

justment to wear and weakness were chief points in this design. Then came the two-bar crosshead as seen in fig. 3. The guide bars were made of boiler iron, a cast iron head being used.

Fig. 4, shows a crosshead used on the "James," built by Wm.

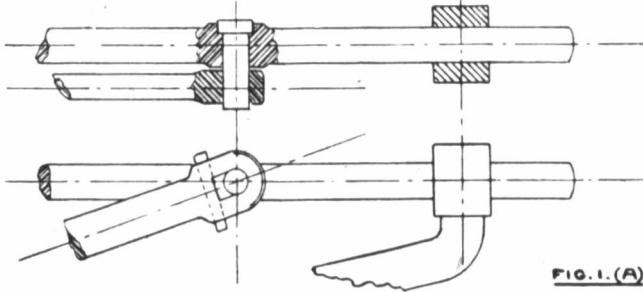


FIG. 1. (A).

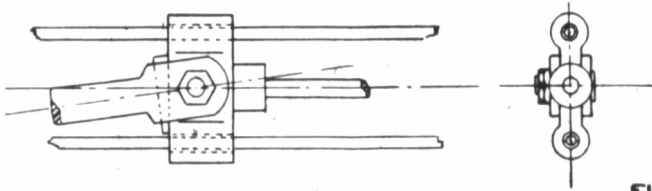


FIG. 2.

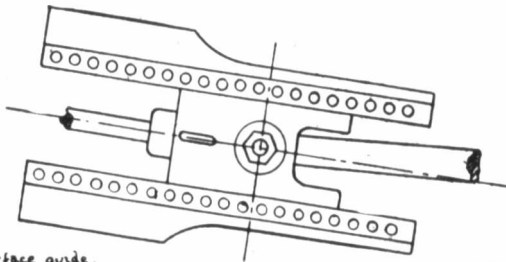


FIG. 3.

Two bar plane surface guide.  
Adopted on first model ever built.  
Eastwick & Harrison. 1839.

T. James, of New York, for the Baltimore and Ohio Ry. in 1832.

Fig 5 as on the "Sandusky" built in 1837. Fig. 6 that on the "Pioneer," the first locomotive to run into Chicago. In the early fifties American designers adopted the single bar type. Commencing