



This article is provided by FMES for your interest thanks to the kindness of the original publishers. FMES makes no representations or warranties of any kind, express or implied about the completeness, accuracy or reliability with respect to this document and any sentiments expressed are not necessarily supported by FMES. Any reliance you place on this document is therefore strictly at your own risk

“Old Rube restoration part 18”

This document was written by Paul Naylor in early spring 2026 and is the eighteenth article in a restoration project. The articles were published more or less simultaneously in the Frimley and Ascot Locomotive Society newsletter.

I started cleaning up the guide bars with a view to re-assembling them, then had a thought. From disassembly, the guide bars were holding the rear cylinder brass covers on, and these overlapped with the cylinder cladding... This means that I need to refit the cylinder cladding first and secure the covers, THEN fit the guide bars. So, I need to make a decision about refitting the old covers (16 gauge galvanised steel and poorly adhering paint) or making new ones out of somewhat thinner brass sheet. As I said before, I like a little bling on US engines, so brass wins the day. I have some 20 gauge hard brass sheet left over from other locos boiler cladding, so this it will be. I can use the old covers as templates, with an adjustment here and there - they could beneficially be a few millimetres longer to go under the end covers better – the point of no return is flattening the old covers out.

Point duly passed... they are flat! Actually, only one is as they are identical (I checked). In the end I only used it to mark out the position of the drain cock holes and for the length round the cylinder. The long ‘ears’ you can see on the old one in the photo did not seem to serve much purpose, so I did not waste brass with these. I am fortunate in having an elderly set of small bench rolls which is ideal for this sort of thing, so rolling the cylinder cover was easy. I have avoided using any heat for any reason and the brass remains hard... and springy, so they ‘snap’



over the cylinder nicely with the end covers

snugly holding them in place. It means I do not need to drill the holes for the little screws holding the old covers on (7 screws on each cover). The photo shows the left hand one, right hand one yet to fit. I could polish them right up, but they match the end covers quite well as they are. When I made my US 1850's wood burner, I made loads of brass ‘bling’ as befitted the style of the day and buffed and polished it to nearly a mirror shine. You needed sunglasses to look at it, right until the first run when it all dulled down and although I ‘Brasso’ed it a few

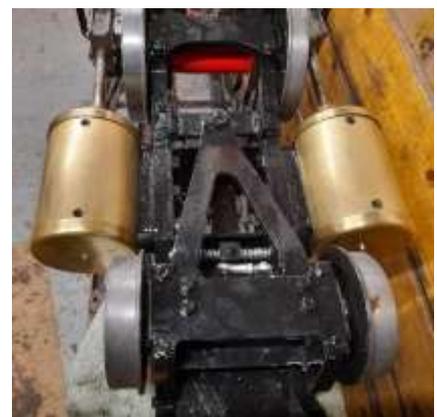


times, my enthusiasm for this activity soon wore thin and it all looks like the above photo now. By the 1880's (when prototype Old Rube was made), I think it also wore thin in real life and locos started becoming black and boring - if a future owner wants to restore it to black, paint is a wonderful invention.

Since I have made the cylinder cladding now, and need the covers on TWO ends of each cylinder to hold it on, I should probably next refit the front cylinder end covers. These were removed to de-treacle the cylinders and get the pistons moving freely, and I only attached them back with a couple of studs to keep muck out during all the cleaning and painting. I don't want to do this twice, so these need to be refitted steam tight ready for use. When I removed them, more than half of the studs came out with the nuts, so there is some work to do. I ended up replacing some of the studs as they had been unceremoniously hacked off flush with the nuts leaving a ragged end (why the nuts did not come off instead of the whole stud). I tapped out the holes (1/4" BSF) to clean them out, and cleaned up or replaced the studs, secured with some Loctite 270. The cover sealing had apparently been done with just a silicon-based sealant and no solid gasket so I scraped this all off both mating surfaces. Although no doubt effective, I don't like silicon sealant as it goes off quickly, oozes out possibly internally (to bung up drain cocks etc) as well as externally and a tube of it always seems to go off if stored for more than a week or so. I assume that this is the reason it seems all you can buy (you throw 80% away after using it once or twice), a tube of old red hermetite lasted for years. As I usually do, I made up some card gaskets (cereal packet or similar seems to work for me) and got some 'Hylomar' gasket compound that says it semi-hardens. We will suck it and see. This is smeared over both sides and then the joint re-assembled. The photo shows the gaskets on their covers pre-sealant application (and in one case gives away the provenance...). The stud holes are made using gasket punches, not something I would usually buy (I used to use a sharpened piece of tube), but I found a complete set in a charity shop for £5 (about 20 punches of different sizes) so why not? I am not sure the charity knew what they were. I don't suppose the CE mark on one gasket applies for this application though. Before fitting I liberally applied oil to the bore, including some through the drain cock holes for the still sealed rear ends.



After some messing around (including replacing an old stud that pulled out when I tightened the nut owing to too few threads in the casting) and suitable marine language, I eventually got everything sealed up. I replaced the single 6BA brass screw on the front cover ends with a stainless steel M3 stud (tapping out the cover hole) for a little more strength. I could now fit the drain cocks that I restored a while ago (and a pipe set to plumb them in that I discovered in the rats nest of piping I had), but I will wait until the chassis is ready for turning over as they are potentially vulnerable.



Now that this is dealt with, I can refit the guide bars first then the connecting rods. Without guide bars, there is a little up and down slop in the crosshead/piston rod when fully extended, but nothing too much (and the stuffing gland is loosened too). The main task, apart from cleaning the guide bars up, is refitting them with appropriate shims to allow easy motion but little play in the crosshead vertically.

It appears that the flats machined on the cylinder end covers for the guide bars are more or less bang on for the crosshead, so no shims are needed here. The rear end however, supported by the cross frame, is a different picture with some quite large gaps to be shimmed. A motley collection of shims (and, being frank, spacers and washers) came from it when disassembled, so I thought I had better start again and make up brass spacers the right thickness. I selected a sort of compromise spacer for the lower guide bars that halved the amount of vertical play in the crosshead. This turned out to be 0.030" for both sides using feeler gauges. When the lower guide bars were fitted using this, I could then clamp up the crossheads and guide bars together (when extended) and measure the spacer required for the top ones. One was another 0.030", but the other was more like 0.1" (hard to measure: feeler gauges no use here!). The latter one took some fiddling to get right (I made it too large and filed it down in stages) but eventually I had a smooth moving shake free crosshead on each side. The net result is not easy to see on photos.



The task of cleaning and refitting the connecting rods was similar to the side rods: scraping off treacle and freeing the bearings (which were in good condition). One rod needed a new oiler as per the side rods. The left side already had spacers between the connecting rod and side rod and was lined up OK, the right side had no spacer but when assembled, needed one just under 0.125" thick, so I had to make one using a short piece of gunmetal I had of the right diameter. When turning such things from solid (and expensive) bar stock, I try to avoid making too deep a hole in the middle and used a 0.5" slot drill held in the tailstock chuck to make a hole and then bored it out to the 0.75" diameter required. I ended up using only 3/16" off the end of the bar stock including parting off, which retained an unmarked surface for next time. When built up and everything in place, it all turns freely with no binding or shake except for about 0.01" end float at the wheel crank pin. And thus ends the refitting of the important bits of the chassis. The photo below shows the left side apparently right way up, but actually still inverted (I turned the photo upside down, it's easier!). Since there is no weight on the axles, the wheels have adopted a 'free position' thanks to the compensation and look a little out of line.

I was getting a little impatient waiting for family muscle to visit (he is moving house, so I suppose it is understandable!) and so I decided to tackle it myself. The chassis needs to be inverted and

turned, as it is the wrong way round as well as upside-down. I attached two slings to front and rear, lifted it off the stand and lowered it onto blocks on the floor. I then removed the front sling and lifted the rear end upwards until it was vertical, by then the front buffer beam was resting on many towels on the floor. The bit the wife did not like came next: holding the chassis vertical while I removed the rear strap as well and replaced it on the other side. This meant that I could tip the chassis past



balancing point and let it down to the floor again, this time the right way up AND right was round. Reattaching both straps allowed me to lift it again, this time to put it back on the rails. In the end, easy and used more adrenaline than physical effort. This is where I remember what I had forgotten to do while it was upside-down... but at least it is on all fours and I can carry on with topside work.