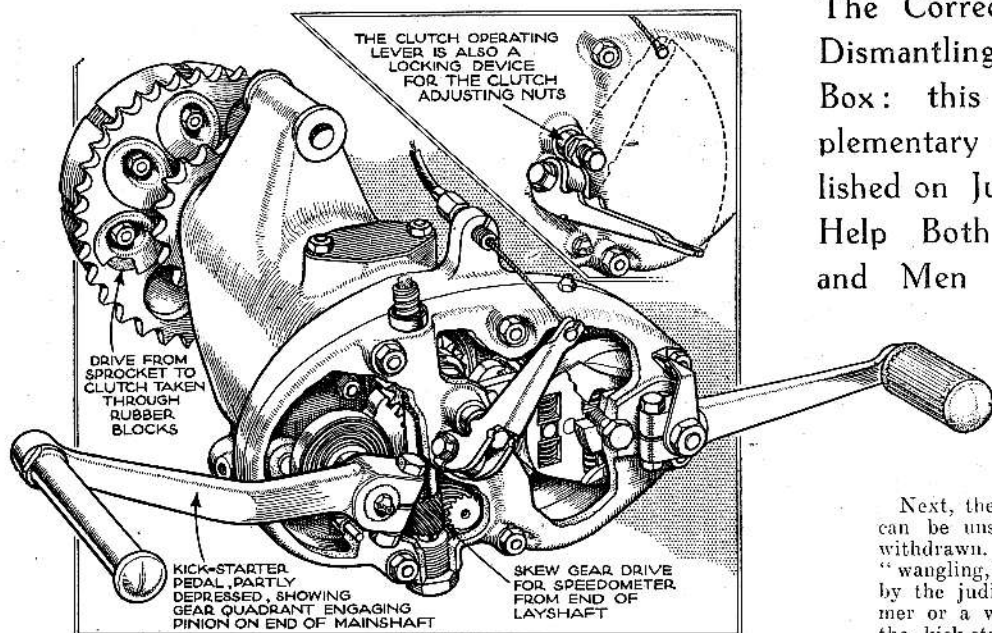


# DISMANTLING A BURMAN

The Correct Procedure for Dismantling the Heavyweight Box: this Article is Complementary to the One Published on July 25th and Will Help Both Private Owners and Men in the Services

By  
"UBIQUE."



THE few troubles which may possibly occur in a modern Burman four-speed gear box (types C and BA) have been indicated in a previous article; it remains, however, to describe the methods which should be employed when dismantling the box.

All internal parts can be removed without difficulty if the correct procedure is followed, but it may be well to remark that the job should not be undertaken lightly unless the operator has some knowledge of mechanics.

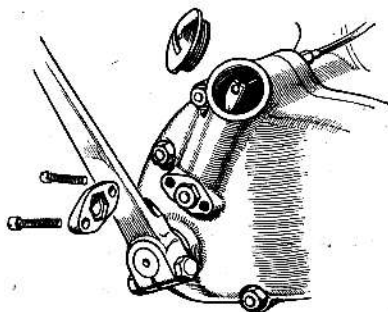
For the purposes of description it is convenient to start with the clutch, though, if need be, the gear parts can be stripped without disturbing the clutch as a unit. In certain cases a covering band is fitted over the clutch box, and this is the first item to be removed. Next, the clutch spring adjusting nuts should be unscrewed, after which the springs, spring cups and presser plate can be withdrawn.

### Note the Order

The clutch plates can now be lifted out; but it is important to remember that they must be retained and replaced in the correct order. The nut which holds the clutch body to the mainshaft has a right-hand thread and after its removal the clutch body can be withdrawn from the splined shaft.

This process exposes the roller race on which the clutch sprocket rotates and also the rubber shock absorbers, so that these parts may now receive attention if necessary. Do not dismantle the roller race unless essential, since the replacement of the rollers may be tiresome though not very difficult.

When tackling the gear box it is necessary first of all to detach the clutch cable. In some of the latest boxes the clutch lever is concealed within the outer



Some of the latest Burman gear boxes have an internal clutch lever. The cable can be detached after removing the screwed cap; the adjusting nut has a locking cover plate retained by two screws. To take up clearance the nut should be turned anti-clockwise

cover plate, and the large screw plug situated over the upper end of the lever must be removed before the cable end can be reached.

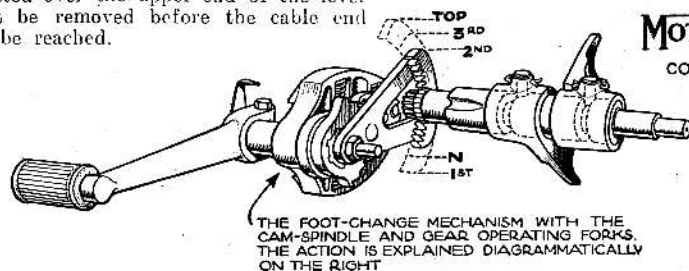
Next, the nuts holding the outer cover can be unscrewed and the cover itself withdrawn. This job may require a little "wangling," but the joint may be broken by the judicious use of a "soft" hammer or a wooden mallet, and thereafter the kick-starter and gear control pedals form convenient handles for withdrawal.

The kick-starter quadrant and spring will come away with the cover plate as a complete unit, and unless due precautions are taken the whole foot control mechanism will come away also.

If this should happen no harm is done, as the teeth of both quadrant and pinion are marked for correct engagement. If, however, the whole of the gears are not to be stripped, it may save trouble if the nut which holds the neutral indicator is removed and the central spindle is pressed inwards as the cover is withdrawn. This will leave the quadrant in mesh with the pinion, and the actual teeth which are meshing at the time of withdrawal can be marked.

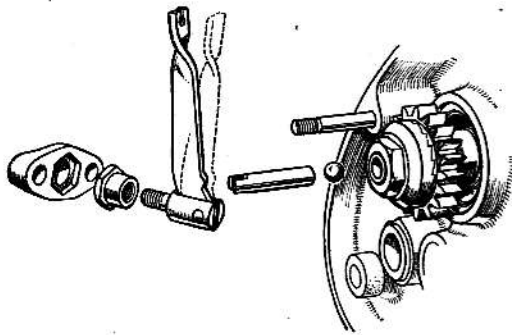
When the internal type of clutch lever is fitted, the next job will be to withdraw the short forked clutch thrust rod and then the steel ball which lies within the mainshaft.

It is now possible to examine the foot operating mechanism, and though the operation of this item is difficult to describe, the parts themselves and the dismantling thereof are quite simple and straightforward.



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# FOUR-SPEED GEAR BOX



The internal type of clutch lever engages a short forked plunger behind which is a ball. Care should be taken to avoid losing the ball when the gear-box is being stripped

The quadrant and its spindle can be withdrawn, as already explained, and after this the double-acting pawl can be lifted off. Then, after removing the pedal from its serrated shaft, the pawl plate and the spring box can be removed either singly or as a unit.

There is no need to anticipate difficulty in re-entering the pins between the springs, as the spring ends are prevented from closing together when the pins are withdrawn by thrust plates which rest on ledges, thus leaving a comfortable clearance for the pins to enter.

If further dismemberment of the box is necessary remove the nut on the mainshaft (right-hand thread) and the nuts which retain the inner cover plate. The outer end of the cam spindle is carried

on an uncaged roller race and when removing the inner cover plate the loose rollers may drop out. Collect them carefully; there are twelve in all. When re-assembling they may be held in position by grease. Before attempting to withdraw the gears, unscrew the plug at the bottom of the gear box and take out the spring for the pawl which locates the gears within the box.

After this has been done the whole gear assembly, including the camshafts and striking forks, can be withdrawn as a unit though the process may be rendered more easy by first withdrawing the mainshaft from the opposite end of the box. This leaves only the final drive gear and sprocket in the box and it is seldom that they need to be dismantled.

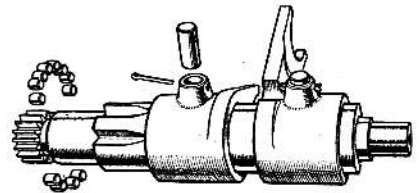
If, however, the bearing on which they run shows signs of wear, indicated by side play, they can be separated as follows: The sprocket must be gripped to prevent rotation, and the best method which is likely to be available is to wrap a length of chain round the teeth and to hold both ends of the chain in a vice. The jaws of the vice should, of course, grip the chain close up to the sprocket. Use an old chain if possible, but if there is no other alternative a sound chain may be employed, provided that it is protected by soft clams.

The lock nut, which must now be unscrewed, is large and parts of its inner periphery are punched into splines on the shaft to prevent it from unscrewing. Because of this it is almost certain to be useless a second time and when removed must be replaced by a new nut. This is a com-

forting thought for undoubtedly a hammer and chisel forms the best method of removal though the trick can sometimes be done with a special spanner—if available. On the whole it is preferable for this job to be done by the manufacturers.

If a gear striking fork requires renewal, the fork can be removed from the camshaft after withdrawing a split pin which locates the retaining pin and then pulling out the retaining pin itself with pliers.

There are two of these aluminium-bronze striking forks and they are not identical, therefore, when ordering a new one be careful to state whether it is for the mainshaft or layshaft gears.



The control end of the camshaft is carried on an uncaged roller bearing; during re-assembly the twelve rollers can be held in place by grease. The striking forks can be withdrawn from the camshaft after the removal of a split-pin and the pulling out of a peg

When re-assembling the box it is best to feed in the camshaft with its forks and gears as a unit and to feel the mainshaft into position afterwards. Before replacing the outer cover plate, make quite sure that you have "timed" the operating mechanism by assembling the quadrant and pinion to their correct marks.

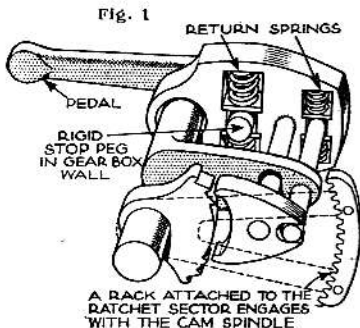


Fig. 1

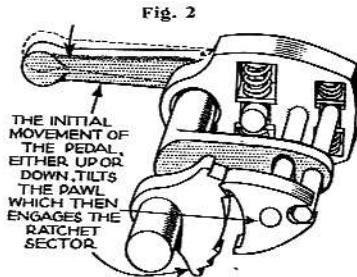


Fig. 2

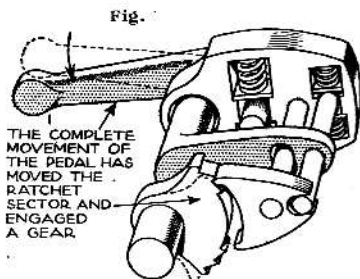


Fig. 3

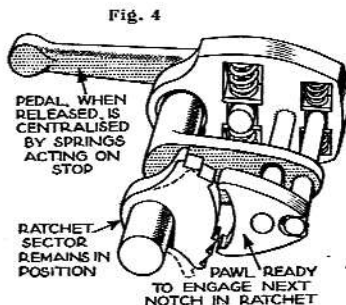


Fig. 4

These four diagrams show the complete cycle of operations that occurs when the foot-change lever is depressed

## MOTOR CYCLISTS WANTED— —for the Home Guard

WHEREAS at first many battalions of the Home Guard were not enlisting motor cyclists as such, the vital need for motor cyclists as despatch riders and for other important mobile work has caused units to welcome motor cyclists with open arms. Thus, while it has been announced that recruiting for the Home Guard has been temporarily suspended, no motor cyclist who is in a position to offer his spare-time services should hold back. The address of the headquarters of the nearest battalion or company can be obtained from the local police station.

Some battalions, such as the N.W. Middlesex, are already in a position to pay a small mileage rate to cover running costs and maintenance, and to provide petrol coupons for duty journeys. Motor cyclists are required by this battalion for immediate duty in the Staines area. Those enrolling are expected to be on duty at Battalion Headquarters, 16, London Road, Staines (where enrolment forms are obtained), one night each week.

Riders in the Cray Valley, Orpington, Chislehurst area, should apply to Mr. Norman C. Smith, 79, Greencourt Road, Petts Wood, Orpington.