- When in 1687, Sir Isaac newton formulated his laws of motion. A steam wagon that utilized a reaction jet to provide forward movement was proposed and was loosely named "Newton steam carriage".
- In 1791, John Barber in England patented a design utilizing the thermodynamic cycle of the modern gas turbine. The turbine was equipped with a chain-driven reciprocating type of compressor and had a combustor and turbine. Barber proposed the use of charcoal, gas, or other suitable fuel to produce inflammable gas. The gas from the producer went into a common receiver and then into the combustion chamber where it mixed with compressor air and was ignited. The resulting hot gases were allowed to impinge on a turbine wheel. To prevent overheating of turbine parts, provision to cool the gas by means of water injection were incorporated.

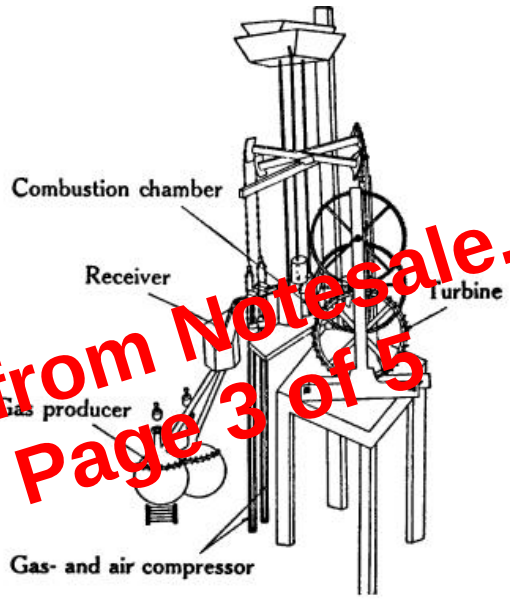

Figure 5. Patent Drawing of John Barber (1791) of Gas Turbine Cycle Utilizing Reciprocating Compressor, Combustor, and Turbine.

Hydraulic Turbo Machinery development

The history of hydraulics is of fundamental importance to the study of turbo machinery development as hydraulic theory and hydrodynamics formed the basis for design concepts used for steam turbines. The principle of minimizing incidence losses and concepts of the U/C velocity ratio were derived intuitively by some of the early hydraulic turbine designers.

- While water wheels had been used in antiquity, it was in the 1600s that some empirical knowledge was derived relating to hydraulic phenomena.