

The Streamlinia Project (5)

Making the basic boiler doesn't take too long, but it's all the little extras that take the time. So here goes!



Fig 29

Engine driven water pump. This is fitted across the non-drive end of the engine. One of the crank pins was made a little longer than the other and drives a connecting rod connected to the pump ram which has a bore of 3/16" and the stroke is the same as the engine. And it works rather well to the extent that I wrecked a 150 psi gauge while attempting to see what pressure it would pump at. The gauge pointer shot across the scale and past the stop. When I took the gauge apart, I found that the bourdon tube had been partially straightened and over about a third of its length it was no longer flat, but had blown up to become a round tube. Fig 29 shows the pump mounted across the end of the engine.

Items to be fitted to the boiler were tackled next: The main steam valve, water feed valve, water gauge, safety valve and the water level probe. See Fig 30.

Note that the water gauge glass is obviously not cut to length yet.

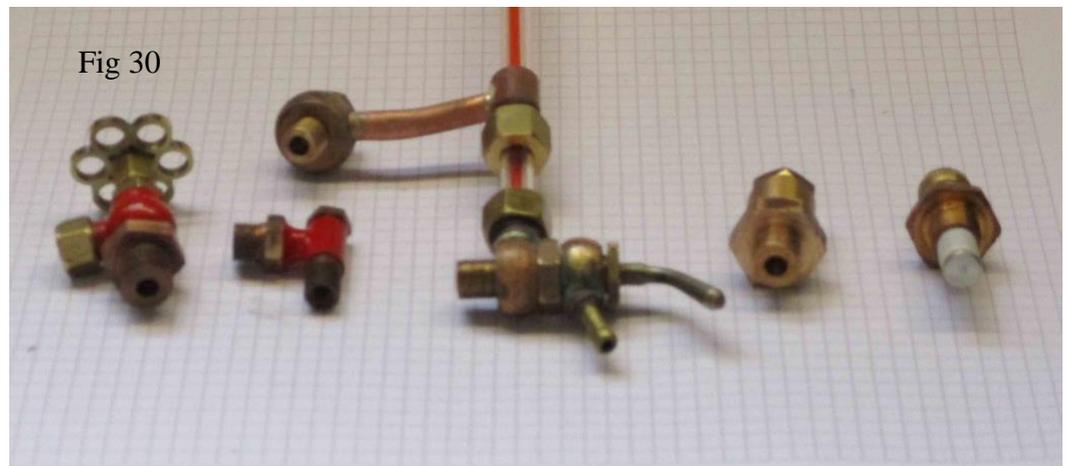


Fig 30

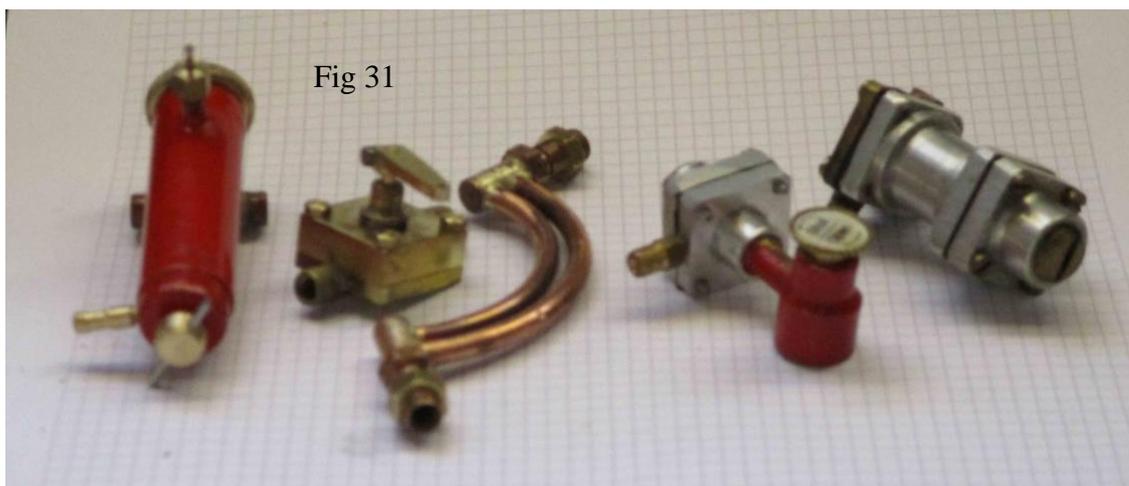


Fig 31

These were followed by the displacement lubricator, the regulator, the superheater and the gas regulator and attenuator, (Fig 31). In addition there were numerous small items such as union nuts and

sealing cones. The designs for some of the items mentioned above can be found in members articles on the society web site, often in a slightly modified form.

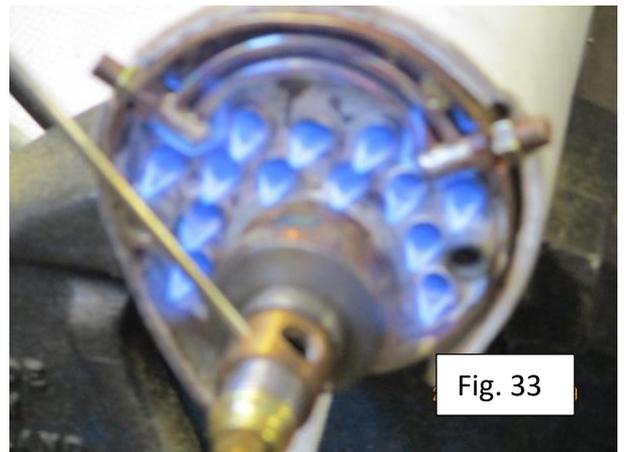
Attention now turned to the boiler shell fittings. The end covers were made from discs of thin stainless steel sheet with a flange formed in the same way that those on the boiler itself, except that there was no annealing and the flanges were kept very short – only about 1/8" – as stainless steel does not take too kindly to being formed with a hammer. The one at the non burner end is just a plain circle, held in place with three bolts which are screwed into brass angles that are held on to the boiler shell with short countersunk screws.

The cover for the burner end is more complicated having four holes in it – two smallish ones for the lower water gauge fitting and the water feed, one large one for the main flue and a slightly smaller one for the outlet to the funnel. Onto this last one was silver soldered a couple of slightly modified 90 degree plumbing bends leading to the funnel. Figs 32 shows the end covers



Now comes the lagging and cleading. The lagging is 1/8" ceramic material and the cleading is 1/32" ply. I always struggle with getting the cleading to fit nicely, and this time was no exception. I originally intended to make it from some thin tinplate I had, but after making a right mess, decided to go for the plywood. Four bands clamp things in place and also clamp the mounting brackets in place.

The above was to be shown in Fig 33. But before that I decided to make sure that the burner would light up OK. With previous boilers I always lit at the top of the funnel and the flame would pop back and light up properly in the main flue (see Fig.24 in the previous article). So, with all the relevant parts in place that was what I did. Well, it did light, but didn't sound quite right. Then I noticed flame coming through the small gaps around the end cover at the burner end, and the cover at the other end which should have been very hot and discolouring was cold. Shut it down quickly! I took the burner end cover off and lit the gas coming out of the return tubes. This is now Fig 33 and you can see what looks like a whole lot of small blowlamps. By turning the gas down very low, the flames could be persuaded to go back and light up in the main flue, but this was not going to be an option in the finished plant as most times the flames went out rather than back to the main flue. Sorry about the photo, the camera wouldn't seem to focus properly



Considering what to do, I have decided to mount a piezo lighter so it sparks just at the exit of the main flue. At the moment I am waiting for this to arrive, and in the next instalment will report on success or failure.