

ENGINEMEN'S M.I.C. MOVEMENT

Methods of Securing Locomotive Tyres

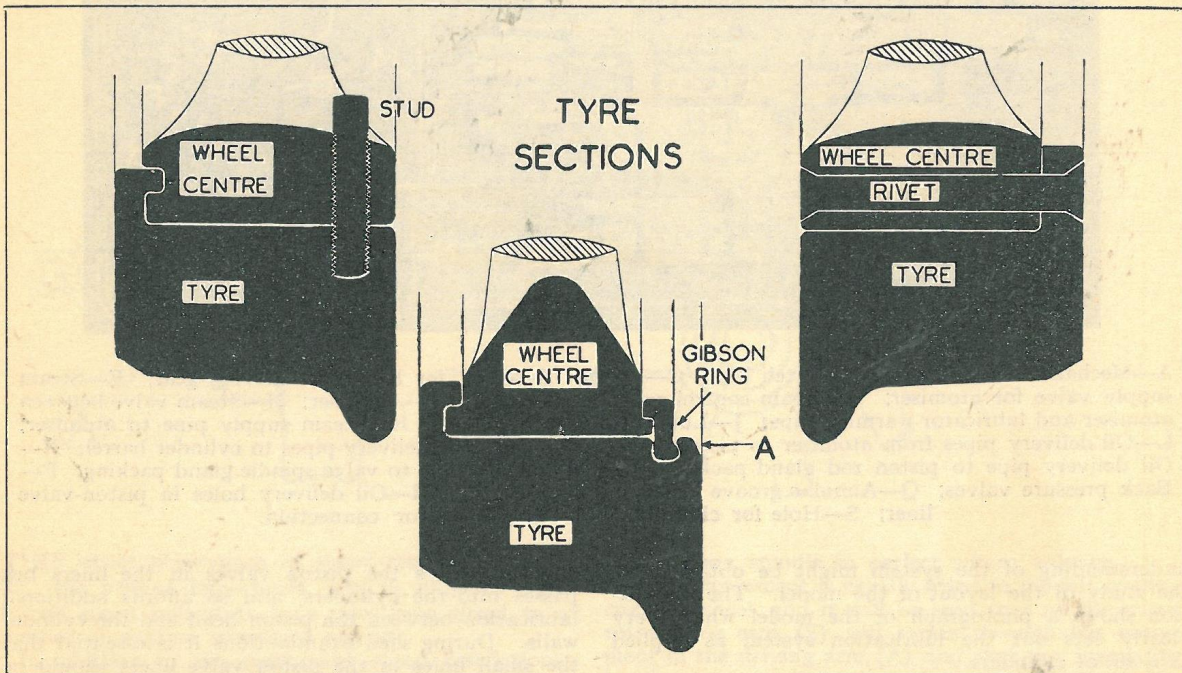
MOST Railwaymen will know that a locomotive wheel consists of two separate parts: (1) a cast steel wheel centre embodying the hub, spokes and rim, and (2) a rolled steel tyre which can be changed when it has worn to such a thickness as would be unsafe to run.

It must be understood that the whole of the work done by the locomotive has to be transmitted to the rail through the tyre and this being the case it is very necessary that the tyre should be securely fastened to the wheel centre. There are a number of

through the rim of the wheel centre and into the tyre. With this type of fixing there was a possibility of flaws developing in the region of the screwed holes in the tyre.

With the object of reducing this possibility the rivet type of fixing was introduced, but this method also necessitated holes being drilled in the rim of the wheel centre and through the lip of the tyre.

The Gibson ring type of fixing was introduced in 1932, and all engines built since that date are so fitted. This method of fixing is clearly shown in the



ways in which tyres can be secured, and the illustration shows three different methods which are in use on the L M S.

In all cases the tyres have first to be shrunk on to the centres, whichever method of securing is employed. The shrinking operation is carried out in the following manner:

The inside bore of the tyre is machined to a diameter slightly less than that of the wheel centre, the tyre afterwards being heated by a special arrangement of gas jets causing the tyre to expand, after which the wheel centre is placed in position and the tyre allowed to cool, during which time contraction takes place.

The difference in diameter of the wheel centre and the bore of the tyres varies according to the size of the wheel and the formula used is such that the tyre will have a satisfactory grip after shrinkage without setting up undue stresses on the tyre.

The old method of securing a tyre was to provide studs between each or alternate spokes, screwed

illustration. It will be seen that a groove is turned on the inside bore of the tyre and a lip formed on the side of the wheel centre, a steel ring of special section being rolled into position to form a lock. The portion of the tyre "A" is afterwards rolled over to fix the ring securely in position.

Every effort should be taken in reducing the possibility of tyres failing in service, and as fractures are liable to develop from sharp corners, special care is taken to ensure that a good radius is provided at all such places where these occur.

It will be noticed in the illustration that the section of the wheel centre for tyres having the Gibson ring fixing is of triangular formation. This section has been adopted to give additional strength to the rim between the spokes to withstand any deflection which might take place.

The operation of fitting tyres to the wheel centres is carried out before they are finally machined correct to gauge on the treads and sides.