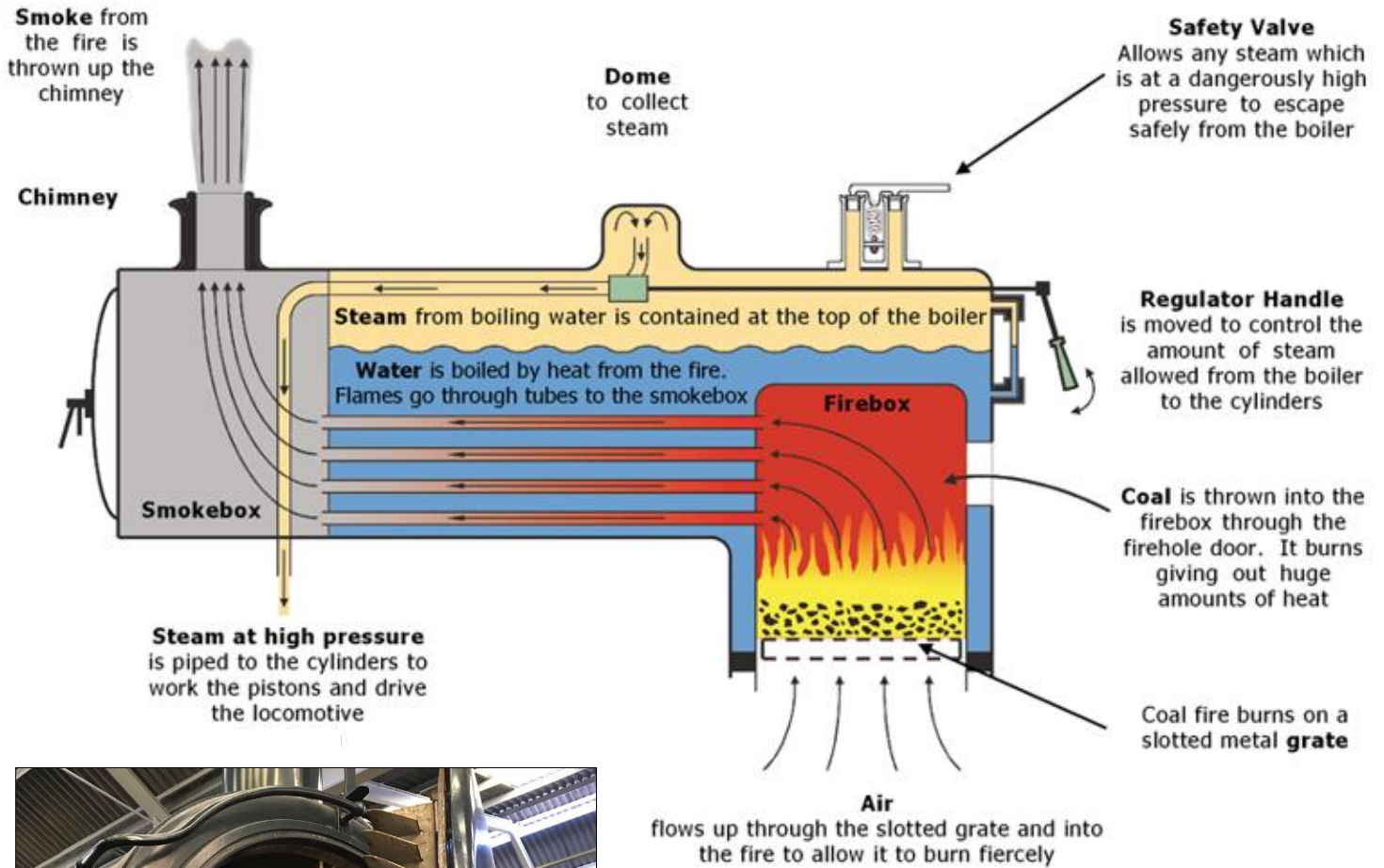


# How Steam Engines Work



This is what it looks like inside the smoke box. You can see the tubes which carry the hot gases through the boiler and the chimney which gets rid of the smoke and steam.

## Choo choo!

Steam engines make this noise because leftover or 'exhaust' steam is vented out through the chimney and into the air. It is under so much pressure, it makes the noise we are all familiar with.

A steam engine burns coal to release heat energy. It is also known as a heat engine. A steam engine is a bit like a giant kettle sitting on top of a fire. The heat from the fire boils the water in the kettle and turns it into steam. However, unlike in a kettle, the steam in an engine is captured and used to power the machine.

Steam engines need two essential ingredients; fire and water. The fire is made in the firebox, which produces heat to boil the water and create steam.

## Boilers

High-pressure steam in an engine comes from the boiler. A fire tube boiler was used in many engines during the 19<sup>th</sup> century. Fire tube boilers are made up of a tank (the main body of the engine) filled with pipes. The heat from the burning coal in the firebox runs through the pipes and heats up the water kept in the tank. The steam created from this is captured and sent down to a different part of the engine – the cylinder, where it is put under pressure and creates movement in the pistons which eventually turn the wheels of the engine! Phew!