

governor is so adjusted in connection with a slide valve that when the train has attained a certain speed, say, 5 m.p.h., this valve places the pipes leading to each locking mechanism in direct communication with the brake train pipe, thus giving the power to actuate the piston and force the locking bolt into its socket. To meet the

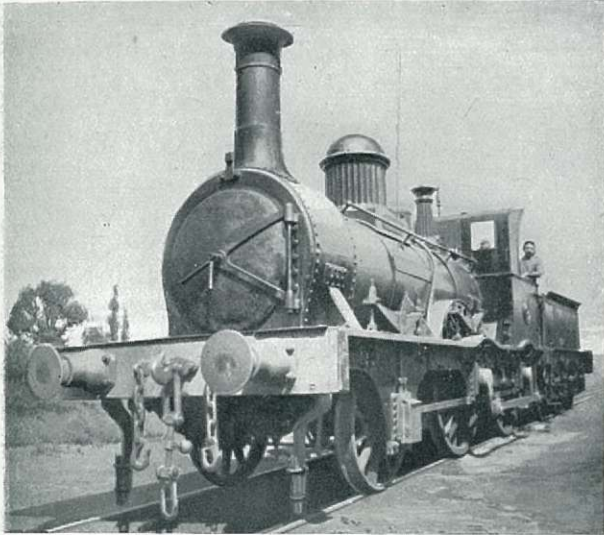


FIG. 6.

requirements of the vacuum brake, a non-return valve is fitted which prevents alterations of vacuum in the train pipe from disturbing the lock if the brake is applied while the train is still running at speed. As soon as the speed is reduced to below 5 m.p.h., however, the governor closes the slide valve to the train pipe and opens it to the atmosphere, thus removing the pressure and allowing the lock to come "off." In dual-fitted stock a three-way cock is provided which gives connection at will with the train pipe of either system of brakes.

In designing this apparatus, thus briefly described, the chief points aimed at were simplicity of construction and automatic working of a trustworthy nature, all the mechanism being strong and durable, and the movements straight-forward in character. All the parts, including the governor and slide valves, are well enclosed to prevent the intrusion of wet or dust.

WEST FLANDERS RY. LOCOMOTIVES.

By ALFRED ROSLING BENNETT.

(Continued from page 143, Vol. XIV.)

By 1853 traffic had increased to such an extent that more engine power was required, and it was decided to order a coupled engine for use with the heavier goods trains. This engine, now No. 27, shown in Fig. 6, was accordingly built by Messrs. Wilson & Co., of the Railway Foundry, Leeds, and named "Britannia." As a survival (the only one known to the writer) of a genuine coupled "Jenny Lind," the picture is unquestionably interesting, and is rendered more so by the fact that little has been done to alter the original appearance of the arrangements. It had an independent donkey pump when it came from Leeds, but this many years ago was replaced by injectors. The cab and sandbox on the boiler are, of course, additions. The name plates had been removed, but were obligingly restored for the occasion when the writer photographed the engine at Bruges in August, 1906. The dimensions of No. 27 are: cylinders 16-in. by 22-in.; coupled driving wheels 5-ft. 6-in. diameter; heating surface: firebox 68.64 sq. ft., tubes (184 of 1 $\frac{3}{4}$ -in. diameter), surface 856.49 sq. ft., total 925.44 sq. ft.; length between tube plates 10-ft. 0 $\frac{1}{2}$ -in., thickness of boiler plate $\frac{1}{2}$ -in., working pressure 124 lb., weight empty 20 tons 1 cwt. 37 $\frac{1}{2}$ lb. The maker's No. is 342.

"Britannia" gave such satisfaction that two similar engines were at once ordered from the Société St. Leonard. These, Nos. 28 and 29, were delivered in 1854. Both were recently still working, and Fig. 7 shows No. 28 as photographed while

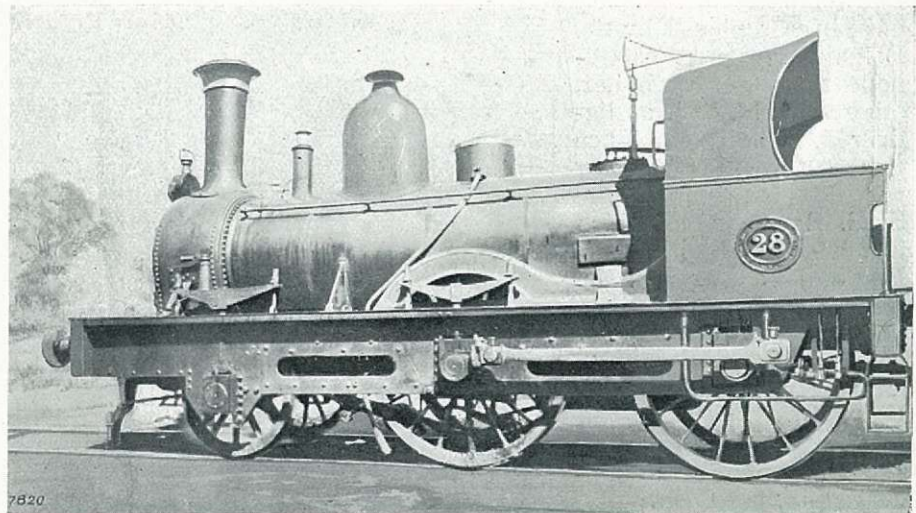


FIG. 7.

shunting at Roulers in August, 1906. The dimensions closely followed those of No. 27, but the driving wheels have 1-in. more diameter, and

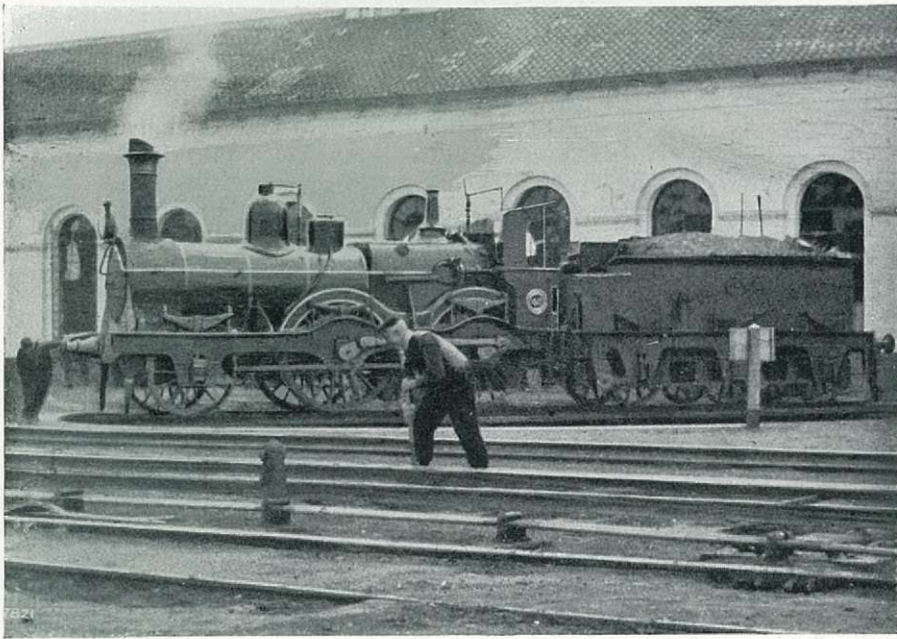


FIG. 8.

the boiler has 28 sq. ft. more heating surface.

In 1863 more engines were required, and Messrs. England & Co., of Hatcham Ironworks, London, supplied six six-wheeled, four-coupled tender engines, one of which, No. 63, in its present condition, is shown in Fig. 8. The original Cudworth double fireboxes have been replaced by the Belpaire type and the sand-boxes removed to the boiler, otherwise No. 63 is as delivered. The resemblance to the "North Kent" or 185 class engines of the S. E. Ry., some of which were also built by Messrs. England & Co., will be noticed. It was found necessary to furnish several engines of this class with entirely new boilers, and Figs. 9 and 10 represent two forms of the rebuilds. The dimensions are: cylinders 16-in. by 24-in.; diameter of driving wheels 6-ft.; heating surface: firebox 94.9 sq. ft., tubes (195 of 1 $\frac{3}{4}$ -in. diameter) 755.13 sq. ft., total 850.04

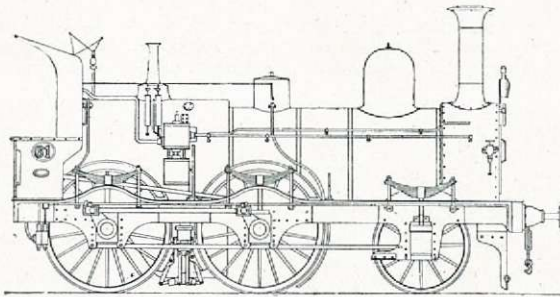


FIG. 9.

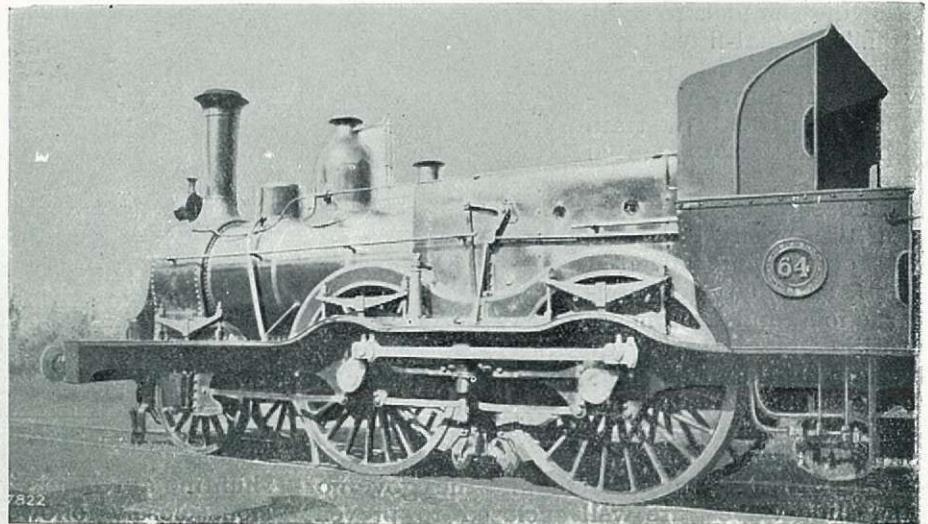


FIG. 10.

sq. ft.; length between tube plates 10-ft. 0 $\frac{1}{2}$ -in.; working pressure 120 lb.; weight empty 29 $\frac{3}{4}$ tons. These engines were until recently to be found on the route between Courtray, Ypres and Hazebrouck.

(To be continued.)

THE RAILOPHONE.—THIS is an apparatus invented by Mr. Hans Von Kramer, of Witton, near Birmingham, for telephoning from railway trains or other moving vehicles.

The principle applied is that of induction, from a large wire frame of special construction suspended from the bottom of a railway coach near the track. From the frame, the terminals of which are connected to a telephone instrument placed in a sound-proof box on the train, electric impulses are induced in a stationary wire fixed between the rails on which the train travels, one wire being laid on both "up" and "down" tracks. The ends of these two wires can be connected up either to telephone apparatus at the railway terminus or to an intermediate station.