

wheels, in order to minimise all disturbance from inequalities of road and to equalise the wear on the tires as much as possible. This system virtually carries the rigid portions of this engine on three points, namely the centre of truck and the centre of each equaliser between the driving wheels, thus giving the most stable form of support that can be attained.

The S.A. class of engine has 17×24 ins. cylinders and 5 ft. 2 ins. driving wheels. The weight of the engine in working order, that is with two gauges of water (*i.e.* above the second try-cock) and with fire in the fire-box, is distributed as follows:—on truck 30,900 lbs., on drivers 53,900 lbs.; total weight 84,800 lbs. = 37.85 tons. According to the usual formula the tractive force is nearly 112 lbs. per lb. of average steam-pressure in the cylinders.

S.C. Light Passenger Engines.—For light passenger service a similar engine is built, classed as S. C., but having driving wheels of 5 ft. 9 ins. diameter; and a casting is inserted above the truck centre to raise the front end correspondingly. The distribution of weight is as follows:—on truck 31,600 lbs., on drivers 58,100 lbs.; total weight 89,700 lbs. = 40.04 tons. The tractive force is $100\frac{1}{2}$ lbs. per lb. of average steam-pressure in the cylinders.

The capacity of tender for both these classes is 2,800 gallons of water and 10 tons of coal if required. The water supply along the line is stored in frost-proof tanks, which have a capacity of about 40,000 gallons, and are distributed at intervals varying from 10 to 25 miles and averaging about 16 miles. The tender capacity is sufficient to carry water enough for running two of these intervals, in case the supply at any tank should be stopped from external causes. As the railways are worked in divisions of about 110 to 140 miles, the coal capacity of the tender allows of carrying enough to serve for a round trip, wherever the exigencies of the coal supply render this advisable.

S.A. Light Engines. — Boiler.—The first point which attracts attention is the “wagon-top,” as it is called, which is $8\frac{1}{2}$ inches high above the top line of the barrel, Fig. 1. The object of this construction

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