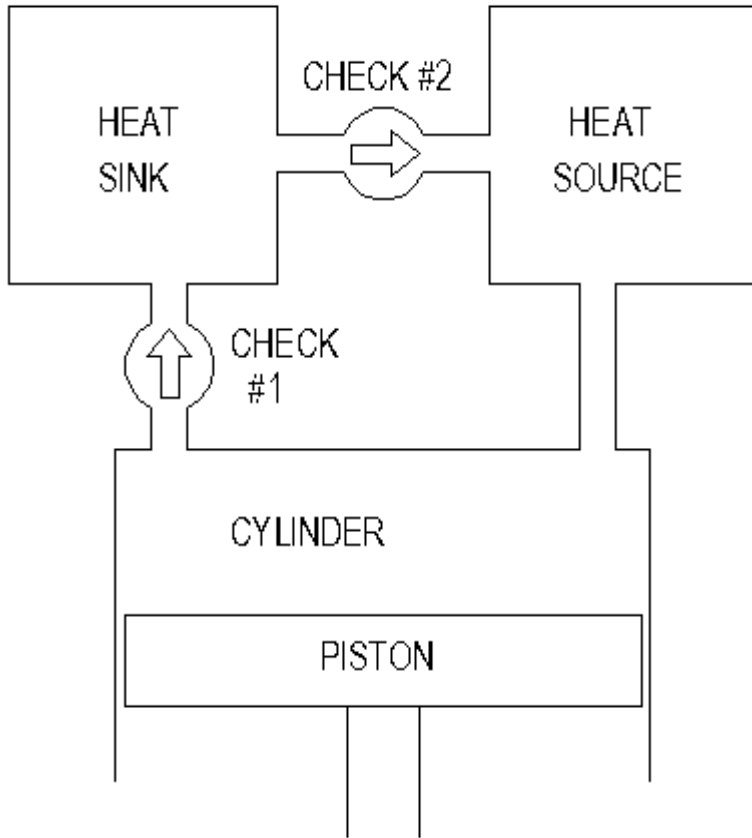


## Check-Valve-Engine

OK, so I have neither made one, seen one, or even heard of one, but this next one is still an interesting idea. I must allow that somebody else somewhere in history may have already invented it, and that I'm merely laying claim to somebody else's brilliant or stupid idea. I was contemplating ideas for simple positive displacement engines, and this is what I came up with. This engine consists of a piston and cylinder, two check valves, a heat sink to cool the air, and a heat source to heat it. While



referencing the drawing, consider the following:

1. When the piston travels upwards air tries to enter both the source and sink.
2. The source doesn't want any however because as it tries to enter it expands and is forced back out.
3. When it enters the cool side however (the heat sink), it begins to contract and really sucks, while check #2 keeps any of the hot air from taking a shortcut over to the sink.
4. As the piston begins to withdraw, cool air is drawn through the heat source and begins to expand, but check #1 does not allow this pressure to return directly through the heat sink. This directs all the cool air through heat source where it expands to drive the piston downwards.

## Passive Solar Air Compressor

Squarely in the "random idea" camp, consider a passive solar-powered air compressor. Place a series of tubular tanks side-by-side in an east-west line. They are connected to each other by check-valves that allow air to flow only from west to east.

The west-most tank also has a check valve that allows outside air to enter, but does not let it escape – its air can only escape into the tank immediately to its east. The east-most tank has a fitting to allow the use of compressed air.

Above this row is a shade with slits in it that allow the sun to heat every other (or third) tank at a time as the sun progresses across the sky. As each tank heats it dumps its expanding air into the tank east of it that is in the shade, and then as the shadow moves eastwards, it cools to receive air from the tank to its west.

The pressure would increase in each tank in sequence from west to east. This arrangement would be a little more effective if the tanks were placed in a semicircle where each one was the same distance from the slits. If the slit were covered by a Fresnel lens, heat could be concentrated, and the tanks could all be in the same plane.