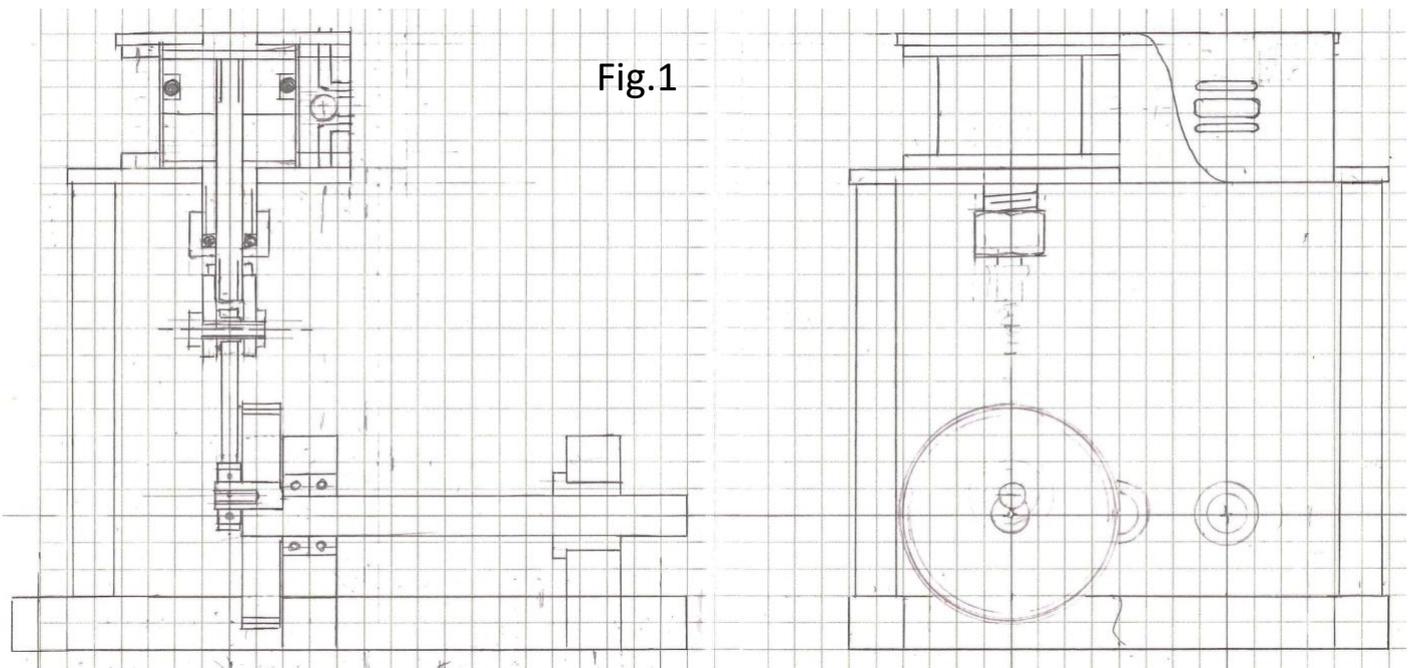


## The Streamlinia Project (2)

**Now to the power plant.** This will be gas fired, and the boiler will probably be of the return flue type. I am aiming for something of about the same diameter and length as the original meths fired one. The engine will be a twin cylinder double acting slide valve design with the cylinders placed side by side and about twice the swept volume of the original. I've been playing with this design layout over the past year or so - you may have seen a couple of them at club nights.

As I want more speed, and the prop size is rather limited, just fitting a larger engine is unlikely to turn the prop much faster so I will be driving it through a step up gearbox. The actual ratio will be the result of experimentation. I can make the gearbox so that it can be fitted with a range of ratios.

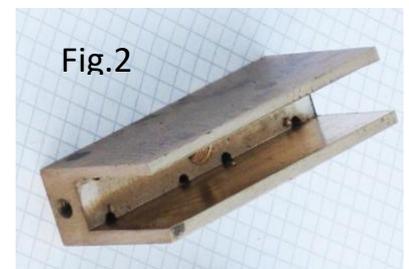
±The first item to be made is the engine. The bore is  $5/8$ " and the stroke is  $0.2$ ", and as mentioned it is a side by side slide valve twin. A very basic general arrangement is shown in Fig.1 . This is shown drawn on  $1/8$ " grid to give you some idea of it's size. As reproduced here it is rather larger than full size. The actual height is just under  $3$ ". Note that this is not necessarily the final design and already there have been some detail changes. With a bit of luck this will be updated as I progress.



The first part to be made was the bedplate. This is from  $1/4$ " dural. It was milled to shape on the milling machine and all the drilled holes were located using the digital readouts fitted to the machine – the best accessory I've ever added.

This was followed by the four cylinder supports. They are  $7/23$ " dia. mild steel,  $2$ " long. The length is nominal – say within  $1/32$ ", but they must all be the same length  $\pm .001$ " seemed about right. Each end was drilled and tapped 6BA about  $1/4$ " deep and one end reduced to  $3/16$ " dia. for a similar length. A length of 6BA studding projecting  $3/16$ " was loctited into each end and a  $3/16$ " length of  $1/4$ " AF hex steel was loctited onto the top end of each support so I could tighten them into the base rather than use some pliers!

Next was the cylinder block – the most complicated part of the whole engine. The main part was a piece of brass  $2$ " X  $1$ " X  $1/2$ " machined to a deep U as shown in Fig. 2. This was soon rejected because whilst I was drilling some of the holes for the bolt holes I managed to break a tiny drill



and there was no chance of getting it out. So to the next piece of brass and with much more care all the required holes was completed.

The actual cylinders are pieces of thin wall brass tube, 5/8" bore. The block was set up to bore the holes for the tubes (Fig. 3) which were then gently pushed into place and penetrating Loctite applied to all the joints. It was then time to machine the ports and transfer passages. The inlet ports are only 1mm wide, the exhaust 2mm and the vertical transfer passages are 1.5mm wide. Lots of care and concentration here!

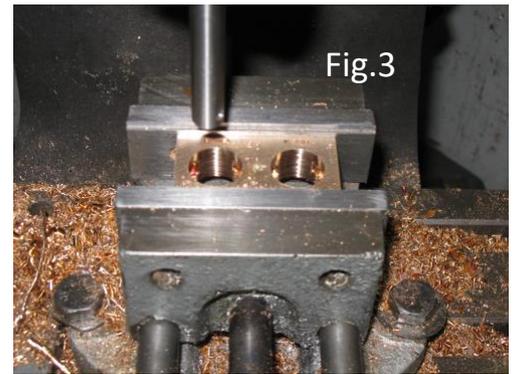


Fig.3

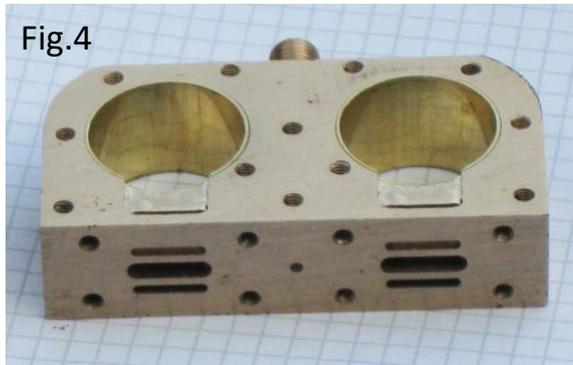


Fig.4

The exhaust exits between the cylinders. I've found an excellent supplier of suitable tiny milling cutters, They are carbide and in my opinion are much better than the so called "throw away" cutters and are around the same price. The finished block is shown in Fig. 4

The top and bottom covers of the cylinder block are made from 2mm thick brass. After being machined to size, all the holes were located by coordinate drilling (that digital read-out again). The radiused corners on the block and top cover were 'machined' on a sanding disc using a fitting with an adjustable centre that I made years ago seen here in Fig.5. It's a bit crude, but works OK. Needless to say, the exhaust stub was not in place as the block was swung around against the sanding disc.

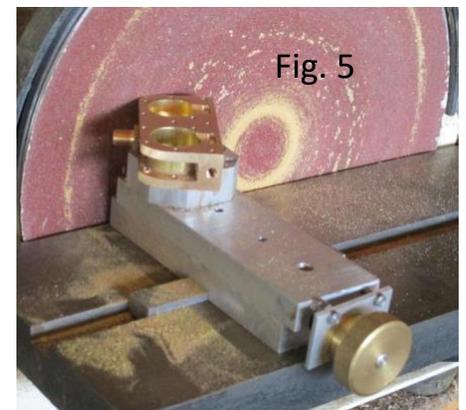


Fig. 5

Next was the steam chest and it's cover and the main bearing blocks. These parts are shown in Fig.6, but as yet are not quite finished.



Fig.6

Figs 7 & 8 show the engine assembled so far.

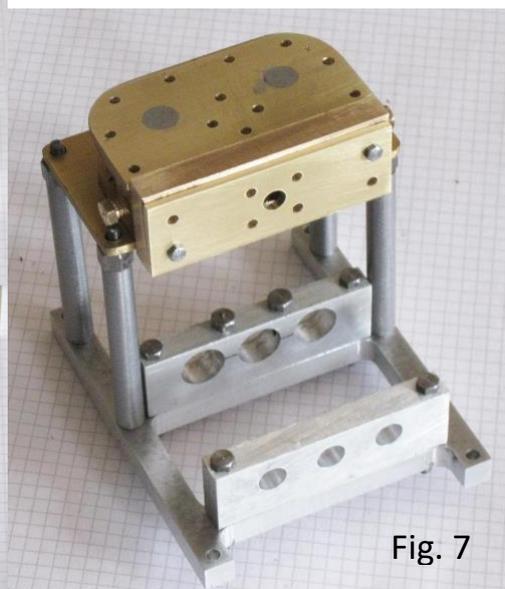


Fig. 7

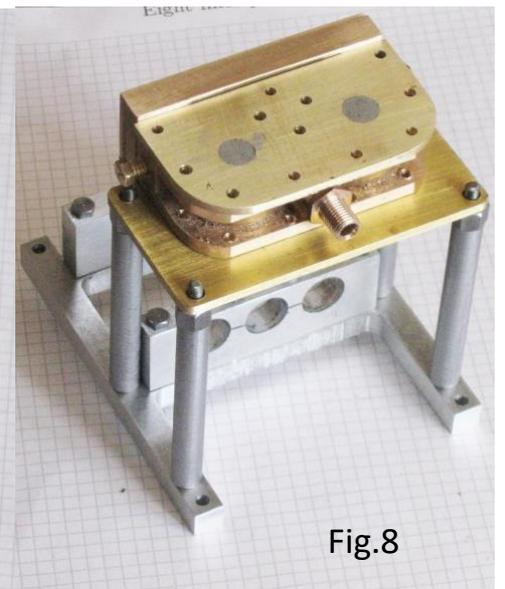


Fig.8

Next time, well on the way to a working engine – I hope