

Simple boiler from pressure cooker

I wanted a simple boiler to run my small oscillating steam engines on steam instead of running them on compressed air. These small oscillators doesn't need much steam pressure to run, 1 bar or 15 psi is enough. To buy a ready made boiler is expensive and even if you made your own from copper tube the price of just the copper tube would be approximately the same as you would pay for a simple pressure cooker.



And the pressure cooker comes ready with a safety valve, the only thing you need is to drill a hole in the lid for a steam connector. I made the steam connector from free-cutting stainless steel and used a fairly thick plumbers PTFE tape as gasket material, the steam connector can also be plugged so the pressure cooker can still be used for cooking food. It has worked well for my modest needs.

The idea isn't mine, I found it on the web. It is described here:

<http://www.tngun.com/diy-steam-engine-boiler/>

Steam connector

I used some free-cutting stainless steel (303) to make parts of the steam connector, I bought a stainless steel knee with 1/8" x 28 tpi pipe thread, this is easily available where I live.

To drill the hole in the lid of the pressure cooker I placed it upside down on a pile of old newspapers and used a handheld drill with a TiN coated twist drill to drill a pilot hole. I then used a step drill to enlarge the hole so a male 1/8" pipe thread could just pass through. Then the edges were deburred.

Fig. 1 shows the main part of the connector, it is a simple turning job. It is made from 303 free-cutting stainless steel, the 28 tpi thread is screwcut in the lathe almost to full depth, I then used a die. It is drilled through 4.3mm and tapped M5 at the bottom for a depth of about 6mm. The M5 thread will take a plug when the pressure cooker is used to cook food, it is removed when the pressure cooker is used as a simple boiler. The flange is given a curvature to match the curve of the lid, I did the same for the washer. The part with the 1/8" x 28 tpi threaded part is inserted through the hole

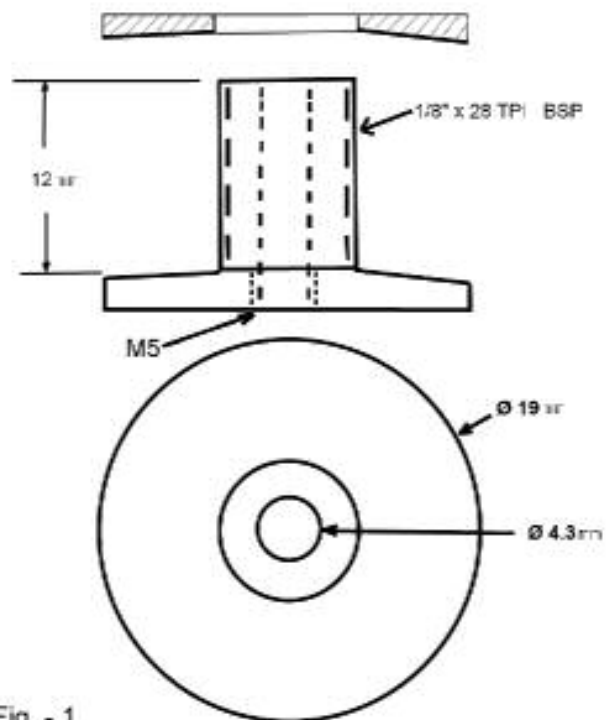


Fig. - 1

in the lid with a PTFE gasket, then a PTFE washer on top of the lid, then the stainless steel washer and the knee, see photo. I used plumbers PTFE tape on the male thread before attaching the knee to get a steam tight connection.



I decided to make a flange to connect the steam pipe to the knee. The flange has 3 holes threaded M3 spaced 120 degrees and a spigot threaded 1/8" x 28 tpi to enter the female thread in the knee, see photo. I used plumbers PTFE tape here also to get a steam tight connection.



I use a paper gasket between the two flanges when connecting the steam pipe. My small oscillators run well on this set-up.

