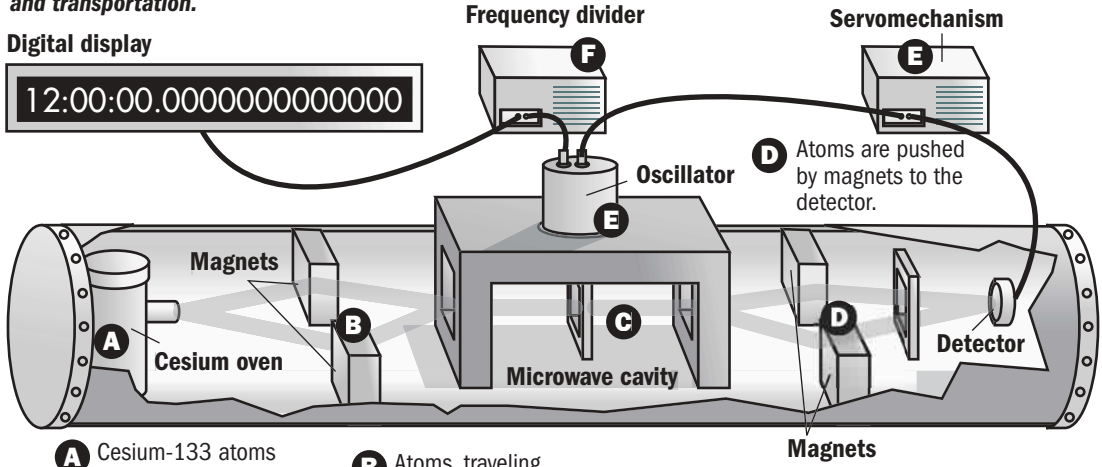
Cesium atomic clock

1955 Great Britain

Precise time measurement is vital to electrical power distribution, communications and transportation.



A Cesium-133 atoms are heated to a gas.

B Atoms, traveling at high velocity, are separated by magnets.

(Determines whether they will absorb or release energy.)

C Microwave cavity exposes atoms to radiation with a frequency of about 9,192,631,770 cycles per second.

(This is the frequency of radiation absorbed by a cesium-133 atom as it shifts from one state to another.)

F Once the frequencies match they are divided into a frequency that can measure time within a billionth of a second.

E The servomechanism monitors the oscillator and detector and tunes the microwave frequency until it matches the frequency of the cesium-133.