

THE ROCKET STOVE

A BASIC PRINCIPLE

if a good air flow can be created at the burning point of a wood fire then very little smoke will be produced and the heat of the fire can be directed to the point where it will be most effective ... ie the bottom of a pan.

There are many different looking rocket stoves and they can be made from many different materials.

What they all have in common is that they all have a tube in which a fire is built in such a way that air is able to flow under the burning end of a length of fuel which is only burning at this one end.

The fuel is thin sticks and kindling which hopefully you can 'make' yourself it gets quite expensive if you buy it in ready made (but that's my preference I like to pay nothing to boil my kettle and cook my dinner when ever possible). Of course thin is a relative term, if the rocket stove is only the size of a can of beans then thin is ...
But if your rocket stove is the size of a dustbin then small is of course much larger.....

WE ARE GOING TO MAKE A MID SIZED ROCKET STOVE

it's a template for making whatever size of stove you require to meet your needs

THE MATERIALS ARE

Two litre veg oil cans (Often to be found at large catering establishments or anywhere where chips are cooked for the public)

A length of stainless steel bendy duct pipe ... the sort that is used to vent the smoke off a wood burning stove ..and was/is used to line chimneys where a gas fire is installed. We are going to need a piece at least a third longer that the height of one of the cans (as above)

Enough vermiculite to fill one of the veg oil cans ie

This will make a very light weight rocket stove....

I have however filled stoves with sandy garden soil, sand, fire ash (which if used ensure that all bits that could combust are first removed) NOTE a heavy stove will hold heat very well and a lightweight one will not ... so if you want to maximize yield a heavy one will keep a small space warm for quite a while after the cooking is finished.

TOOLS

A decent pair of tin snips

A pair of welders gauntlets per person(very useful for when you are cooking, also the stove will get hot eventually so if you need to move it they will be very helpful)

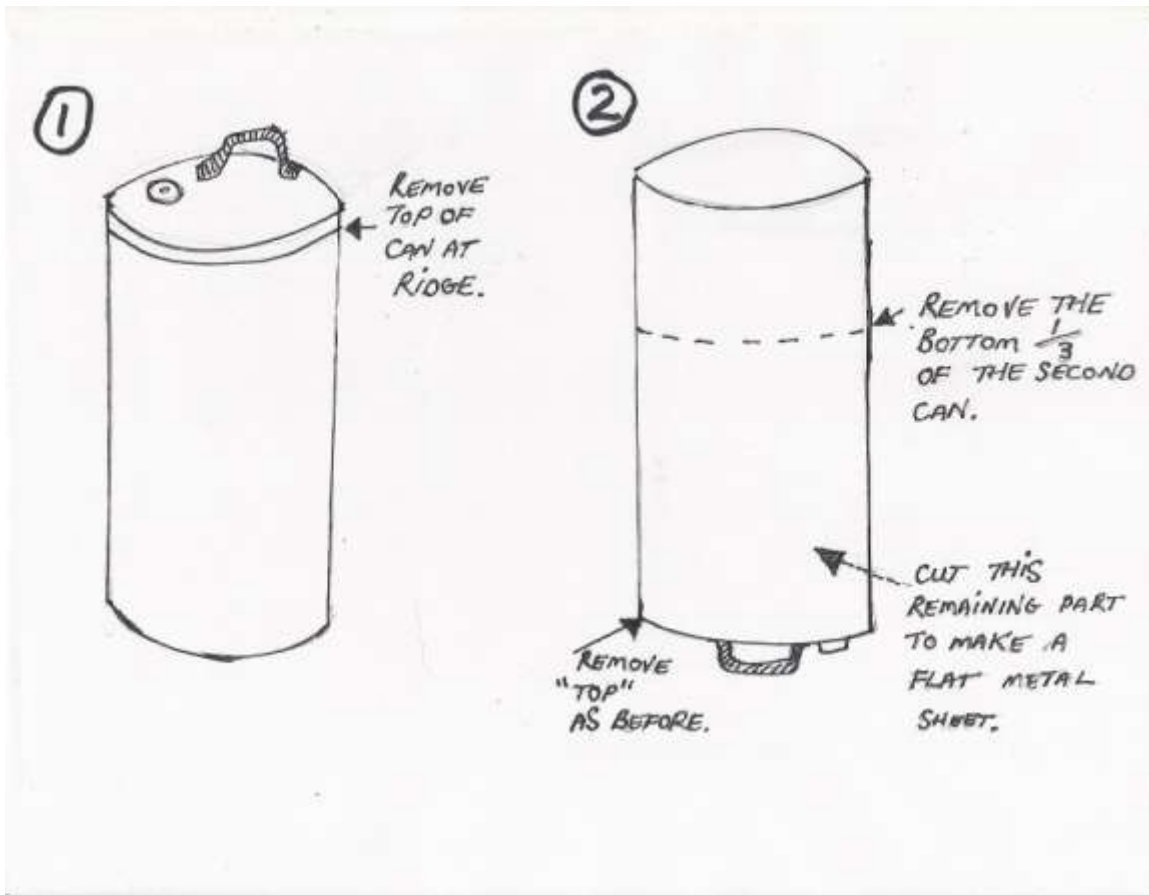
A hammer

A 4 inch nail/ 10cm

A metalworking file

Both of the veg oil cans need cutting if they are the standard can variety; the tops have a handle and a spout which are just in the wrong place for our eventual needs.

Cuts need to be made as the following diagram shows.



Using the nail mark the cans as above this will be the line along which you will be cutting.

Using the hammer and nail - punch a couple or 4 holes in a straight line and big enough for you to get the 'nose' of the tin snips in to begin cutting along the line.....

PUT YOUR WELDERS GLOVES ON.....

once you begin cutting the edges will be very sharp and dangerous without the proper clothing ... the welders gloves will also cover your wrists - an area without which you could be in danger of cutting quite badly.

The cans will tend to squash a little as they are not designed for this process but eventually with a little help from your friends holding the can whilst you cut (and also wearing gauntlets) you will have the two basic parts which will be the container for the burning tube.

A bit like this which shows a stage a little further on but shows the two parts very nicely



The two parts will be very sharp so keep the gauntlets on if you are handling them... you can at this point file off the sharp bits with the metal file, hammering along the edge is also useful as flattening the sticking out bits can save a lot of time; filing can be a slow process, but as you will be handling these pieces quite a bit it will be well worth it from a safety point of view.

The next stage is to make the two parts like the two in the picture.

Starting with the smaller part we need to make a hole in the centre just big enough to fit the tube through. Get the tube and hold it onto the top so it is central and with the nail draw around it. In the centre of the marked circle bang a couple of holes in order to get the tin snips in and cut from the centre to the line you have marked, do this again.. pushing the triangles of metal though to the back until you have cut the entire circle. When turned over you should see the lovely sun like pattern you can see in the picture above. Try pushing the steel duct pipe through the hole to ensure it's the right size.... It mostly will be too small and this is good. A snug fit is good so the tube eventually wont wobble about or filling fall out when the stove is complete.

To make the hole wider use the hammer to beat the edges .. I find it best to use the edge of the hammer or if it has one of those round ends then use that...

Bang gently in the mid point of each of the triangle parts this will make the edge go from being straight to being more curved... do this all the way round and keep checking to see if the tube will fit.... When it does its time to move on to the next stage.

It is important that when you make the hole for the tube on the front of the tall can that you leave enough space to put some of the insulating material below the tube when you put it in (if you look closely at the can you will see also that the bottom comes up slightly higher than the bottom ridge of the can so take that into account too) I find 2 to 2.5 inches is good (5 - 6.5 cm) this will also stop heat being transferred into the ground or whatever you place the rocket stove on when you are cooking with it.

Use the same technique as before to mark the position for the hole but be aware when you are banging the nail through or cutting – the can will be much more bendy ... also when reaching into the can to bend the triangles back be very aware that you are reaching into a much deeper space and if you are not wearing long sleeves as well as the gauntlets then you could be risking cutting your arms - so be careful.

Use the same techniques as before to make the hole perfectly snug for the tube to go in AND NOTE the hole on the upright part of the can is going to let the insulating material fall out if the gaps are too large so try and get it fitting pretty snug..

The can parts now need a couple of finishing touches.

The two parts need to be pushed together to form the body of the stove but you will soon notice that two cans of the same diameter will not easily push one inside the other, the 'top' which is going to be the inner needs to have at least one and at a push two cuts –

[It is best to make one cut as when the base is filled at a later stage (especially with vermiculite) there is a tendency when fitting the lid part for it to get jammed by the resistance which the filling will produce against anything being pushed into it]

The cut will allow a slight amount of squash to its diameter and this will give just enough difference to its size to fit the top into the bottom.

The cut/s need to be made from the cut edge straight toward what was the base and can be seen in the photograph above. The cut/s should be no longer than half the depth of the lid. A short cut is best... experiment with one cut of 2cm first and try to push the top into the unfilled base. You may need to use quite a lot of pressure