Please read and send in as full a discussion as possible at earliest date.

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THE PROPORTIONS AND DESIGN OF LOCOMOTIVE CROSSHEADS.

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DEVELOPMENT.

The locomotive crosshead is that block which connects the end of the piston rod with the small end of the connecting rod, and running between guides, prevents undue strain being transmitted to either connection. It must be so simple as to be easily handled and kept in repair, it must be strong enough to withstand a high amount of rough usage due to accident rather than piston thrust, and lastly it must be so designed that little work is absorbed by it in friction.

We shall endeavour to study its development from its earliest form to the standard types as now used on modern locomotives.

Although Trevithick's locomotive of 1803 had no crosshead, in it were embodied the three main features of one, namely, piston rod connection, main rod connection, and a common guide for both. Fig. 1 shows a plan and side elevation of this arrangement where "a" is the piston rod, "c, c" the connecting rods fastened to the beam "d" and guided by the bars "b, b."

Fig. 1. (A) shows a modification of the above, in which only one connecting rod was used.