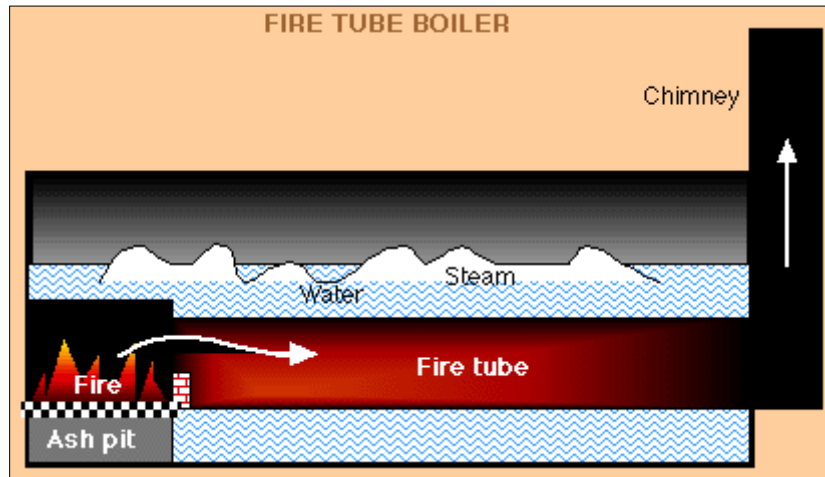


Coal Fired Boilers

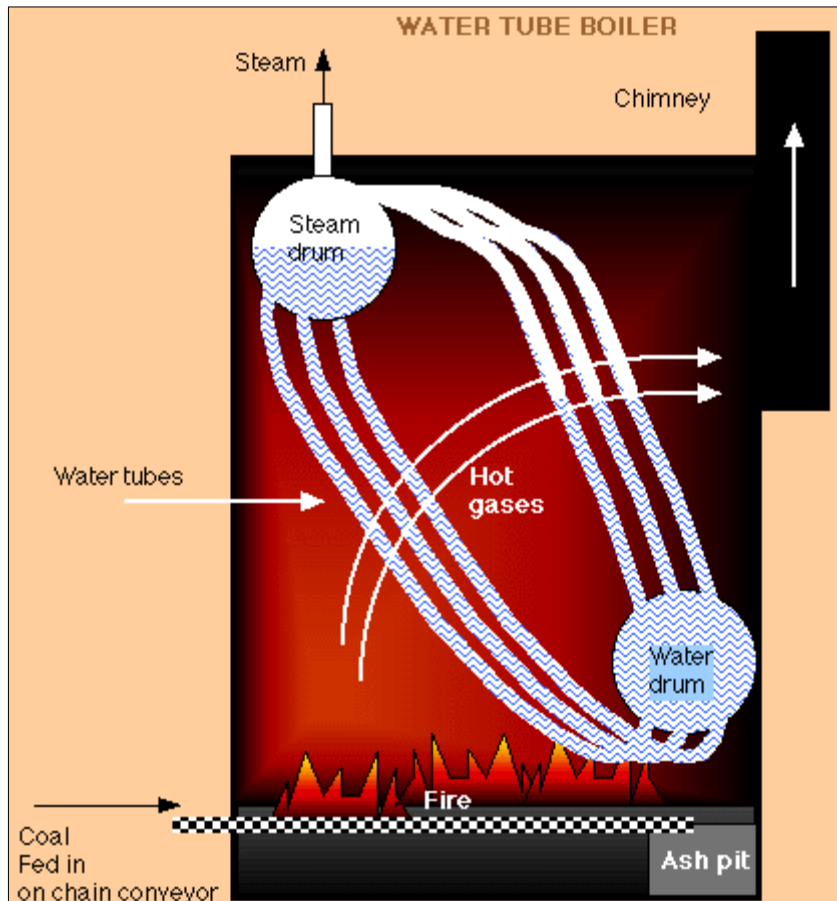
Coal-fired boilers are of two basic types: **Fire Tube** and **Water Tube**.

Fire Tube Boiler



The Fire Tube boiler has been constructed in many forms. The 'Cornish' boiler with a single large fire tube, the 'Lancashire' with two and the 'Locomotive' with many small tubes. The tube shape is best able to resist the pressure of the steam and by having many small tubes, the surface area available to transfer heat from the hot fire gasses to the water is increased.

Water Tube Boiler



The water tube boiler does away with the need for a strong outer shell to contain the steam pressure. Steam bubbles rise as soon as they are formed and cause the water to circulate freely around the pipework. Water and steam are separated in the steam drum.

Rapid water movement prevents a film of steam forming on the tube surfaces which would otherwise reduce heat transfer from the metal tube to the water. This not only improves efficiency, but prevents overheating of the tubes.

The scouring action also stopped the tubes 'scaling up' in hard water areas. Often an extra 'sludge drum' (not shown) was provided to collect this at the lowest point and was emptied regularly.

Reference:

<http://www.bathtram.org/tfb/tT111.htm>