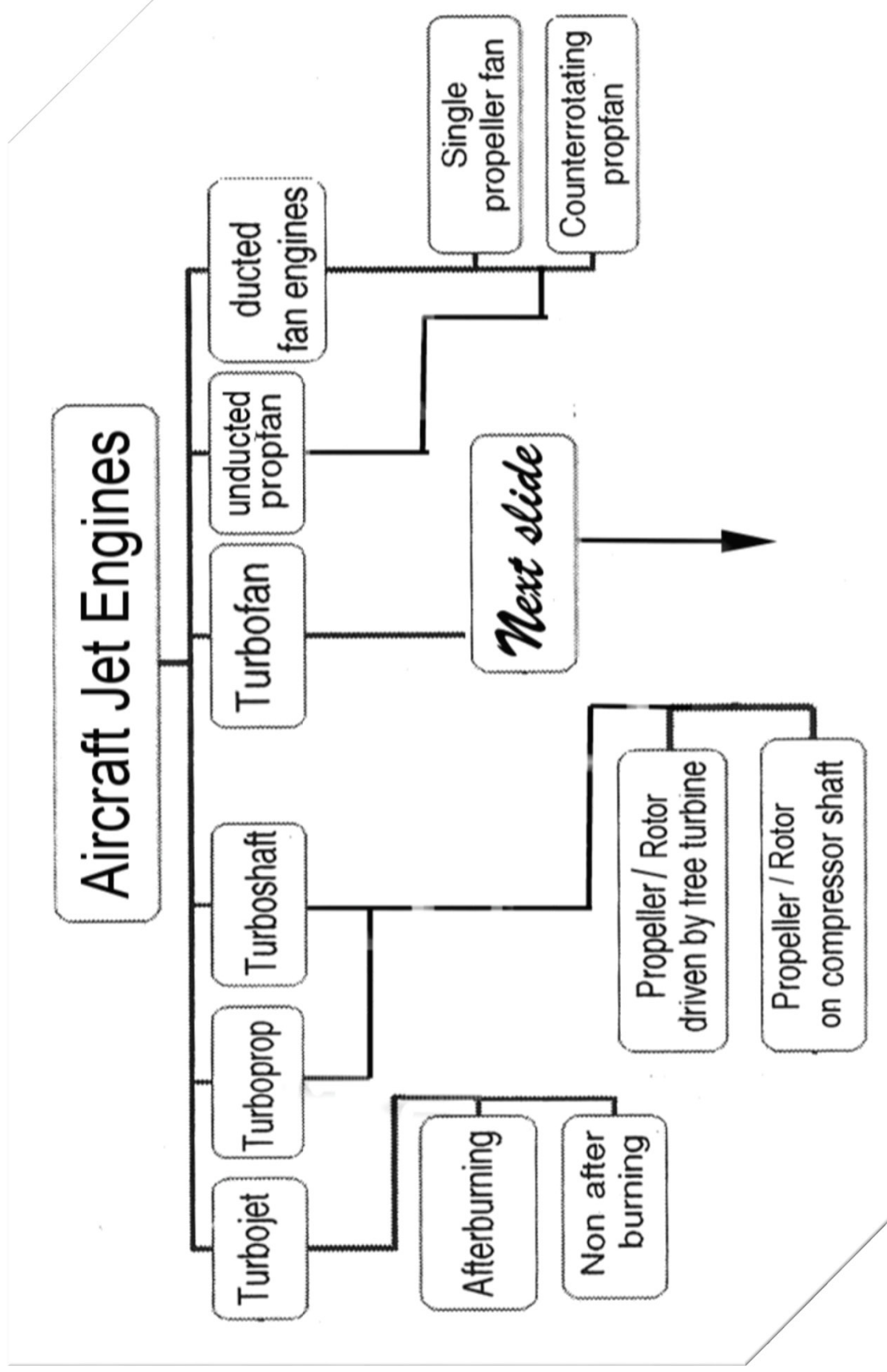
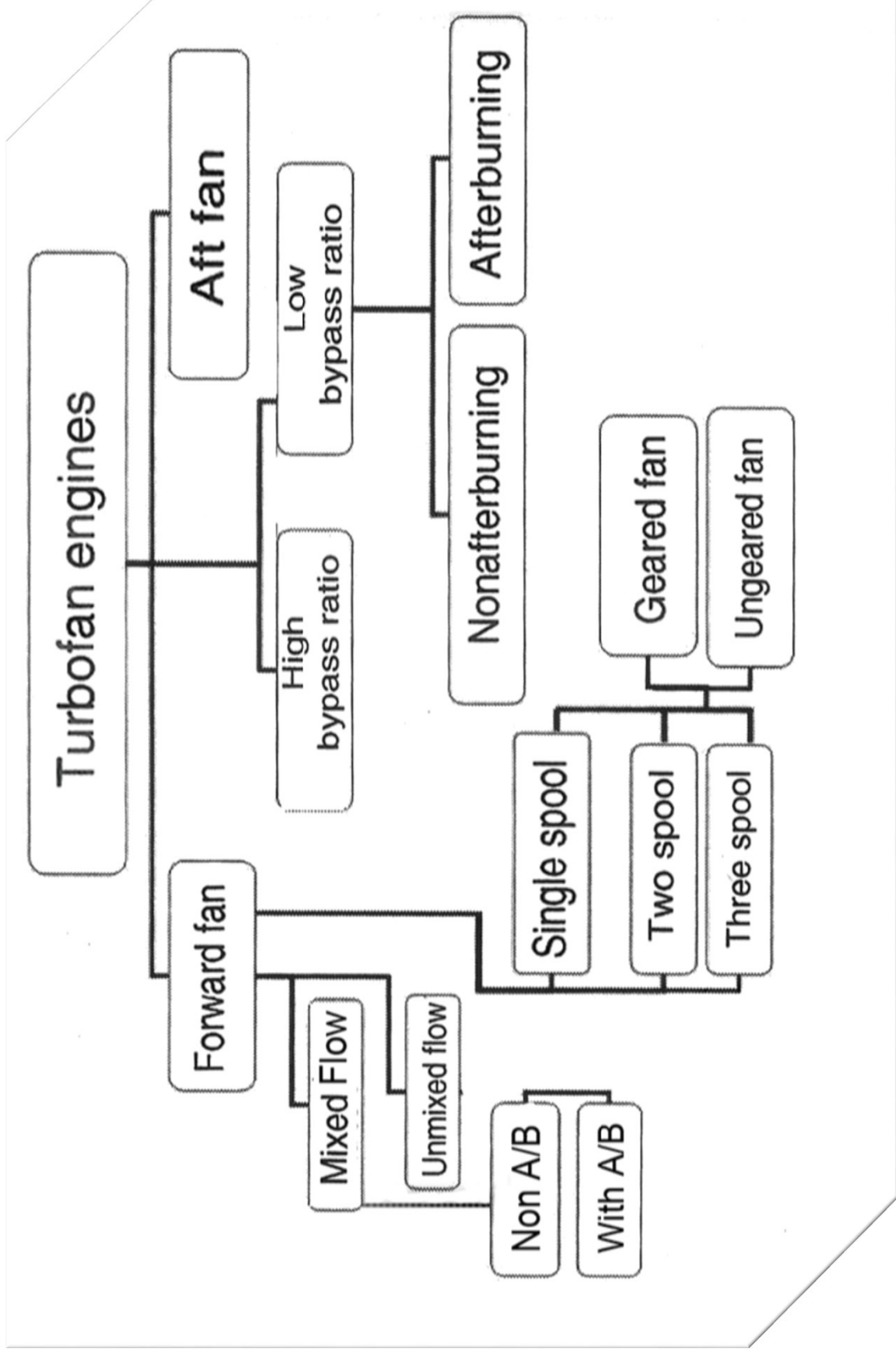


AE 658 – Aircraft Powerplants

[Basic Aircraft Jet Engine types](#)



Aircraft Turbofan Engines

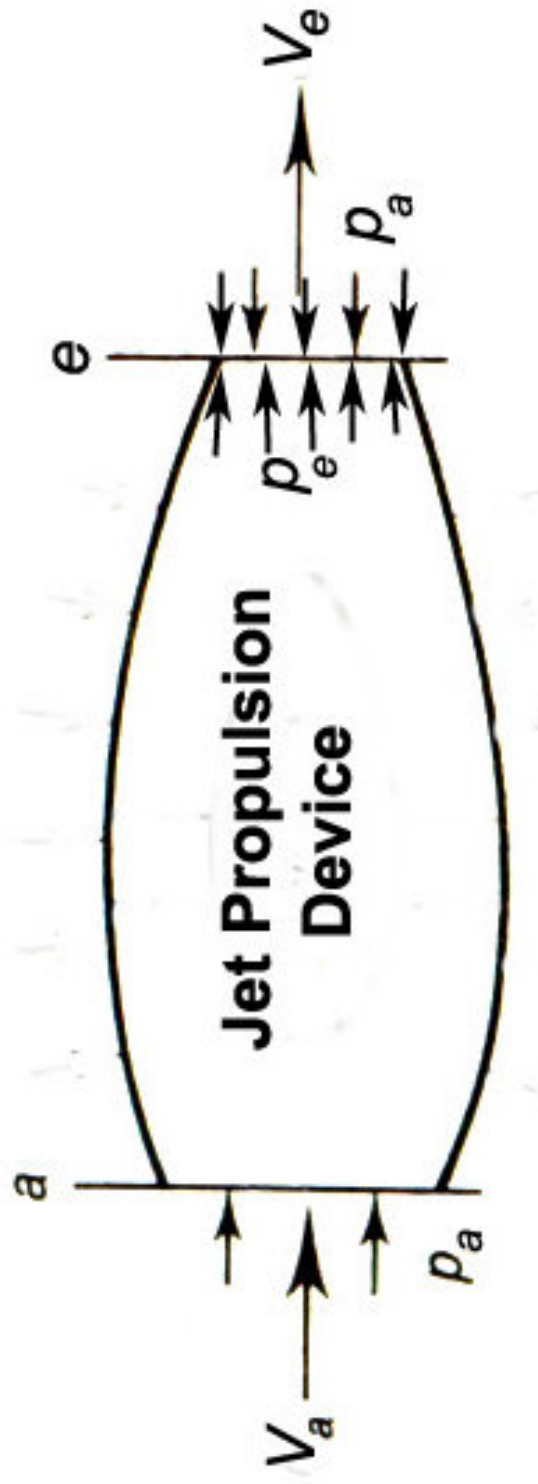


Development of Aircraft Jet Engines

- [Sir Isaac Newton](#) in the 18th century was the first to theorize that a rearward-directed acceleration could propel a machine forward at a great speed. This theory was based on his own third law of motion.
- As the hot air blasts backwards through the jet nozzle the aeroplane moves forward.

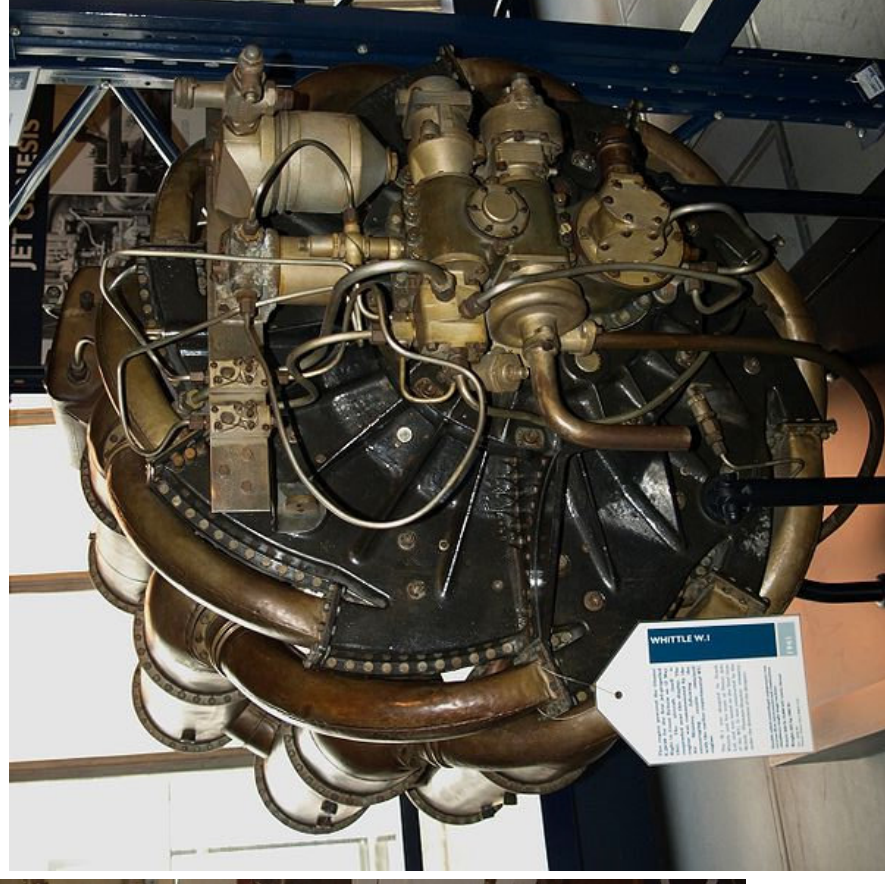
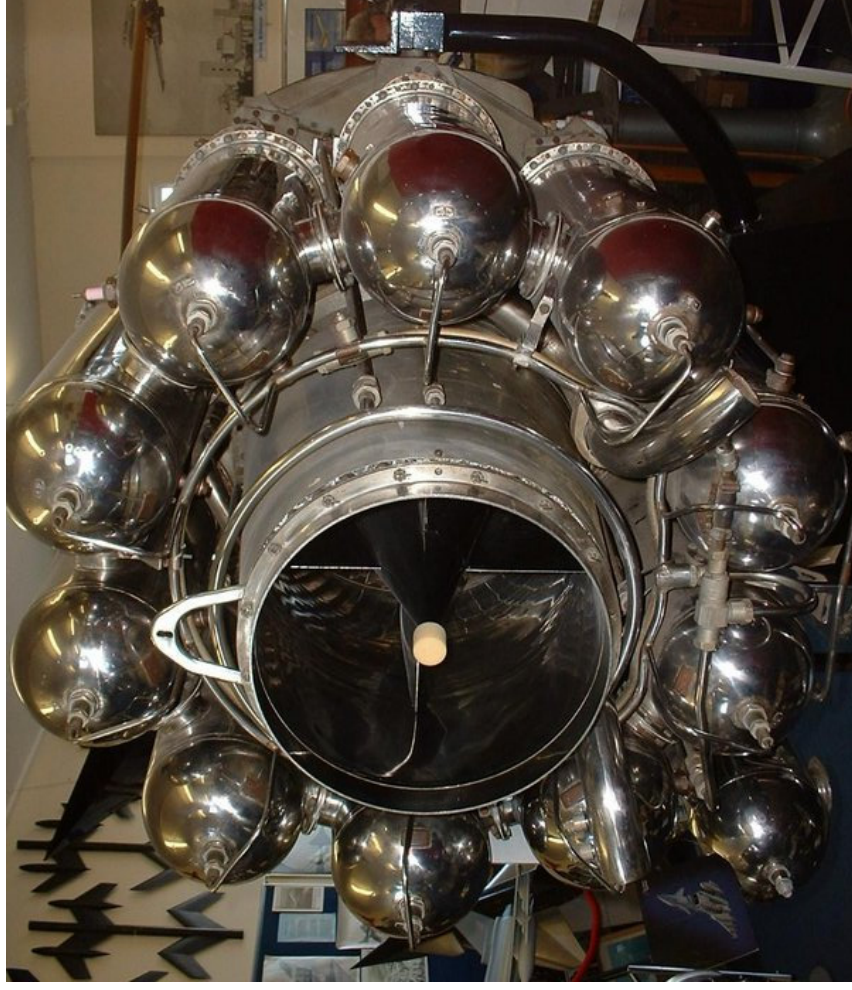
- In 1920's a high powered committee in USA, working under NACA, produced a report that stated that a jet engine was not a feasible proposition. So very little work was done in USA on jet engine development till world war II.
- Frank Whittle patented his jet engine in England 1930. He later developed it in USA.
- Dr Hans Von Ohain patented his jet engine in Germany in 1936. It flew in 1939. He also later worked in USA

How Jet Propulsion works

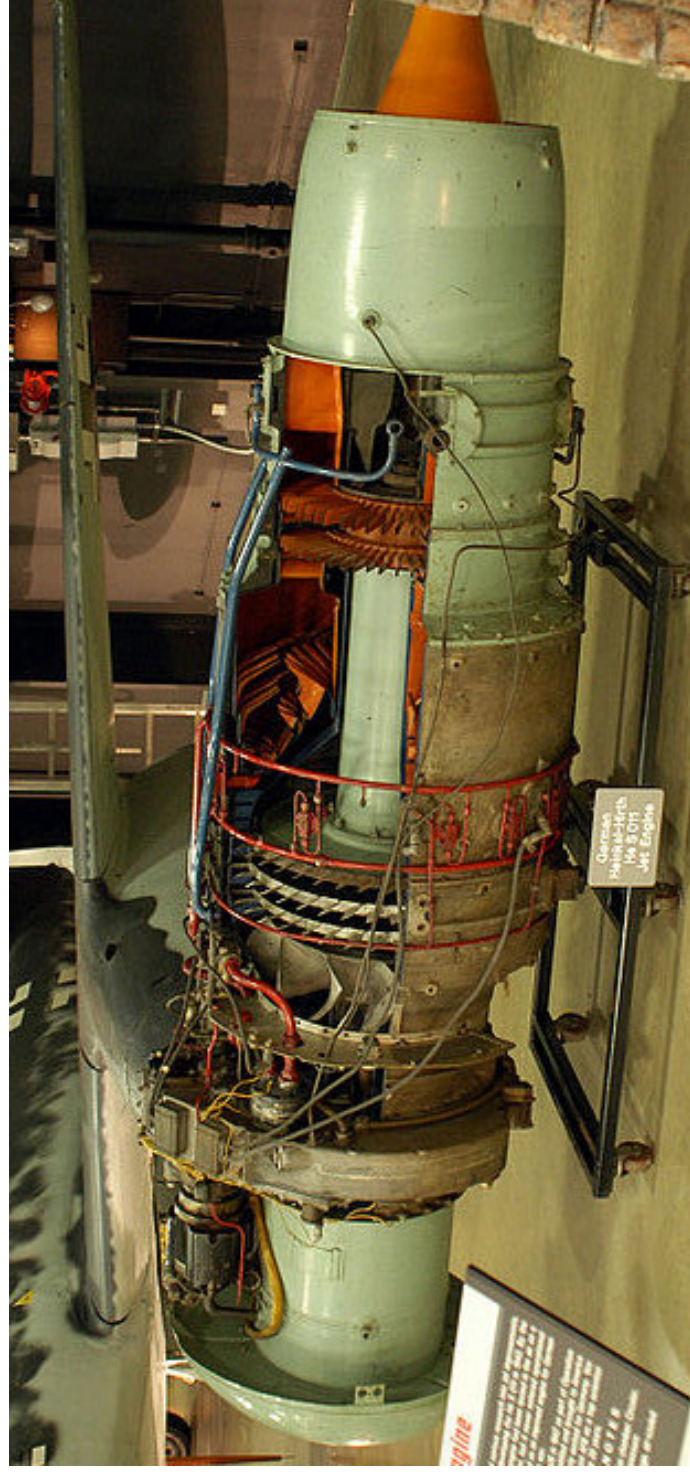


- The key to a practical jet engine was the gas turbine, used to extract energy from the engine itself to drive the [compressor](#).
- The [gas turbine](#) was not an idea developed in the 1930s: the patent for a stationary turbine was granted to John Barber in England in 1791.
- The first gas turbine to successfully run was built in 1903 by Norwegian engineer [Ægidius Elling](#). Limitations in design and practical engineering and metallurgy prevented such engines reaching manufacture.

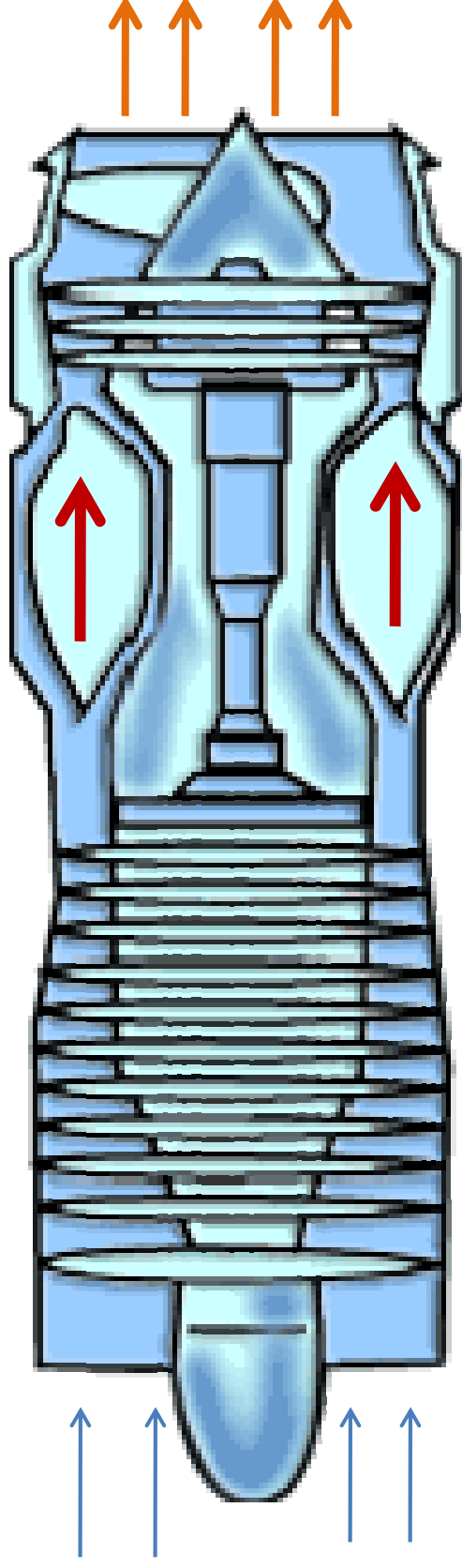
Whittle's jet engine that flew



Heinkel Engine by Von Ohain that flew



A typical Gas Turbine based jet engine



A modern aircraft jet engine

