

Optimum shape of a pop-pop engine?

(For rigid engines not for diaphragm ones)

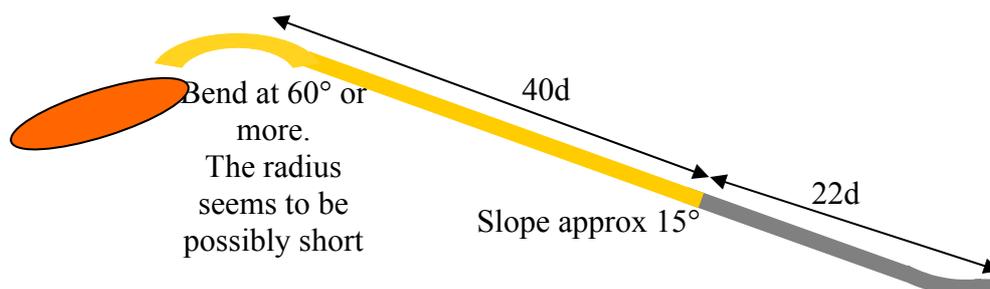
Criteria to be fulfilled if possible: Some of these criteria could evolve with the knowledge of pop-pop engines.

- (1) Evaporator able to store heat (constant power).
- (2) Evaporator able to transfer intermittently (almost instantaneously) much heat.
- (3) Nozzle (even if its diameter is the one of the pipe) horizontal in order to exert a horizontal thrust.
- (4) Long length of the pipe with slope down towards the nozzle to store the « water snake » and to limit the gas vents.
- (5) As few accidents as possible on the part of the pipe which contains liquid water to limit pressure losses.
- (6) Heat losses between hot source and cold one by conduction of the pipe to be limited.
- (7) Evaporator volume to be limited (because the thrust is inversely proportional).
- (8) Evaporator exit going up. In fact it is to ease the water drops climbing down towards the evaporator.
- (9) Length of the pipe from its upper point to the nozzle equal to approximately 62 times its diameter.
- (10) Distance between cold source and hot source to be approximately 40 times the diameter.

Practical application:

- (1) (2) and (7) → Evaporator made of copper with large heated area and small volume.
- (5) → Long bending radius between nozzle and pipe.
- (6) → Upper part of the pipe to be thin and made of stainless steel, steel, possibly brass, but avoid aluminum and most of all copper.
- (10) → Lower part of the pipe made of copper or aluminum... or materials that are less heat conductor (for instance the one used in the upper part) if this lower part is immersed.

Design:



The rest is to be decided by you as you feel it.

Example (questionable):

