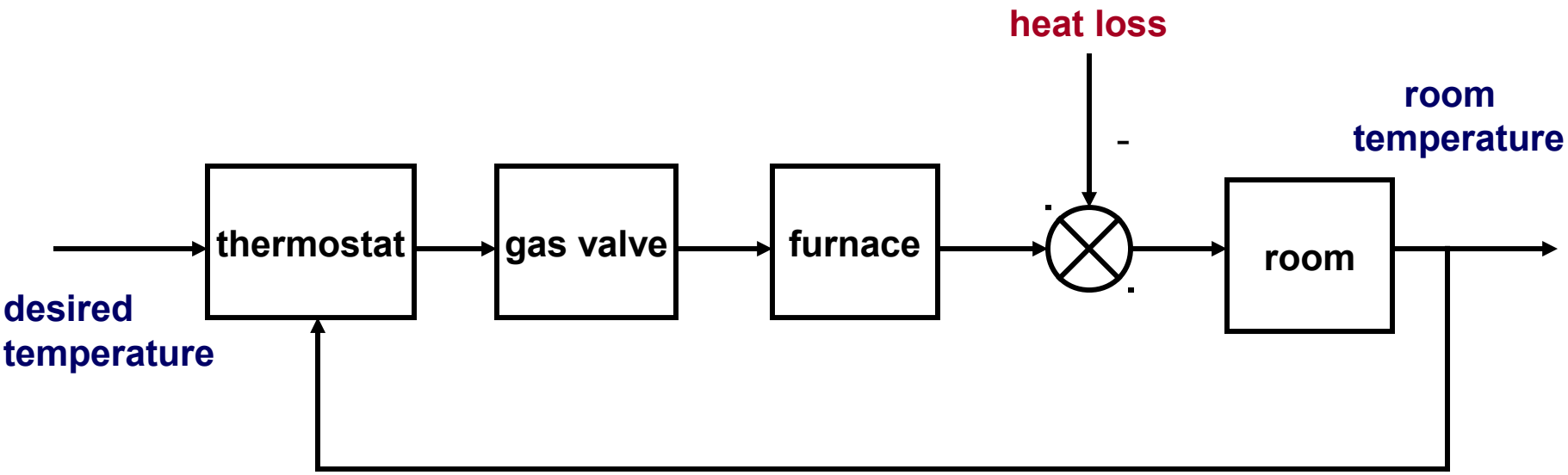
Simple Feedback Systems



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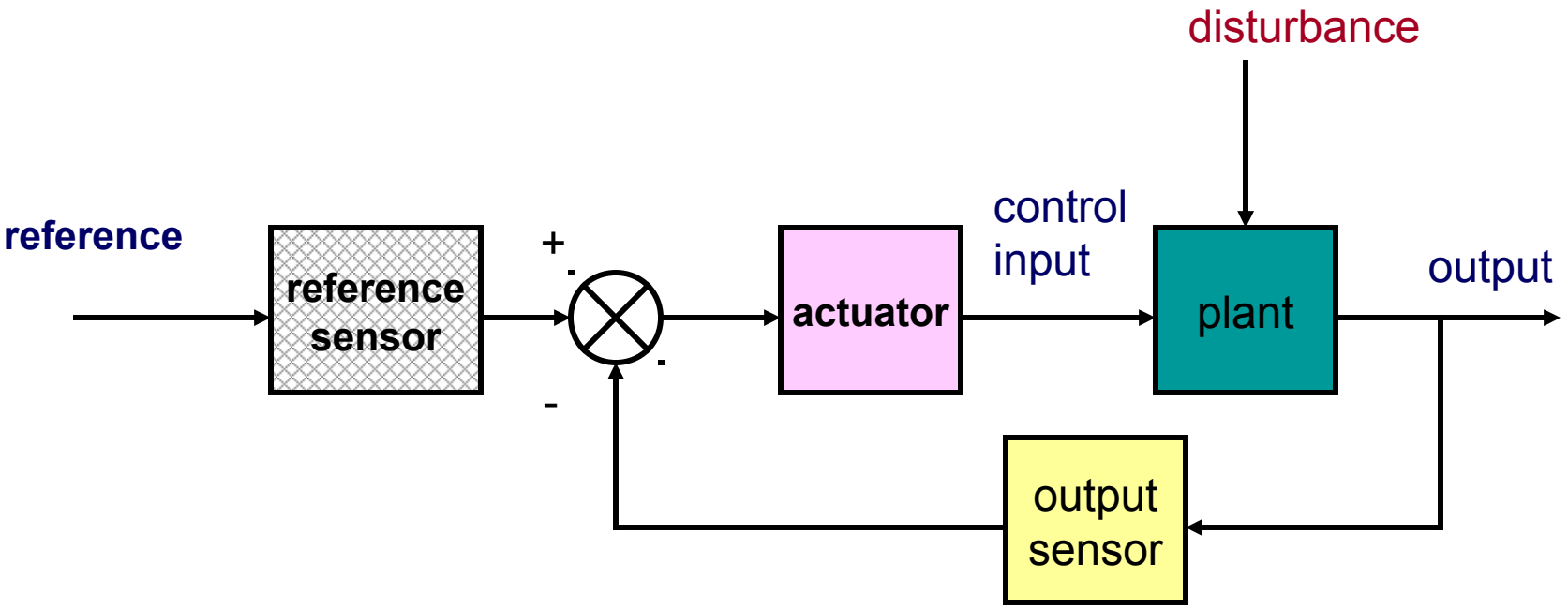
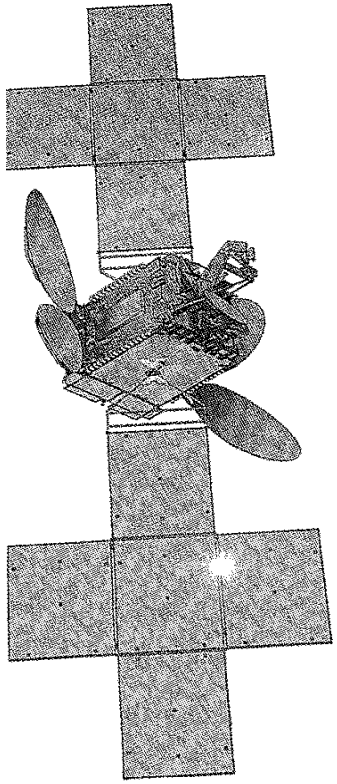
more examples ?

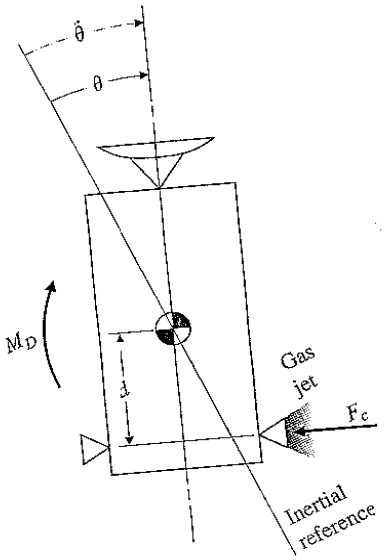
Simple Feedback Systems



Block diagram

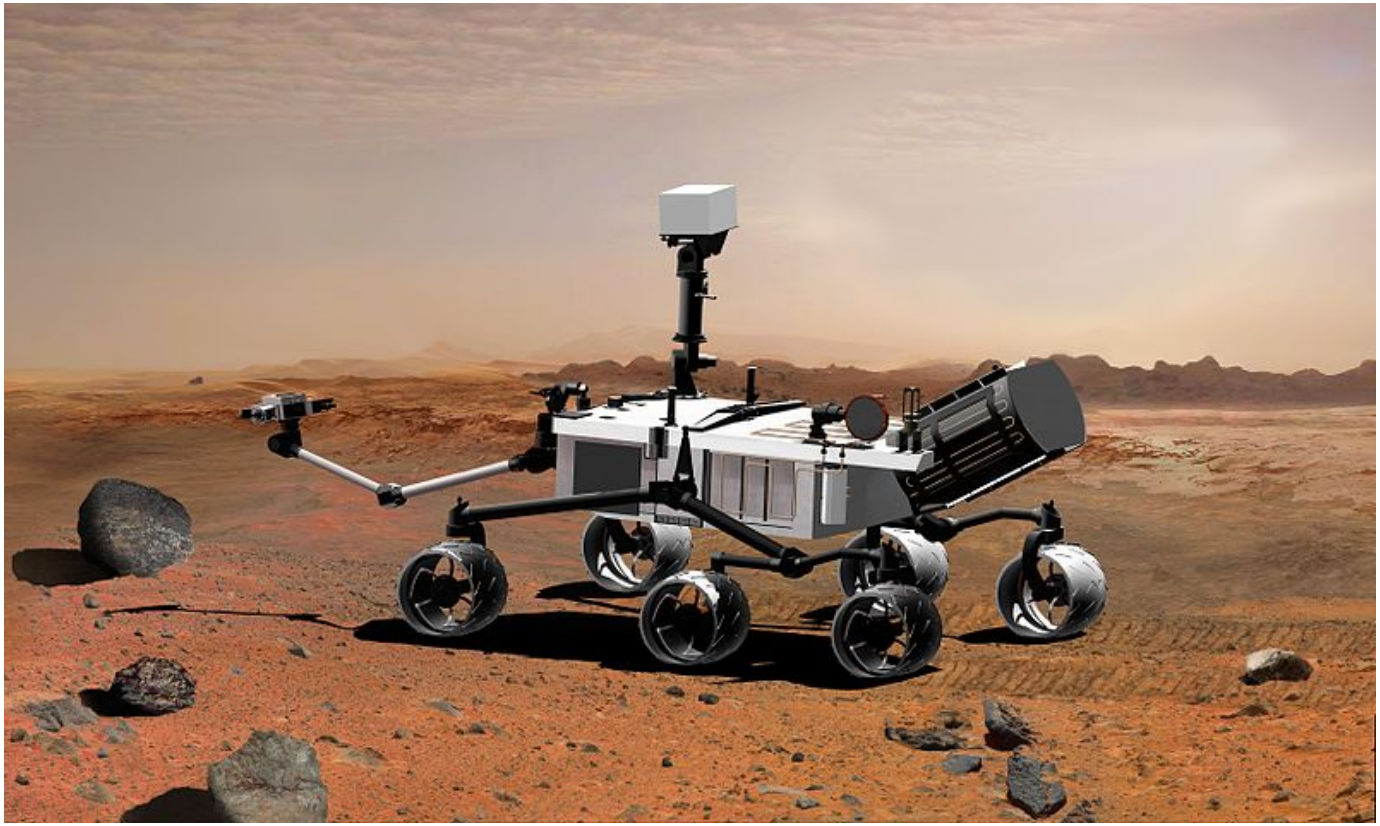
Why control?





Satellite positioning

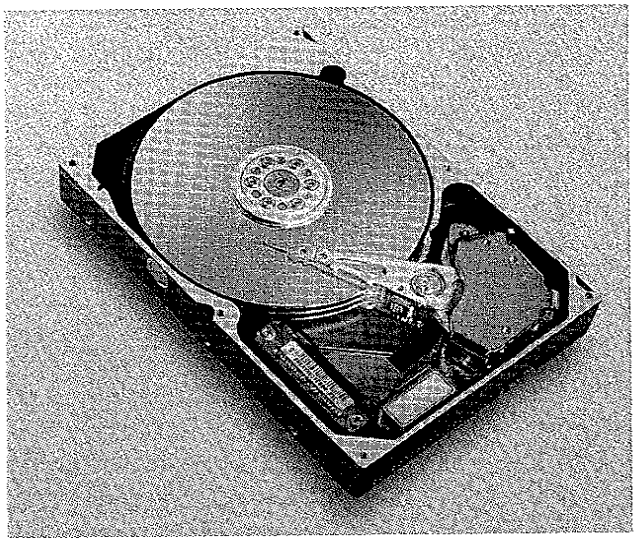
Control at a distance



Control at a distance

Curiosity (Mars Science Laboratory)

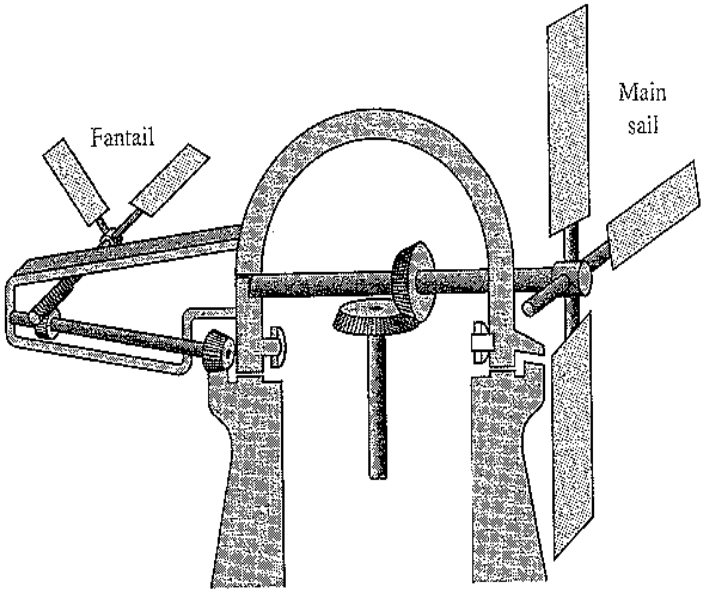
Simple reference input



Disk drive

Track following

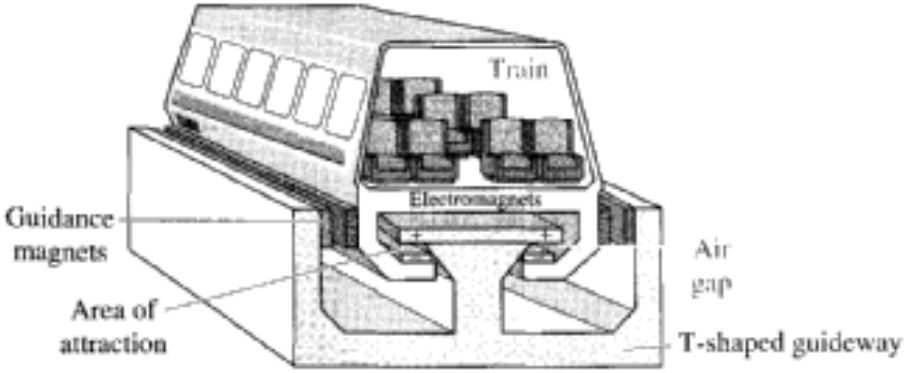
Reduce disturbances



Yaw movement of wind mill

Unstable systems

Magnetically levitated train



has to be stabilized

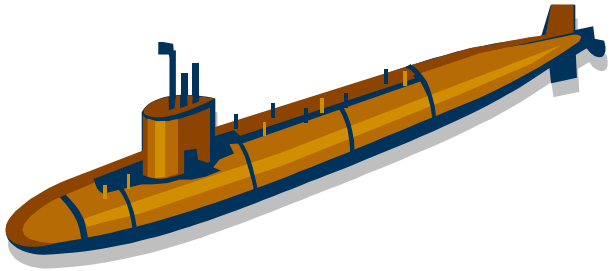
Unstable systems

Fighter aircraft

has to be stabilized

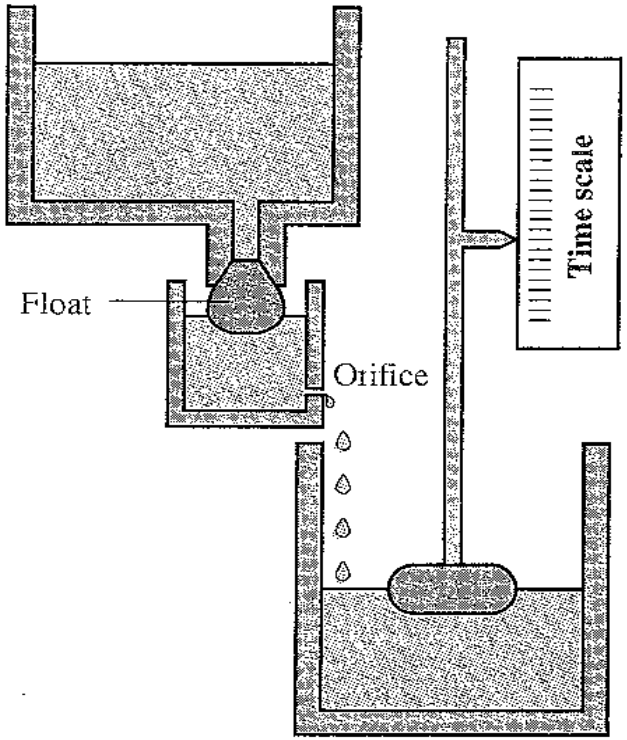
helicopter

Also unstable without control



submarine

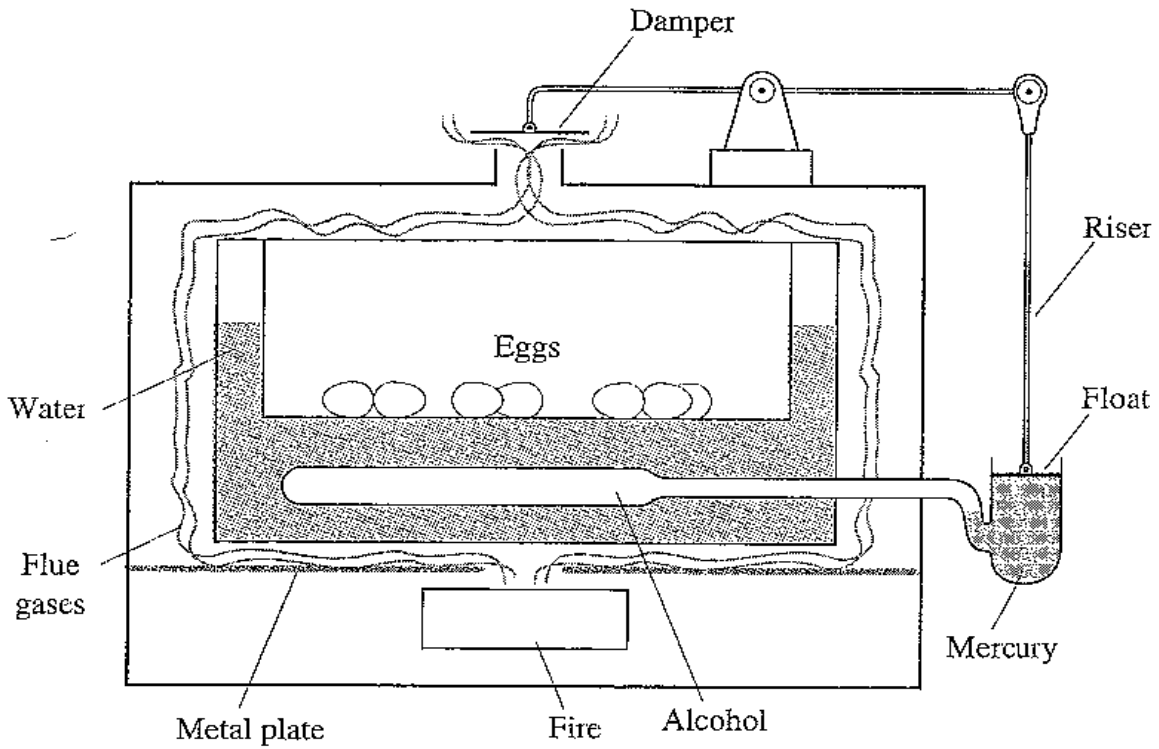
History of control



ca. 300 B.C.

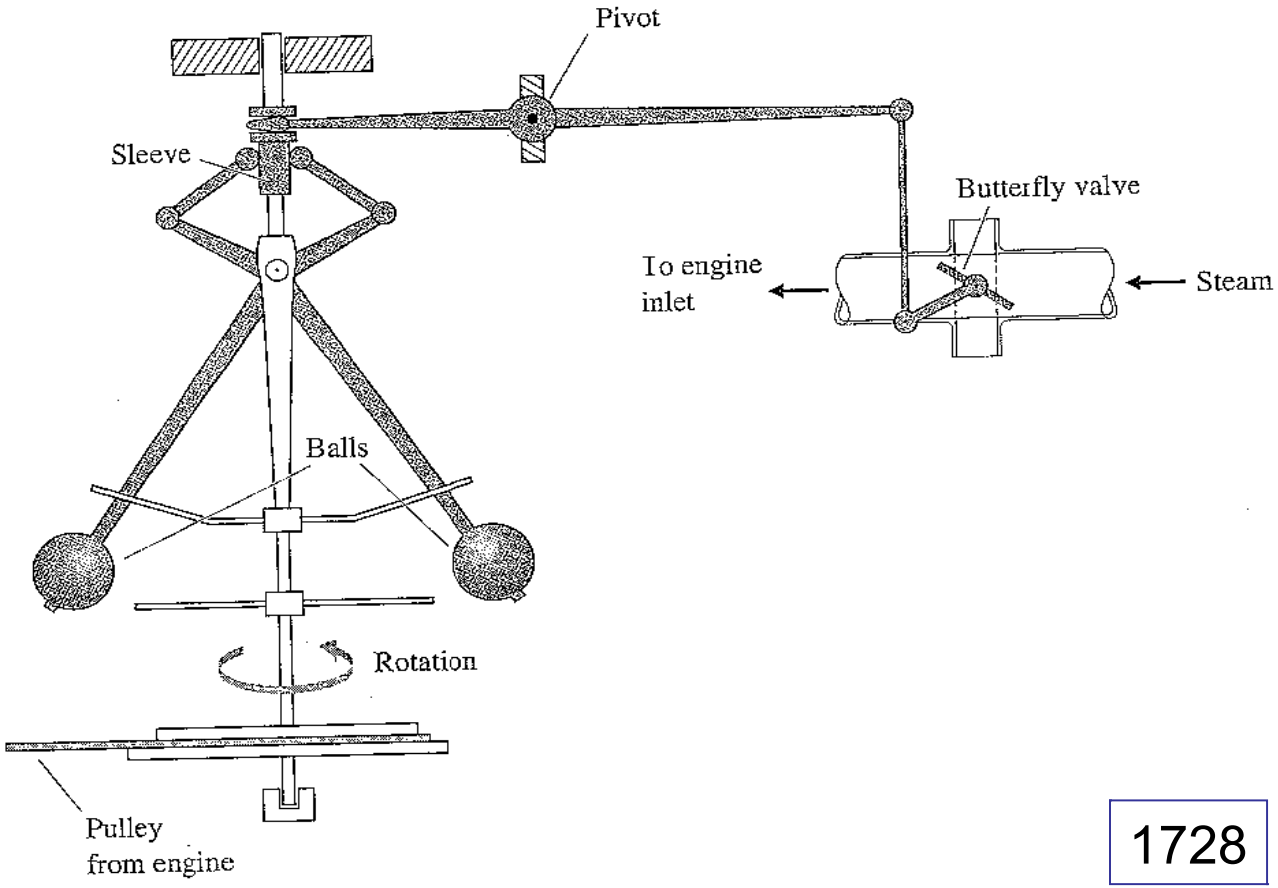
Water clock

Incubator by Cornelis Drebbel

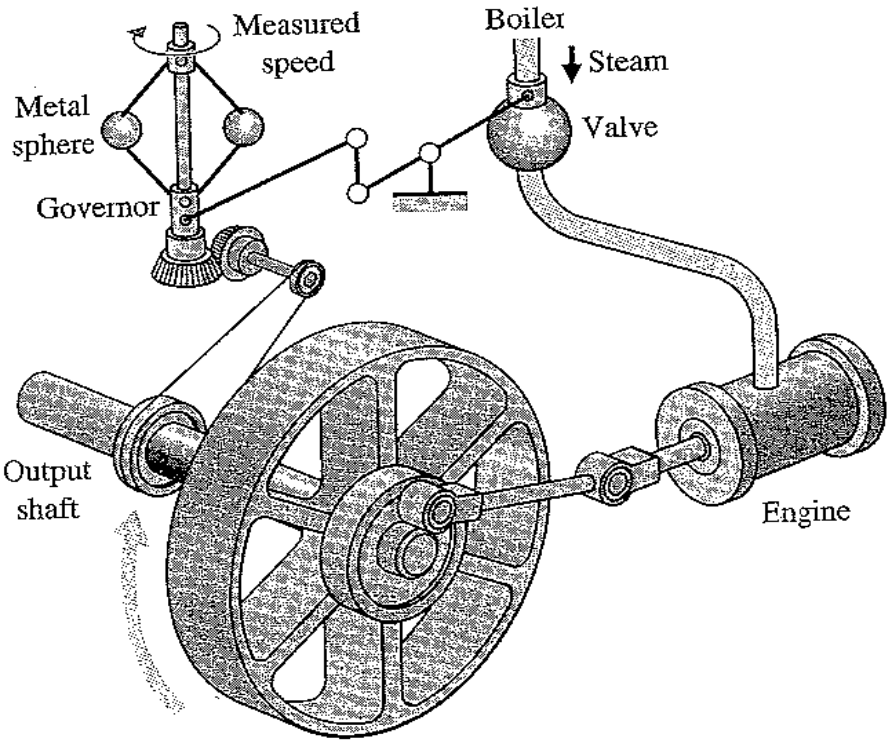


1624

Regulator by James Watt

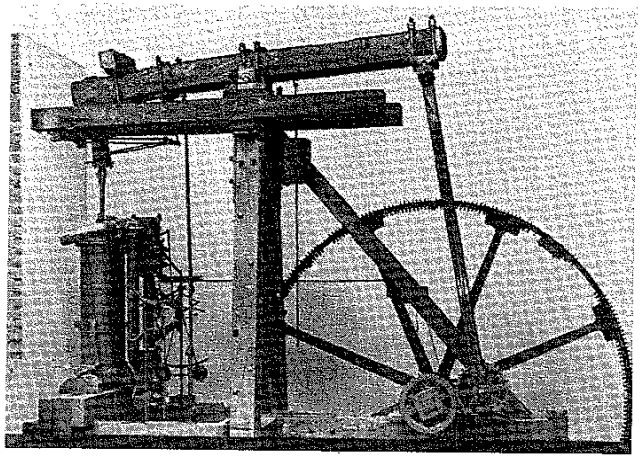


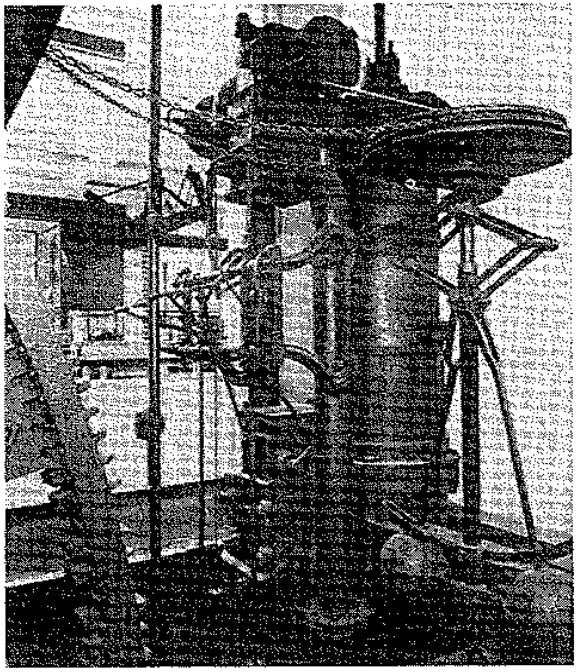
1728



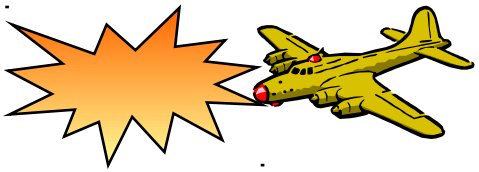
18-th century

Controlled steam engine





Steam engine with Watt's regulator



Development of the Control Theory:

-Stability
-System theory
-Control techniques

1945

Feedback control / controller design

Bode, Nyquist