Rotors (Enigma)

Wired inside to implement a (fixed) permutation.

Rotor Schematic I

plaintext: aabcdb
ciphertext: DDCABC

left contacts: typewriter
right contacts: lamps
**Hebern Single Rotor Machine**

Patented by Edward Hebern in 1924 (filed 1921)

**Rotor Schematic II**

- A -> D
- B -> A
- C -> B
- D -> C

**Using Rotors**

The idea of rotors was invented independently by:
- Arthur Scherbius (Germany), filed for patent on 2/23/1918
- Hugo Koch (Netherlands), filed for patent on 10/7/1919
- Arvid Damm (Sweden), filed for patent on 10/10/1919
- Edward Hebern (US), filed for patent on 3/31/21

Scherbius (later invented Enigma)  Boris Hagelin (took over Damm’s company)