

PORTABLE RAILWAYS.

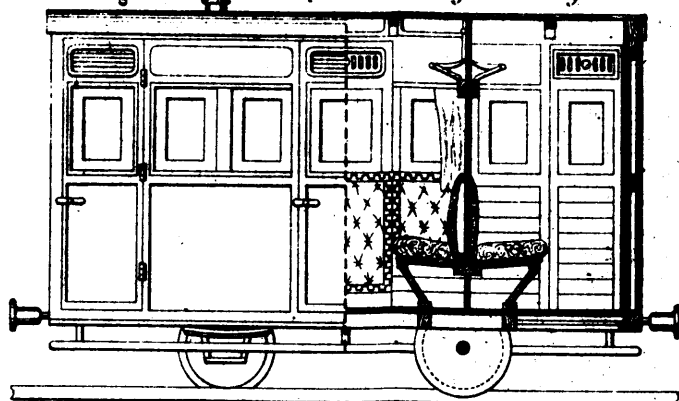
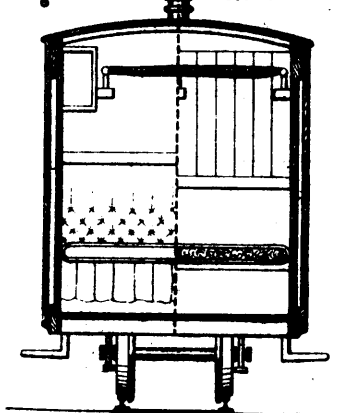
Fig. 25. *Composite Passenger Carriage*.Fig. 26. *Transverse Section*.

Fig. 27.

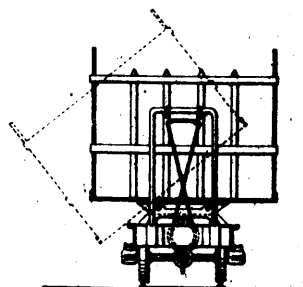
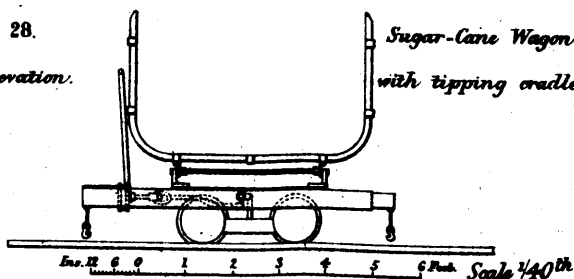
Sugar-Cane Wagon with tipping cradle. End Elevation.

Fig. 28.

Side Elevation.

purposes, with wheels, axles, and pivot bearings of steel; on being dismantled, the bodies of the two trucks form a chest, which is bolted together and contains the wheels, axles, and other accessories. The total weight of the 185 yards of road used by Dr. Balay and M. Mizon during their first voyage was 2900 lbs., and the wagons weighed 5000 lbs. Hence the expedition had to carry a supplementary weight of $3\frac{1}{2}$ tons; but at any moment the material forming this burden became the means of transporting, in its turn, seven boats, representing a total weight of 20 tons.

It is impossible to enumerate in this paper all the various kinds of wagons and trucks suitable for the service of iron works, ship yards, mines, quarries, forests, and many other kinds of works; and the author has therefore limited himself to mentioning only a few instances which suffice to show that the narrow gauge can be applied to works of the most varied nature and under the most adverse circumstances, possible.

It remains only to mention the various accessories which have been invented for the purpose of completing the system. They are illustrated in Figs. 7 to 13, and consists of off-railers, crossings, turntables, &c.

The off-railer, Fig. 7, is used for establishing a portable line, at any point, diverging to the right or left of a permanent line, and for transferring traffic to it without interruption. It consists of a miniature inclined plane, of the same height at one end as the rail, tapering off regularly by degrees towards the other end. It is only necessary to place the off-railer (which, like all the lengths of rail of this system, forms but one piece with its sleepers and fish-plates) on the top of the fixed line, adding a curve in the direction in which it is intended to go, and to push the wagons up the off-railer, when they will leave the fixed line and pass on to the new track.

The switches consist of a rail-end 4 ft. long, which serves as a movable tongue, placed in front of a complete crossing, the