

ENGINEMEN'S M.I.C. MOVEMENT

THIS month it is proposed to deal with pistons. On this important part of a steam locomotive it will be readily appreciated that a considerable amount of experimental and research work has been carried out to obtain the best results.

The importance of these investigations will be realised when it is considered that the piston head has to take the initial force of the steam pressure in the engine cylinder and to transfer that force through

frictional resistance. At first two narrow rings were fitted as shown in diagram "B," The latest practice is three rings as shown in figure "C," this giving a greater degree of steam tightness.

The illustrations already referred to also show the two types of piston head used on the L M S, and methods of connecting these to the piston rod. Figures "A" and "B" show the earlier design in which the method of securing the head to the rod

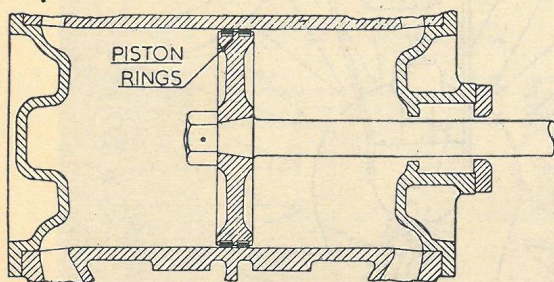


FIGURE A

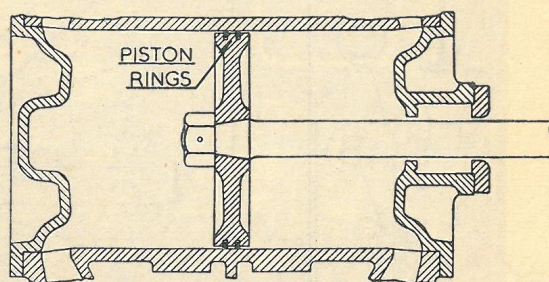


FIGURE B

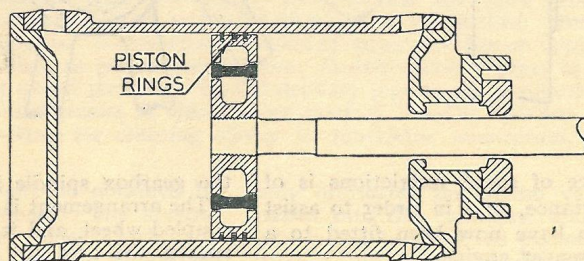


FIGURE C

the connecting rod and crank to the driving wheels which in their turn revolve and move the engine and its load.

One of the most important features of a piston is that it should be steam tight—that is, when the steam pressure is applied to one side there is no leakage from that side to the other. Such a leakage would reduce the full effect of the steam pressure on the piston.

To ensure steam tightness the piston head is fitted with rings which fit into grooves cut round its rim. These rings, due to their own elasticity, press continuously against the cylinder barrel. For many years two rings were fitted of a broad section as shown in figure "A." These have been superseded by narrow rings which are more elastic, provide a tighter fit against the cylinder barrel and offer less

is for the piston rod, which has had its end machined to a cone shape, to be fitted into a corresponding cone machined in the centre of the piston head, a nut pulling them tight together. A taper pin is fitted through this nut and the piston rod thus making a very secure fixture. Figure "C" shows the latest design of piston head. The method of fixing the head on to the rod is by screwing it on to the rod thus eliminating the nut and the necessity of providing a recess in the cylinder cover to give clearance for the nut as indicated in figures "A" and "B." The thread is tapered and the head is screwed on with considerable force, so that the locking arrangement of this head on the rod is by the tightness of the threads. The stays shown in the diagram are replacements of the "cores" used when making the casting and they also give added strength to the casting.