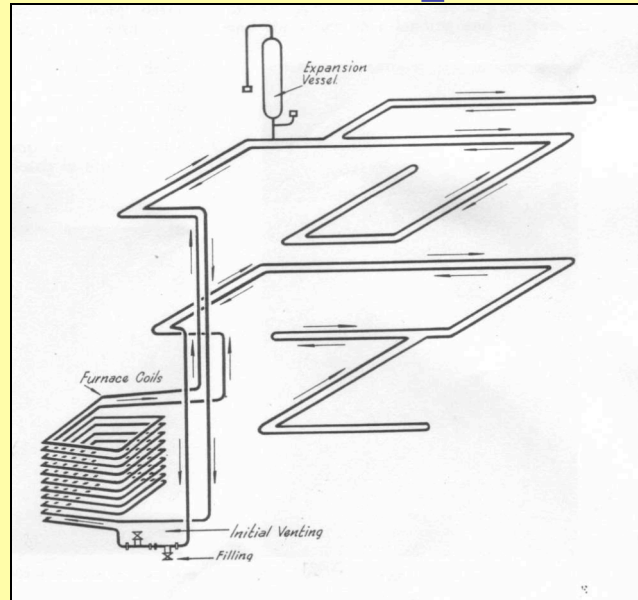


Hall of Fame

Landmark equipment that shaped the history of h&v

1831 – High pressure hot water heating system [Angier March Perkins]



Jacob Perkins was born in Massachusetts in 1766. In 1816 he moved to England and secured a number of patents relating to boilers, steam engines and, most notably, a vapour-compression refrigeration machine.

His son, Angier Marsh Perkins, born in 1799, also settled in England where he devised his system of high pressure hot water heating. It used 25mm seam-welded wrought-iron pipe of 6mm wall thickness screwed together and tested before installation to 21MPa. After filling all the pipework (except an expansion tube) with water, the system was sealed and when the furnace was lit, the heated water expanded, compressing the air inside and pressurising the system. A sufficiently high pressure was reached to sustain a flow temperature of some 200 deg C.

I have always imagined that I have seen Perkins systems in churches, with steel pipes about 32nb laid in the pews and looking very robust. The screwed joints were said to be left and right hand threads so that

unions were not necessary and bends could be pulled.

With the very high pressure and temperatures, the temperature drop and so the thermal circulating pressure were high. A pressure vessel was at the top of the system in a discreet location. Finally, the heat source was a brick boiler with the circulating pipes coiled round inside the combustion chamber. What a simple installation!

His system was installed at the Royal Society for Arts, the London Patent Office, in two sections of the British Museum and in Strathfieldsaye (the country seat of the Duke of Wellington). However, the high operating pressures and temperatures reached by his system caused considerable concern and so he introduced a safer medium-pressure system that soon displaced the original. The system eventually fell out of favour because of the high premiums charged by the fire assurance companies, but the principle paved the way for the large hphw systems of the mid-20th century.



More pictures and details of historical products can be found on the CIBSE Heritage Group website at: www.hevac-heritage.org