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Georgian science: Newcomen Engine



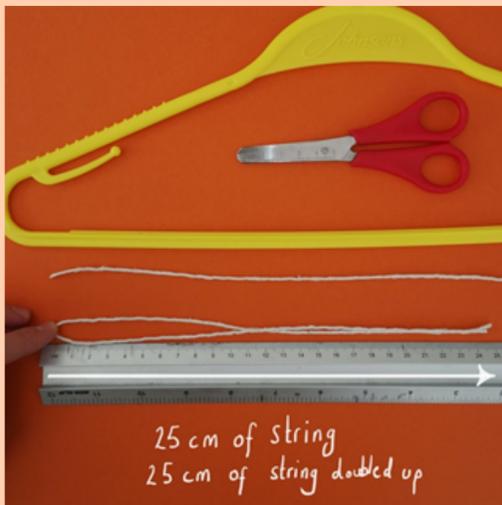
You will need:

A coat hanger
String or wool
Two large plastic
bottles, eg, a
pop bottle
Sellotape
Paper and pencils
Scissors
Ruler

The Newcomen Beam Engine is an important invention in mining history as it took water from the mines so that deeper mines could be dug safely. The engine uses steam which is cooled, which then moves the engine.

It's a bit like a seesaw, on one side is a bucket to collect water. On the other is steam.

Elsecar has an engine on its site and more can be found here:
<http://www.elsecar-heritage.com/newcomen-beam-engine>



Cut a 25cm piece of string. Then a 50cm piece of string. It's easier to double up the longer string against a 30cm ruler.



Asking an adult to help, cut your bottles in half. You need the top and bottom of the same bottle and the bottom half of the second.



With the longer string, loop it round the left side of the coat hanger, tie it on and then using tape, stick a piece of the string on either side of the bottle.



Tie the shorter string on the other side of the hanger and stick it securely to the lid of the top half of your bottle.



Cut out 4 squares from your paper and take a pencil or pen for labelling



Write two of your labels like this.



A day in the life of a Georgian child



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A picture of the
Newcomen Engine
at Elsecar Heritage
Centre



You can also see how
the mechanism works
here

https://en.wikipedia.org/wiki/Newcomen_atmospheric_engine#/media/File:Newcomen_atmospheric_engine_animation.gif



Stick one label on one side of the larger half of the bottle and the second label on the other side. In the Newcomen engine, this is where the steam is collected which then powers the whole thing to move and collect water



Write your other labels like this and stick them onto the piston and water bucket



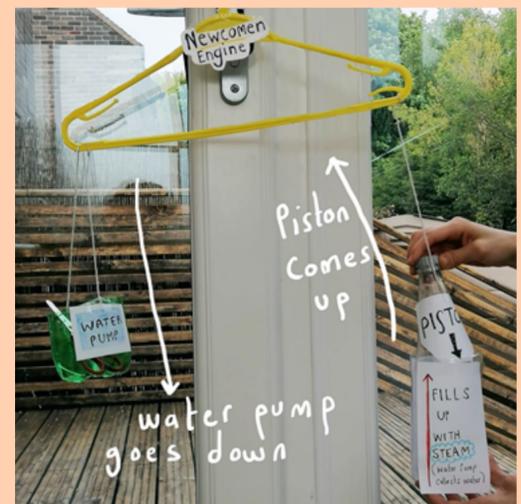
You can even make a sign for the top of the engine



Hook your coat hanger on a door handle or a picture hook and put your scissors or the ball of string in the water pump to add a bit of weight.



Take the steam bottle, turn the label that says 'Piston Moves Down' and push the piston down. In a real engine, water in this side is heated to create steam. Cold water is added and the steam contracts. This makes the piston move down and brings the water pump up from the mines. Like a seesaw.



When the steam builds up again, it pushes the piston up and brings the water pump down, into the mine to collect water. Move your piston up and see what happens