DIVIDING IN THE LATHE

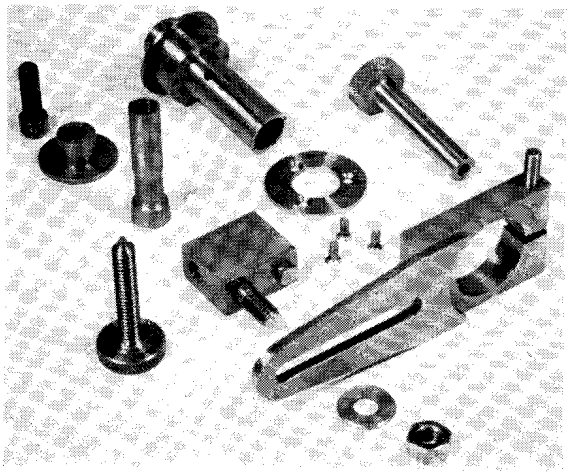
L. C. Mason describes the construction of a simple dividing attachment for the lathe, especially useful to builders of the M.E. Traction Engine.

THE NEED FOR DIVIDING round model components arises from time to time, and the building of model traction engines, for example, seems to produce a fair number of such jobs.

Both W. J. Hughes, in describing the building of the 1½ in. scale Allchin, and the writer with his 1 in. scale M.E. Traction Engine, thought it worth while to describe briefly how to make an attachment to cope with the various dividing jobs in the building of these engines. The attachments are very simple, and do the job required of them quite effectively. In both cases the attachments were specified for the ML7 lathe.

However, if an attachment is to be made to enable the lathe to carry out dividing for all purposes, the design can be improved and elaborated, so as to make the attachment more versatile, and to eliminate some of the weaknesses of the simpler version. It would be a distinct improvement to make provision for locking the mandrel against rotation independently of the detent, leaving that merely to select the required position. Any side play in a screw detent, or slight spring in its mounting could allow a slight mandrel movement where a machining operation was required to be carried out at each station—such as gear cutting—

Components of the lathe dividing attachment.



as distinct from just marking in the points indexed. Rigidity and freedom from unwanted backlash are the main requirements in a dividing attachment of this sort, and the design offered here looks after these points very well. This again is proportioned for use on the ML7.

As in the other attachments, use is made of the lathe's own change wheels as dividing plates, and the carrier for the wheels, locking into the back end of the mandrel, follows much the same lines. It will be seen that while a screw detent is used, this works in a tapped block deep enough to ensure that there is no side play in an easily working screw. Holding the mandrel in the selected position is looked after by the provision of a large diameter collar on the mandrel plug which can be locked in position by a split block encircling it, rigidly anchored to the lathe structure. Not only does this relieve the detent of the duty of holding the mandrel, but leaves undisturbed any change wheel set up on the quadrant, through not having to attach the detent mounting to the quadrant.

The plug extension to the mandrel is held in position in the conventional way, by a taper headed draw-bolt which not only expands the split end of the extension in the mandrel end, but clamps the change wheel in position on the outer end. This draw-bolt is a good item with which to start making the attachment, as when the top-slide has been set over for turning the taper on the bolt head, the top-slide setting can be left for boring the taper in the end of the extension sleeve to match.

Chuck a piece of ½ in. dia. steel rod in the three-jaw and turn the shank of the bolt first, drilling in the end No. 3 for ¾ in. depth and tapping ¼ in. BSF. Part off, leaving enough to face the head back to ¼ in. thick. Run the head down to 15/32 in. dia., and set the top-slide over 10 deg. to give a 20 deg. inclusive taper. Turn the taper on the underside of the head till the large end of the taper meets the top face with a sharp edge.

The sleeve is all plain turning and drilling in the three-jaw from a piece of 1¼ in. dia. bar, machining the mandrel end first. This should be a close sliding