Boats: 3. Simple steam boat

(Ireland)

Background

A lit candle will heat up a boiler of water creating a brief burst of steam that is expelled through the pipes in the rear of the boat. The force of the expanding gas (steam) pushes the boat forward.

You will need:

- ✓ Milk carton
- ✓ Stapler
- ✓ Sticky tack
- ✓ Tea light and matches
- ✓ Syringe
- ✓ Straws
- ✓ Empty soda can
- ✓ Sharp knife

Follow these steps:

1. To make the boat cut the milk carton in half lengthwise.
2. Cut a piece of the remaining carton to make a cabin for the boat.
3. Staple the cabin onto the boat.
4. Halfway along the boat make a small hole to allow two straws to pass through.
5. Cut the soda can so that you have a piece of metal 18cm by 6cm.
6. Fold this in half.
7. Cut a 1cm piece off three of the sides (not the folded side) of one of the folded sides.
8. Use sticky tack to glue the three 1cm sides as you fold these over the smaller half of metal. This becomes the boiler for the boat.
9. Roll the two straws in sticky tack and insert these into the boiler you have just made.
10. Insert the boiler into water and blow through the straws to ensure that the boiler is airtight and no air is escaping.
11. Push the straws through the hole in the boat and seal this hole with more sticky tack.
12. Use a syringe to fill one straw with water. Continue to fill water in one straw until water pours from the other straw.
13. Float the boat on the water.
14. Light a tea light under the boiler.

So what happened?

As the water in the boiler heats, steam will be expelled through the pipes in the rear of the boat. The force of the expanding gas will cause the boat to speed forward in the water.

What next?

Try making different shaped boats or boats from different materials that work on this principle.

Dynamics and Statics

Boats: 4 Steam boat

(Czech Republic)

Background

A lit candle will heat up water in the pipes, creating a brief burst of steam that is expelled through the pipes in the rear of the boat. The force of the expanding gas (steam) pushes the boat forward.

You will need:

- ✓ Sardine can
- ✓ Copper piping
- ✓ Metal piping, hacksaw, drill
- ✓ Syringe
- ✓ Hot glue gun
- ✓ Tea light and matches

Follow these steps:

1. Shape the copper wire around a metal pipe into a coil.
2. Use a drill to drill two holes in bottom of the sardine can, right at the back.
3. Push the ends of the coil through the holes.
4. Seal the holes with glue from the hot glue gun.
5. Use a syringe to fill one end of the pipe with water. Continue to fill this pipe with water until water pours from the other end of the pipe.
6. Float the boat on the water.
7. Light a tea light under the metal coil.

So what happened?

As the water in the metal coil heats, steam will be expelled through the pipes in the rear of the boat. The force of the expanding gas will cause the boat will speed forward in the water.

What next?

Try making different shaped boats or boats from different materials that work on this principle.