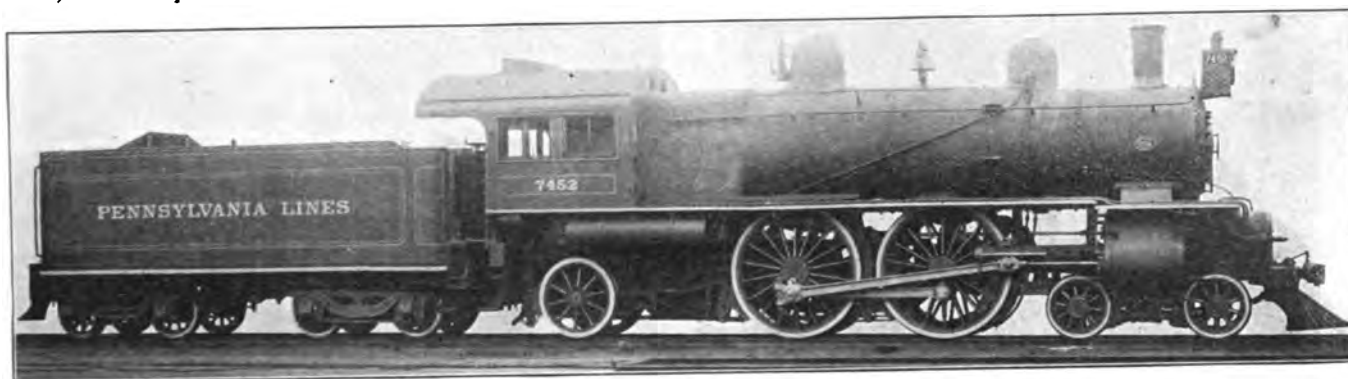


Balanced Compound—Pennsylvania Road

THE Pennsylvania road has placed in commission a four cylinder balanced compound engine built by the American Locomotive Company, and of the Cole design adapted to the Atlanta type. This engine has 117,200 pounds on drivers, being in this respect somewhat heavier than the simple Atlantic type engines built for the Pennsylvania road by the same builders in 1903, and 18,500 pounds heavier in total weight, while of practically the same starting capacity. The Cole compound is now in the way of receiving a thorough trying out, it being on the New York Central, the Erie and the Pennsylvania. In entering service of the latter road, it will be in competition with other Atlantic type of machines, among which are the De Glehn and the Baldwin, besides the simple engines of 1903 mentioned above.

These compounds with the exception of the De Glehn, are comparable with the simple engines named

Weight, in working order200,500 lbs.
 Weight on drivers117,200 lbs.
 Weight, in working order, engine and tender....340,200 lbs.
 Heating surface, tubes2680.17 sq. ft.
 Heating surface, firebox181.4 sq. ft.
 Heating surface, total2861.57 sq. ft.
 Grate area55 sq. ft.
 Axles, driving journals, main. 10½x12 ins.; others, 10½x12 ins.
 Axles, engine truck journals....diam. 6½ ins.; length 12 ins.
 Axles, trailing truck journalsdiam. 7 ins.; length 11¼ ins.
 Axles, tender truck journalsdiam. 5½ ins.; length 10 ins.
 Boiler, typeEx. Wagon Top
 Boiler, O. D. first ring67 ins.
 Boiler, working pressure205 lbs.; fuel Bituminous coal
 Firebox, typeBelpaire wide box
 Fireboxlength 111 ins.; width 72 ins.
 Firebox, thickness of crown ¾ in., tube ½ in., sides 5-16
 Fireboxthickness of crown ¾ in.
tube ¾ in., sides 5-16 in., back 5-16 in.
 Firebox ...water space, front 4 ins. sides 4 ins., back 3½ ins.
 Crown stayingRadial
 Tubes, materialCharcoal iron



BALANCED COMPOUND, P. R. R.

above since they have the same wheel diameter, grate area, boiler pressure and traction force. The appended table shows the relative proportions of the engines named above, and will be of interest in a general way.

Comparison of Atlantic Type Engines—Pennsylvania Road.

Build.	Date.	Type.	Cyl.	Drivers.	Int. Drivers.	Int. Total.	H. Surface Total.	Tractive Power.	Adhesion Factor.
Am. Lo-co. Co.	1903	Simple	20½x28	80	115500	182000	2640	23800	4.85
De Glehn	1904	4-cyl. Bal. Com.	14 3-16 & 23½ 25 3-16	80 5-16	84800	182000	2677	19500	4.33
Am. Lo-co. Co.	1905	4-cyl. Bal. Com.	16 & 27 26	80	117200	200600	2862	23300	5.03
Baldwin.	1905	4-cyl. Bal. Com.	16 & 27 26	80	120000	202000	2864	23500	5.53

The following specification of general dimensions and particulars of construction of the Cole engine illustrated, will give a clear understanding of the proportions and design of the machine.

Cylinder, typeCom. Piston Valve
 Cylinderdiam. 16 and 27 ins.; stroke 26 ins.
 Track gauge4 ft. 9 ins.
 Tractive power23,300 lbs.
 Wheel base, driving7 ft. 5 ins.
 Wheel base, rigid7 ft. 5 ins.
 Wheel base, total31 ft. 11 ins.
 Wheel base, total, engine and tender.....61 ft. 4 ins.
 Tubesnumber, 315; diam. 2 ins.
 Tubeslength, 16 ft. 4 ins.; gauge No. 11 B. W. G.

Boxes, driving, mainCast steel; others Cast steel
 Brake, driverWest. American H. S. reduc. valve
 Brake truckWest. Amer.
 Brake, trallsWest. American H. S. reduc. valve
 Brake, tenderWest. Amer. H. S. reduc. valve
 Brake, air signalWest. J.
 Brake pump9½ in. L. H.; 2 reservoir 15x88 ins.
 Engine truck4-wheel W. I. frame, swing center bearing
 Trailing truckRadial with inside journal
 Exhaust pipeSingle nozzles 5¼, 5½ and 5¾ ins.
 Grate, styleRocking
 Piston roddiam. 3 ins.; piston packing, C. I. rings
 Smoke stackdiam. 16 and 18¾ ins.
 Smokestack, top above rail14 ft. 11½ ins.
 Tender frame8 and 10 in. steel channel and plates
 Tank, styleWater bottom
 Tank,capacity 7000 gals.; fuel 10 tons
 Valvestype Piston; travel 6 ins.; steam lap 1 in.
 Valvesex. C. L. H. P. 5-16 in.; L. P. ¾ in.
 Setting ¼ in. lead forward motion when cutting off at 11 in. of strike, R. H. crank pin at lead.
 Wheels, driv.diam. outside tire 80 ins.; centers diam. 72 ins.
 Wheels, driv., material,main, Cast steel; others, Cast steel
 Wheels, engine truck, diam.36 ins.
 Wheels, kindStd. Steel Works cast iron spoke
 Wheels, trailing truck, diam.....50 ins.
 Wheels, trailing truck, kindSpoke center
 Wheels, tender truck, diam.36 ins.
 Wheels, tender truck, kind...Std. Steel Works cast iron spoke