

CONVERTED

The first of three studies of single inside cylinder brass locos

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Pictures by author

I bought this loco in a sale recently, expertly described as a 'boiler on tender, no makers marks, built from metal, mainly brass'

Figs 1a-e. The boiler was detached from the frames, sundry components were loose in a bag, it was filthy and looking sorry for itself, if largely complete. The style of siderails is particular to a number of locos available in the 1890s, presumably all by the same anonymous Birmingham maker, but as is so often the case, they are often ascribed to Radiguet. I can see no reason for this, beyond the fact the siderails are quite decorative and therefore look 'French' to a certain type of ignorant mind. I had no example in the collection and this one was unusual in being inside cylinder. It turned out to be something that I suspect is unique, a very early conversion from two to three axles and from outside to inside cylinder. By an amateur, a professional or even the original maker, is the question here.



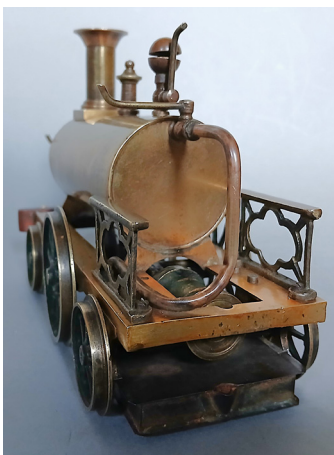
Fig 1a



Fig 1c



Fig 1b



Left - Fig 1d: The baseplate is still as first supplied with a plain rear beam with no provision for a drawbar eye or burner hanger, although a near-central dint in the beam may suggest preparation for fitting one.

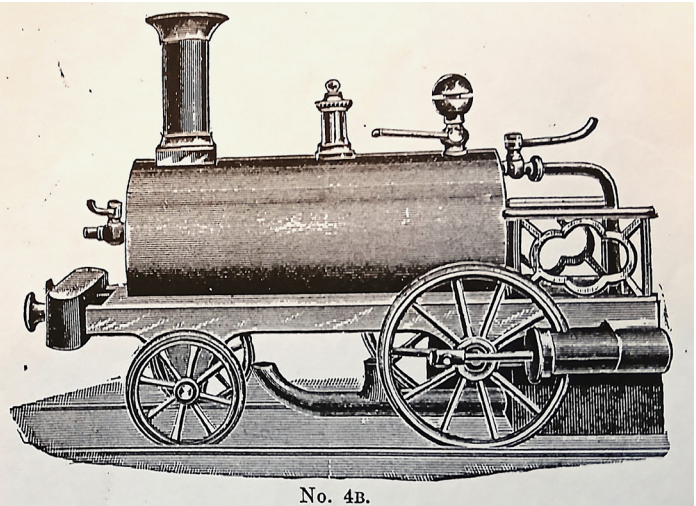
Right - Underside view showing central single cylinder and burner (See also Fig 3)



The loco started life as a 2-2-0 with rear-mounted, outside, single-acting (SA), oscillating cylinders, a very standard type of brass loco. It was available into the early 20th century; however, its all-bright brass finish, lack of weatherboard or cab and square based chimney suggest its design could go back earlier than the 1890s.

Fig 2: The loco as 'No. 4B - Splendid Bright Brass Locomotive' in the Macmillan (Alloa) catalogue of c1902. Although later described as having a 'strong polished copper boiler' all locos I have seen of this pattern are all-brass as per the title, save for (sometimes, as in the loco discussed here) a copper chimney cap.

- No. 3.—Bright Brass Locomotive, length 5½ in., with pair of oscillating cylinders; cast frame, with steam whistle, safety valve, and steam tap complete, ... Price 9/6
- No. 4.—Bright Brass Locomotive, similar to above, but 7 in. long, cast polished frame, bright brass footplate, pair of oscillating cylinders, driving wheels 2½ in. diameter, safety valve, steam whistle, water tap, and steam tap, complete on massive brass wheels. A very handsome model, and strongly recommended, ... Price 12/6
- No. 4B.—Splendid Bright Brass Locomotive, with cast polished bed plate and side frames, strong polished copper boiler 2½ in. diameter, 5 in. long, with starting lever, water tap, safety valve, bell whistle, pair of very superior oscillating cylinders, ornamental side frames to footplate. A very strong and beautifully-finished engine; total length 8½ in., ... Price 14/6
- No. 5.—Bright Brass Locomotive, boiler relieved and lined, best bell whistle, safety valve, steam and water taps, starting lever, pair of oscillating cylinders; total length 8 in., complete with lamp, ... Price 11/6



Armed with the catalogue image, we can see what has been done to it. The cylinders have been taken off and the driving wheel axle hangers removed. The driving wheels have been moved forward and provided with a cranked axle and two square bearing blocks. Meanwhile two new axle hangers have been let into the frame at the rear. A large rectangular clearance has been provided for a single, double-acting (DA) oscillating cylinder. This has required the remodelling of the steam-pipe. Originally it reached its manifold at the rear (we can see half its original access hole at the back of the clearance in Fig 1d) but it now twists back along the footplate to get to the cylinder block by a U turn under the left-hand side. The DA cylinder mountings are somewhat shallower than those of the original outside oscillators and therefore the axles have been moved up, lowering the base. To accommodate the throw of both the cylinder and the crank, the boiler has had to be mounted on saddles, well above the base, where in its two-axle form it sat inside its base. The lower footplate and higher boiler give it a slightly more modern appearance, at least from the front. But, overall, it retains height of the two-axle version. Although the lack of footplate would be somewhat disturbing for the loco's crew, it adds considerably more interest to the bystander watching the loco in motion, with its cylinder moving up and down with every revolution of the wheels.

So far so good, but the problem for any inside-cylinder, toy loco is its burner. A lot of potential heating space is taken up by the crank; so, the wicks are mounted far forward. The burner is similar to that in the catalogue illustration, two broad wicks in curved and straight brass tubes, only these are a good bit longer to take account of the boiler mounts. The reservoir is clearly modelled on the original, or even is the original cut down. It mounts similarly to the two-axle version, slid in from behind. This gives it rigidity, but there is precious little space to slide the burner forward. It fits, but the forward wick either acts up the chimney, or right behind it on the soldered joint, either way is not ideal. To give it a bit of space the driving axle is mounted as far back as possible, while typically 2-2-2 brass locos have the wheels evenly spaced, here there is a noticeably long wheelbase from the leaders to the drivers and a very short one from the drivers to the trailers. Given the position of the rear axle, the reservoir is not much higher than the burner tube and therefore has very limited capacity. Having said that, at least it would be unlikely to outlast the water supply, which, given that chimney joint, is just as well **Fig 3**.

So, whodunnit? The condition as found and its detail I think rules out a collector. No collector would destroy what is a pretty desirable loco and one that was clearly in good condition when the job was done, then only to have it fall

apart while accruing a thick layer of encrusted grime. Moreover, it had clearly had a long history in its three-axle form. All but one cylinder fixing screws were absent and instead the cylinder block and hanger had been very badly soldered in place. It all pointed to the conversion being done close to time of production, with the wear of ages being accrued over the century and a quarter since. It looks



Fig 3

to me like whoever did it worked by trial and error, rather than with careful pre-planning. The cylinder block was first mounted along the edge of the clearance, which would 'look right', but then its builder has realised that this does not take account of the overall width of the cylinder, and has moved the block to centre it correctly. Only then has its opposing hanger been fitted, leaving two empty holes on one side, but none on the other **Fig 4**. This, to me, rules out the original maker. Surely, they'd get it right first time? Yet, close inspection of the driving axle bearing blocks shows us that one has been channelled for use in a sprung axle-guard; so, whoever did this also made larger, more impressive models and had bearing blocks in finished and unfinished state handy for the conversion of this loco, suggesting someone who did a fair bit of work of this kind **Fig 5a & b**. Moreover, the burner

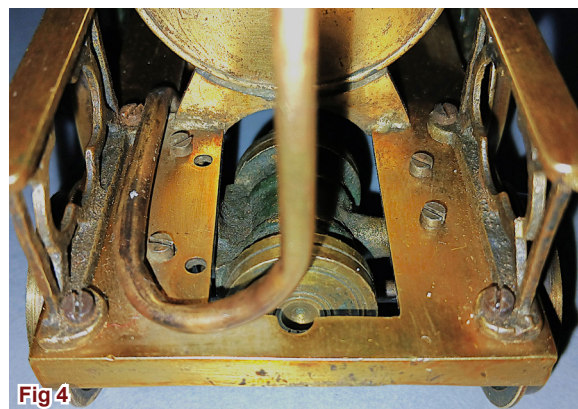


Fig 4



Fig 5a

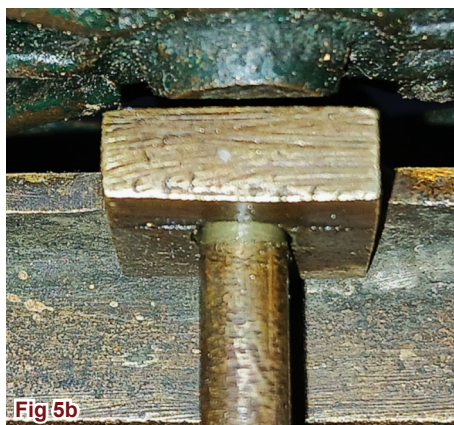


Fig 5b

is equally professional-looking and the lacquered bright brass finish is that of someone used working on brass locos at a commercial level.

Yet, why bother? What was the driving force behind the conversion? It took an awful lot of work to convert an archaic-looking, outside cylinder, two-axle loco into an equally archaic, inside cylinder, three-axle one. Moreover, the design required far more work than the more obvious one of retaining the original boiler height and merely putting blocks

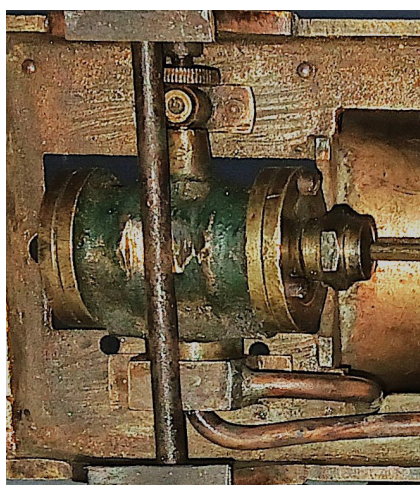


Fig 6: The DA cylinder has its ports arranged around a central pivot in the block. The cylinder is aligned and held to its block by a screw-locked needle pivot on the other side. As found, only one fixing screw had survived and both cylinder block and opposing hanger were crudely soldered in place, explaining the scoring that surrounds them. The proximity of the rear axle to the cylinder has encouraged someone to file out extra clearance in the latter.

between the cylinder mount and footplate to bring the cylinder below the plate and align it with the original lower axle settings, where there would be no need for the boiler saddles, nor footplate clearance hole.

The single inside DA oscillator is hardly 'realistic', nor would it improve performance over two outside SAs. Interestingly, it is of a fairly ancient pattern, set with a screw needle-pivot in a hanger opposite the block **Figs 6 and 6a**, not a compression spring and screw running through the block. Does this suggest the loco and conversion is a fairly old one, or just that whoever did the job just had an early pattern cylinder to hand? The loco is still a floor runner with no provision for rear coupling. no attempt has been made to provide a weatherboard, let alone a cab. Other than the cylinder, all other fittings seem

to be identical to the original two-axle spec, even the 'extra' wheels are matched. I can only assume that whoever did it was fond of 'ancient' railways' and thought (rightly) that the loco would look more convincing if it had a third axle and no external drive gear, but this contradicts the exercise of raising the boiler. My first reaction is the conversion was done by a very competent amateur. But, would such a person decide to use a single cylinder mounted so high that it cuts through the footplate? That seems more the stuff of a commercial maker. Perhaps a commission through a retailer to a maker, or by a retailer who offered repairs and rebuilding.?

In the end, I doubt I will ever know whodunnit, still less their motive for doing so...but, I'm glad they did. The loco is just so much nicer looking than its brethren with two axles and outside cylinders, while inside cylinder brass locos are rarities that always command more interest than outside cylinder ones. Unlike tinsplate, where period interventions of this level, no matter how good, almost always compromise a loco's value; when it comes to brass, the opposite is often true. 🌀

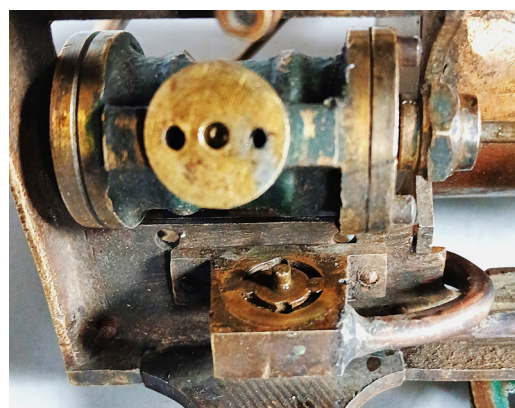


Fig 6a: Cylinder detached from block, shewing porting arrangement and central pivot