
4000

The Biggest 2½-in. Gauge Loco. Yet

by "L.B.S.C."

WHEN that versatile engineer-architect, Mr. Ed. Adams, really gets going, you can bet that the result is going to be something startling—and you'll win! Take a look at the reproduced photographs, and read the following notes, for a typical example.

In the *Railway Gazette* for January 30th, 1942, appeared drawings, photographs and a description of a high-speed 4-8-8-4 articulated freight locomotive built for the Union Pacific Railway of U.S.A.; and when our worthy friend saw them, he immediately caught a dose of the same complaint that your humble servant contracted, way back in July, 1926, when I saw the picture of the L.P. 4-12-2 (there must be something "deadly" attached to the Union Pacific!), and got an irresistible urge to build a 2½-in. gauge edition. Nothing could be done at the moment—a person known as Jerry could tell you why—but in October, 1943, the drawings in the *Railway Gazette* were enlarged to a suitable size for 2½-in. gauge, some details added from the *Locomotive Cyclopædia*, and some letters passed between our good friend and myself, on various points in the design. On looking around for suitable materials, it was obvious that it was going to be very difficult to obtain supplies, especially castings, and the building of the locomotive would certainly be a long-term job. However, Mr. Adams made best use of whatever he could come by, and many small parts were made and set aside, ready for eventual erection; but some parts were made twice over, our friend having forgotten that he had previously made a similar component, so you can imagine how the job was dragging out! However, all difficulties were eventually surmounted, and the engine is now in service on the 52-ft. circle of the Falls Grove Railway. Mr. Adams has only three flat cars, but the engine hauls them, with all the passengers that can be squeezed on, quite easily. If there were sufficient cars available, a little sand might enable the whole outfit to emulate a dog chasing its tail. Working sanding gear will be fitted later.

The principal dimensions are as follow: Length of engine only, 3 ft. 7 in., length of tender 1 ft. 10 in. Coupled wheels 2½ in. diameter. Cylinders 1 in bore, 1½ in. stroke, with ¾-in. piston valves, oiled by a mechanical lubricator having a ram 5/32 in. diameter and ¼ in. stroke, driven by a 40-tooth ratchet-wheel. Boiler, 4 in.

Mr. Ed. Adams's "Last Word"

barrel; grate 9½ in. by 3¼ in.; feed, one ¾ in. by ¼ in. pump, and one injector. The boiler is built according to the principles set out in these notes, has a combustion-chamber, three superheater flues, and a nest of ¾-in. tubes, and my recommended system of staying. It is lagged with asbestos sheet, and the cleading plates are of thin brass; the boiler bands are of thin copper, with pads on the end to provide a "hold" for the screws.

Interesting Details

The frames were cut out of ⅜-in. mild-steel; some job! The full-sized engine has a complicated system of compensated springing, but Mr. Adams thought this was too much of a good thing to reproduce in 2½-in. gauge, so substituted plain bronze axlebox:s with overhead coiled springs. The front set of coupled wheels, and the leading truck, are on a separate frame pivoted to a king-pin between the rear pair of cylinders, the front end sliding laterally on a seating under the smokebox, fairly strong springs being fitted at both places. This was necessary to equalise the load on the axles and minimise the chances of the front engine slipping, most of the weight being in the rear part. A little careful adjustment did the trick.

The steam- and oil-pipes have articulated joints, as shown in the detail illustration, which explains itself. Mr. Adams says that the glands have to be fairly tight, to prevent any slack-

ing off when the engine is working. The exhaust from the front cylinders goes through an armoured gas-tube which, so far, has proved satisfactory.

Mr. Adams's previous experience with the building and operation of small locomotives has taught him the value of accessibility; and in this engine he has incorporated some ideas to that end. He says that detail and appearance take second place to accessibility, and with that I am in agreement; for, as he says, it is not only annoying, but a waste of valuable time to take half the engine down to get at some fiddling replacement or adjustment job. The latter antic is not unknown in full-size practice; I well remember a certain engine, the first of its class, which had an oil-pipe leading to the driving axlebox break on its trial trip. It was found necessary to lift the boiler to replace the pipe! It is hardly necessary to add that *that* defect was promptly remedied.

Making it get-at-able!

On the 4-8-8-4, not only is the front engine completely and readily detachable, but the upper part of the smokebox, complete with the double chimney, can also be easily taken off, as shown in one of the pictures. This allows of easy access to the front-end throttle, superheater-headers and connections, blast connections and nozzles, and blower; and also permits easy cleaning of the tubes and the interior of the smokebox. The front platform comes away also, and exposes the lubricator, ratchet-gear and drive.

Owing to the rear coupled wheels being under the firebox, the grate could not be arranged to dump in the usual manner, so the rear end is made to drop about ¾ in. and slide back under the cab, to get it out. When running, the grate is supported at the front end on a piece of angle, as specified for some of my boilers in these notes; and the rear end is held by a single pin passing through the backhead at the foundation-ring.

The grate was originally made from ½-in. mild-steel bars at ¾ in. centres, shouldered down to ¼ in. at each end, and riveted into end bearers of ½-in. by ¾-in. steel strip. This grate failed owing to the bars burning after 20 miles of running; the centre part was reduced to ¼ in., and the whole issue became badly distorted. To get over that trouble, our versatile friend made the centre part of the grate renewable; and the drawing shows how this was done. The centre part was cut away and short bearers were fitted as shown, two removable sections with stepped bars being made to fit the opening. These may easily be inserted through the firehole door, by aid of a pair of long-nosed pliers. The grate is easily cleaned by removing the centre part, and raking the residue through the hole into the double ashpan.

The firehole door is of the butterfly type, the two halves being connected by segments of gear-wheels, as shown in the accompanying illustration. The friction between the lever and quadrant is just sufficient to enable the door to "stay put" in any position.

The boiler fittings are all made to "Live Steam" specifications, the front-end throttle being a disc-in-a-tube with four holes in it. It is very sensitive, and works easily, opening at a touch. The sand-boxes on the boiler barrel are made from thin sheet copper hammered up over an oak former; the lids are turned, and furnished with wire handles, all ready for conversion to actual working sanders.

Electric lighting is fitted, and at present comprises a headlight and a portable cab lamp, which hangs at the side of the cab, and has a shield to throw the light on the gauges. Flash-lamp bulbs are used, the current being supplied by dry batteries housed in the left-hand air reservoir. The headlamp can be used to examine the smokebox, and the cab light to look in the firebox, when the engine is not under steam.

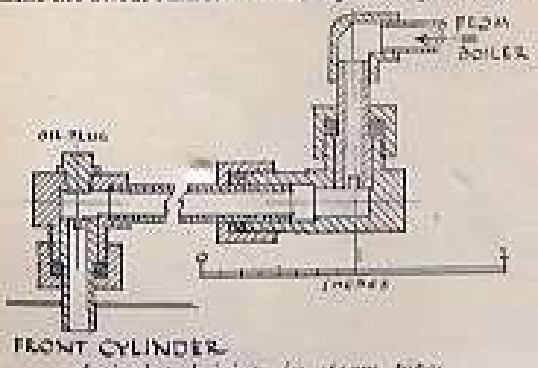
How She Runs

Steam is raised with the vacuum-cleaner motor gadget which was illustrated in these notes some time ago, a cork being used to plug one side of the double chimney, the suction-pipe of the fan being applied to the other side. When charcoal isn't available, oak sticks about ¾ in. square and 7 in. long, are used for lighting up, and it is easy enough to get up steam on these alone, though a few shovelfuls of ordinary house coal are usually thrown on the wood fire before making up with anthracite, on which the engine usually runs

When the engine was first tried with a couple of passengers, she wouldn't steam, and this was solely because of insufficient draught with a light load. I gave friend Adams a few 'ints and tipses on blast and blower adjustments, and now he says it's a good job the safety-valves are efficient! She requires careful firing, as the large grate must be kept covered, without any holes to admit cold air; but the judicious application of a pricker, such as I have described in these notes, attends to the levelling-up all right. Mr. Adams says the big pressure gauge in the tender, recently illustrated, is a great help to the fireman; for, being very sensitive, it indicates instantly any slight drop in pressure which might be caused by a hole in the fire.

Noises in the Air!

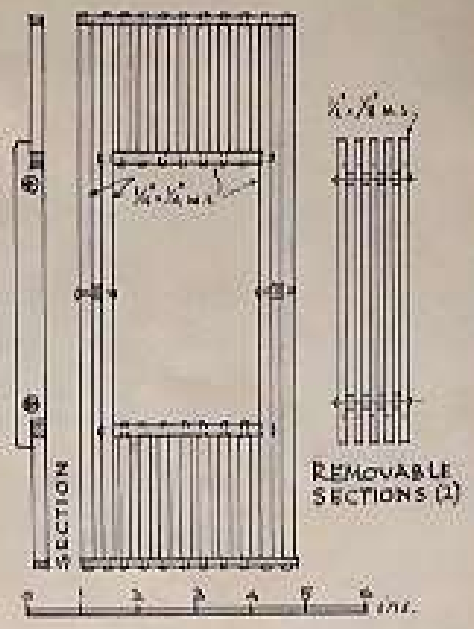
Incidentally, I wonder how many readers of these notes have been close to a full-sized engine which has suddenly started to make a heavy rumbling sound, causing vibrations in the air which seem to shake the whole station? This is caused by a hole in the fire, and the blower drawing cold air through it. One Sunday evening about forty years ago or more, I was having a buckshee trip on one of the old London, Tilbury and Southend tanks, from the town famous for its cockles, to Fenchurch Street, and when we stopped at East Ham, three small boys came dashing up to have a close view of the engine. The fireman had let her run a bit low, as we were getting near home, and suddenly she started to make the awful rumble. The way those poor kids scooted for dear life was just nobody's business! The nearest approach to the peculiar sound which I have ever heard was the rumbling which accompanied the explosions of Jerry's final bit of devilry, the "V2" rockets.



Articulated joints in steam pipe

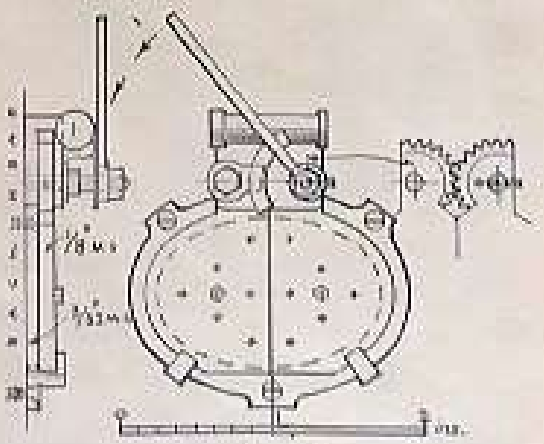
"Carting the Engine Around"

The locomotive is much too heavy to carry very far; and as it is some little distance from the workshop to the line, Mr. Adams followed the good example of the late "Bro. Wholesale," and provided wheeled transport. Our late and very much lamented friend fixed up a proper "pram," consisting of a heavy rectangular box-shaped body mounted on three pneumatic-tyred wheels, the whole issue being strong enough to carry a ton; he always "did things wholesale"! I have it here now, and it comes in very useful at times. Mr. Adams's vehicle is a sort of glorified



Construction of grate

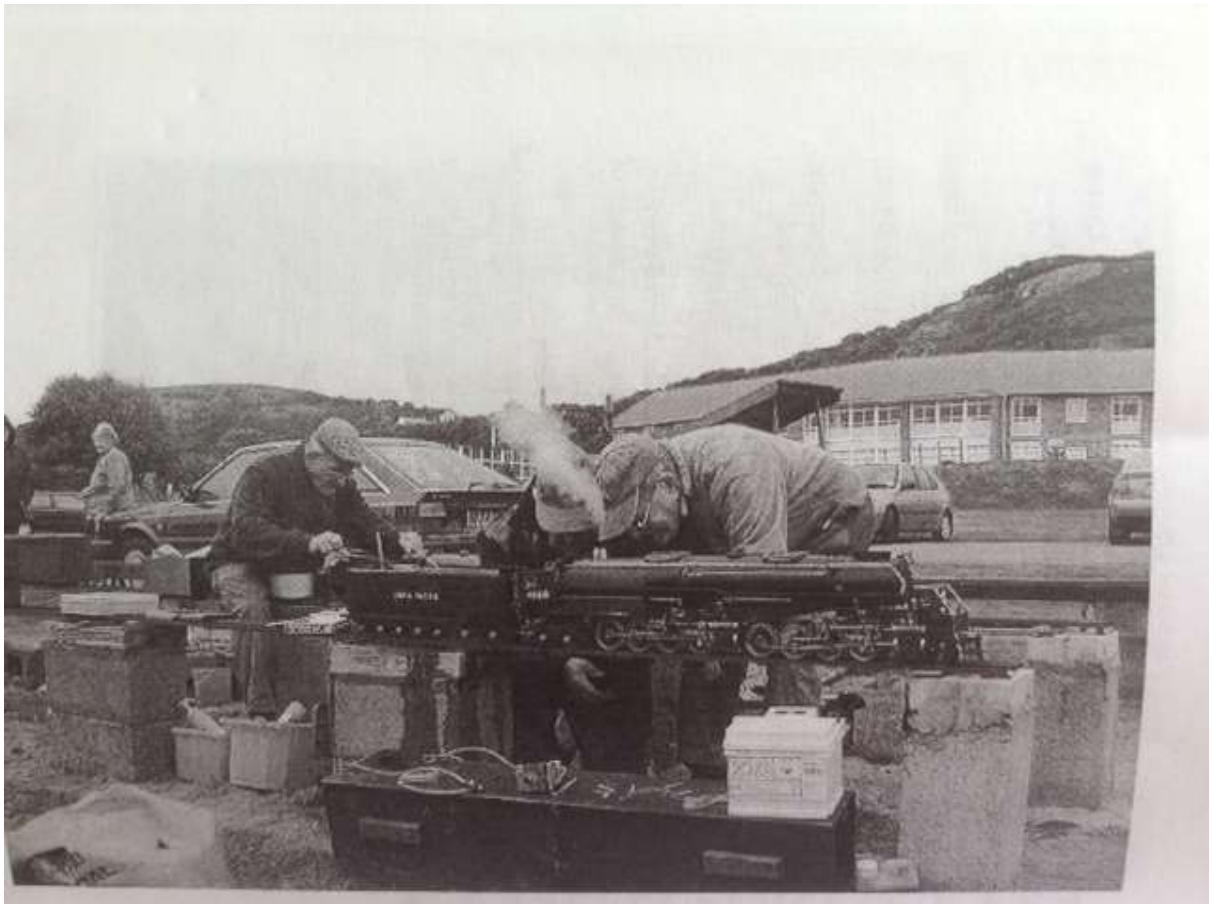
scooter, consisting of a board with an axle at the rear end, on which are mounted two small pram-wheels. At the front end another pram-wheel is carried on what looks like a miniature cycle steering-column with forks complete. This swivels around like the front wheel of a Joy's invalid chair, making the whole bag of tricks easy to travel in any direction, or turn almost in its own length. A cover is fitted, made of bent plywood, to keep dust from settling on the engine.



Butterfly firedoor

The engine is at present reversed by a wheel and screw, but our friend says he will be fitting a power reverse, in the near future, in addition to the working sanding-gear. She is certainly some engine; I thought "Annabel," my 2½-in. gauge "Mallet" 2-6-6-4, was a pretty hefty specimen for that width of rails, but the Union Pacific job beats her. When thinking of the various

accomplishments of Mr. Adams, one might well emulate the sailor's parrot, and remark, "That was mighty fine—I wonder what he'll do next?"



Footnote by Harold Jones - NWMES:
Ted Street on the right, Alan Searle just behind the plume of steam at Ysgol Gogarth.
An interesting article on a 2 1/2 inch gauge Big Boy.
Mr Ed Adam's son ? Who I think still lives in Craig y Don and could well still be a member, in the 1990's approached our Society asking if there was any chance of reviving this loco to working order. Ted Street took the contract on and to be honest, the loco finally steamed but struggled even on the Ysgol Gogarth track.(The radii being too tight!!.) Another of the other problems Ted encountered was that most of the pipe joints had not been silver soldered causing considerable steam leaks.
At the moment, I am told that a member of the 2 1/2 inch gauge Society has taken this mighty machine on , hoping to restore to original working condition. If Mr Adams does read this article , hopefully he might give us an update on progress.Although the text on this article is rather small, if anyone is interested in reading it, I'm sure they'll succeed in what is quite an interesting article.
Above is a photo of Ted Street and Alan Searle preparing to steam this loco at Ysgol Gogarth.