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Peyo Revolution Stove

Peyo

- Skills and guides - DIY, Making things. -



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Description :

This is the result of my search for a perfect alcohol stove: effective, fuel economic, strong and easy to build.

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Peyo Stove Revolution (PRS)

Very young already I liked to build things with my hands, and very often I noticed that the object I realized had a taste of exception. When I began the MUL (Ultra Light Backpacking in French) I had considered that many practices carried out themselves some of their accessories. I could simply give you the instructions on how to build a stove with alcohol with two cans as one can find some on the Web, but I believe it's not quite as interesting to know holding them and the outcomes of the thing.



1. Why build your own alcohol stove ?

Some good reasons:

- Cost: Zero euro
- Extreme lightness of the stove (15g = ½ oz)
- Lightness of the fuel, ratio of burn time / weigh (as compared to gas)
- Fuel available everywhere
- One can choose the suitable container for fuel
- No need to carry a full cartridge and another half empty.
- Pleasure of making my own stove
- No moving or clogging parts and robust design (even dented my stove works)
- If it becomes too much damaged I can remake of them one with my knife and two cans

2. The process of creation

I almost tried all the existing stoves (open jet, stove under pressure, side burner, ion, photon, pepsi can stove....), I always sought for the world's wonder: a stove which would need no additional support (thus a side burner), effective, not too greedy on fuel, light (when the stove exceeds the weight of certain gas burners I see no interest), sure and resistant.

As one is better helped by himself (*ndlr French proverb*), I decided to adopt the characteristics which interested me in each already existing stove:

- Side combustion of Side burner <http://zenstoves.net/AtlantaStove.htm>

Peyo Revolution Stove

- Alcohol under pressure of a Pressured Stove <http://zenstoves.net/BasicPressureB...>
- Ergonomy and facility of assembly of the Convex stove <http://marquardts.org/mindspring/ca...>

I mixed everything in a bag and the PRS was born !



I have tested it and it exceeded my hopes. It is:

- Resistant (more than a Pepsi stove)
- Not too greedy for fuel (20 ml of alcohol for 6 minutes of heating)
- Super light (15 gr. with its ignition base)
- Effective (+/- 4 minutes to boil one pint of water)

And in more it is beautiful!

3. Necessary tools and material

- Two cans
- Office Scissors
- Pin with a wood piece or a small punch
- Paper sheet with small squares
- Normal Scotch tape

4. Assembly instructions

Can Cutting

1st can = Female part the stove

- Take the first can, glue a 5mm graph paper band on side (but of the 4 mm also works) aligned from the bottom of the can.

The squares must be quite parallel with the base. They will allow to make a series of holes regularly aligned on it, all around the can.

- Once the paper is holding (use a lot of tape so that the paper does not move), measure 4 cm from the base and made a mark on paper. From the bottom, count 3 squares up (1,5 cm) and make a series of holes (with the small punch/pin), 1 square (0,5cm) spaced. It being a pressure stove, the holes should not be too large (the diameter of a pin).

Peyo Revolution Stove

- Then cut the can to 4 cm from the base (that is to say at the mark you made) starting from the base. It will be the female part of the stove by which the flames will leave (now a small a 4 height cm cup) This is the first part (female) of the stove is finished!

2nd can = Male part the stove

- Take the second can, to cut out it to 2,5 cm (1 inch) starting from the base. It will be the male part of the stove which will go inside the female part.
- Then to make 3 similar holes in the groove at the base of the convex part. The holes are laid out in an equidistant way in equilateral triangle. They are the holes for filling the stove.
- You have your cup in hand. Imagine that is a face of watch. At each full hour, (midday one hour, two hours, etc.) make a notch of 5 mm to the chisel. Then remade a notch with each half hour.
- Fold each notch to the outside, a little lower than horizontal. That must look like the petals of a flower.

Assembly

Here is the simple part of the work. For those which have already made Pepsi Can Stove, they know that imbricating two parts of cans together is quite difficult and often deform the stove (often with escapes). Here is the technique based on the technique of Convex stove (see higher link).

- Take the two parts, their convex face up.
- Places the male part on the table and cover with the female part (in a well balanced way)
- Gently (but surely) press down, so that the part male penetrates completely into the female part up to the level of the notches.
- Fold down the outers flaps against the inside of the female part.
- The Assembly is finished. Be careful however that the male part do not come to block the side holes of the female part.

Your stove is finished!

5. The making pictures

The necessary material

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Cutting

Stick a paper band of 4 cm with dimensions on one of the can and of 2,5 cm on the other.



Cut following the edge of the paper band with the help of a cutter. It is necessary to make several turns with the point of the blade until it penetrates without forcing and avoid crushing it.

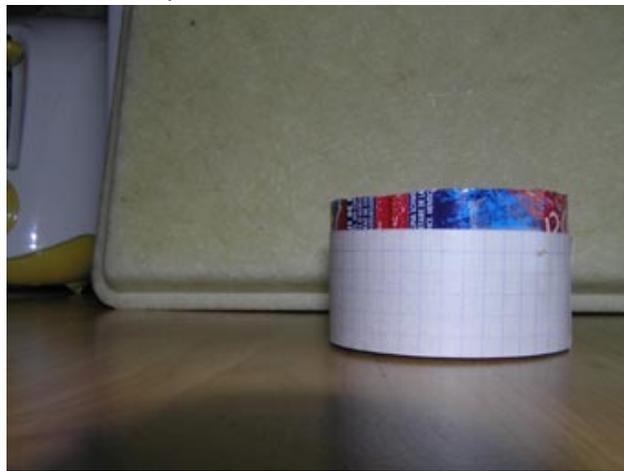


Peyo Revolution Stove

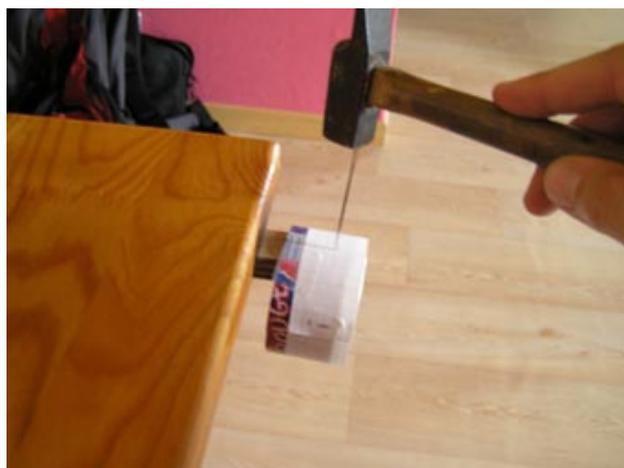


punching holes

Glue a 5mm graph paper band on the female part.



Lay the inside of the female part on a wooden anvil. With the help of a fine needle, punch a series of very fine holes every 0,5 cm and from 1,5 cm of the bottom.



Peyo Revolution Stove



Assembly

Lay the male part flat (left convex in bottom), and lay the female part top and support gently with the flat of the hand.



Finish

Carry out notches every 0,5 cm on the top of the PRS with scissors. Then fold up the strips toward the inside. Flatten them well with a grip.



It's finished !

6.Fuel and ignition

- Take a small, slightly hollow metal cup (lid of jar of jam, melts of limps of preserve or simple sheet aluminium doubled and formatted)
- Place it under the stove
- Fill the stove with 20 ml of alcohol to burn .

The filling of the stove must be made gently to leave time with the 3 small holes to let the liquid fill the inside of the stove.

Larger holes would make easier the thing but would put the pressurization at evil.

- Add alcohol in the cup under the stove which will hold place igniter (alcohol stove will be heated then vaporized thanks to this lighter).

Peyo Revolution Stove

This pre-burner is the indispensable condition of the ignition: too little alcohol in the cup and the stove will not burn; too much alcohol in the cup and combustion will be too strong at the start will waste alcohol which will not be used in an optimal way for the heating of the pan.

"Set the pan on the stove



Make your first tests, fill it operate it, shutdown the light and you will see at which point it is beautiful working stove.

Combustion is done in three phases but is more regular and moderate than a Atlanta Stove.

- 1st phase: Light the cup, during 10-20 seconds it will heat alcohol inside the stove.
- 2nd phase: The alcohol in the stove will vaporize.
- 3rd phase: there is no alcohol in the cup: combustion is stabilized and will remain similar during all combustion and this, until its extinction.



7. Safety Concepts (empirical)

It not a stove under real high pressure, the dangers of explosion are quasi nonexistent (avoiding too much alcohol in the cup). However it is necessary to comply with some rules and to know some tricks:

- Fire burns
- 3 small holes of the top create a flame of 20 cm when one thus removes the pan of the stove attention to your hair or your shelter.
- The stove makes larger flames if it's is moved during combustion
- Flames are blue and difficult to detect in strong light (under the sun).
- During your tests at home: always use a wooden plate under. The stove isn't too hot at its base but we never know.
- Of course use this stove in a place with air supply.
- Always have within reach a metal container or a resistant rag to choke the stove in the event of problem. Water do not extinguish this style of stove but on the contrary makes it more unstable.
- If your dish is not cooked and that combustion stops, check well that the stove is extinct before restocking it with fuel.

The largest danger is to pour fuel whereas the stove is not extinct: burn and explosion could happen in your fuel bottle.

- A bottle with a spout makes the filling easy and surer because that avoids spilling the alcohol.
- Pay attention not to have alcohol on the hands (or worse on clothing). The flame is blue and when the feeling of burning is felt, it is already too late.

"After thousands tests,i know this stove is secure but you know..... you use this stove at your own risks and dangers...so be careful!

Enjoy