This is a supplemental MIDGE building instruction, which includes some small modest modifications that I have made to Chris's original elegant design. Note, that I have not include information on the sizes or numbers of the various holes that need to be made in the cans. Those can be found in Chris's original MIDGE instructions (see "The Complete MIDGE"). There is very little difference between this and the original. It only extends the Burner Cap, for improved insulation, uses a variety of interchangeable Burner sizes, and has a can as a Burner Stand. Except for the increased insulation, the function is straight original MIDGE. I have not yet been able to improve on it.

Cans.....

Cowl:
-This is 4¼" dia x about 7" tall.
-A standard 46oz juice can or equivalent.
It gets holes punched in it sides around the base.

Burner:
-This can be a 15oz vegetable can, or a soup can, or even a spaghetti sauce can. There is wide latitude in size for this one.
-It gets the bottom punched full of little holes, so air rises through. It could even have the bottom cut out, and replaced with a big screen, like ¼" hardware cloth.
Small holes get punched all around the side, at the top.

Burner Cap:

This can needs to be just slightly smaller
in diameter, than the cowl, so that it will
fit down inside of the cowl.  A large tuna
can (12oz) or a large refried bean can,
or a variety of other cans will fit there.
I like a tall can, because it adds an additional
layer of air, and another shiny metal surface
for radiant insulation. That will make the
fire hotter, and keep the inside of the cowl
shiny longer, for a cooler exterior surface,
The burner cap, gets a hole in the center of
the bottom. It can be about 3" dia, or smaller.
I have not experimented with a lot of sizes.

A quick note on insulation:

 This stove works on a few different insulation
principles that most of us are not used to thinking
about.  It uses no standard insulation materials.
Instead it has layers of shiny metal, that have a
low value of "emissivity" which is a fancy word for
saying that it reflects the heat back. That reduces
its radiant heat loss, and keeps the fire chamber
hot.  The air spaces do the rest, but these air
spaces do not just slow the heat from getting out,
like most air space insulate. All these air spaces
are preheaters for the combustion air, so they also
carry the escaping heat, right back into the stove,
to make the fire hot enough for very good combustion
and gasification, even though there is no conventional
insulation used.  When the stove is fresh and shiny,
you may even be able to pick it up with your bare
finger for a few minutes into the burn (this would
be your responsibility, not mine).  Once the surfaces

get dirty, as happens very quickly to the burner, the
radiant insulation effect is greatly reduced. However,
the other cans stay shiny for a while, and are easy
to replace, so you can keep the insulation value
high if you care to. The Cowl is kept cool by the
fresh air being drawn in. Once the fire goes out,
the temp of the Cowl may actually get hotter.

That is the three main cans.
There is another can which I use:

Burner Stand:
A standard 6oz tuna can, with a bunch of holes
in the sides and bottom, as a stand (bottom up)
for the burner to set on top off.

Assembly:

1)The cowl sets, open end up.
2)The Burner Stand get dropped,
(open end down) into the cowl
3) The burner sets on the stand
(open end up)
4) The burner cap is dropped
down (open end down) over
the burner, inside of the cowl.

That's it....

To operate it.

1) Fill the burner roughly half full of fuel.
As you may have read, the fuel can be
sticks, wood pellets, or even shredded

junk mail. Many choices, but start with
these first. It needs to allow some air
flow, but need not be loose.
2) With the burner cap in place, light
the top of the fuel.  It may need some
help. I use a little crumbled candle wax.
3) You will get a little smoke at first,
until the gasification starts. It may take
two minutes. After that you will see
some blue flame that looks like it
is coming from the secondary air
vents around the perimeter. That
is your WoodGas, burning as it
mixes with the fresh combustion
air.  You can look down into the
chamber, through the flow of the
WoodGas, to see the wood
being cooked, in the oxygen
deprived environment.

If you have any more questions,
just ask, in the forum.

-Laren-