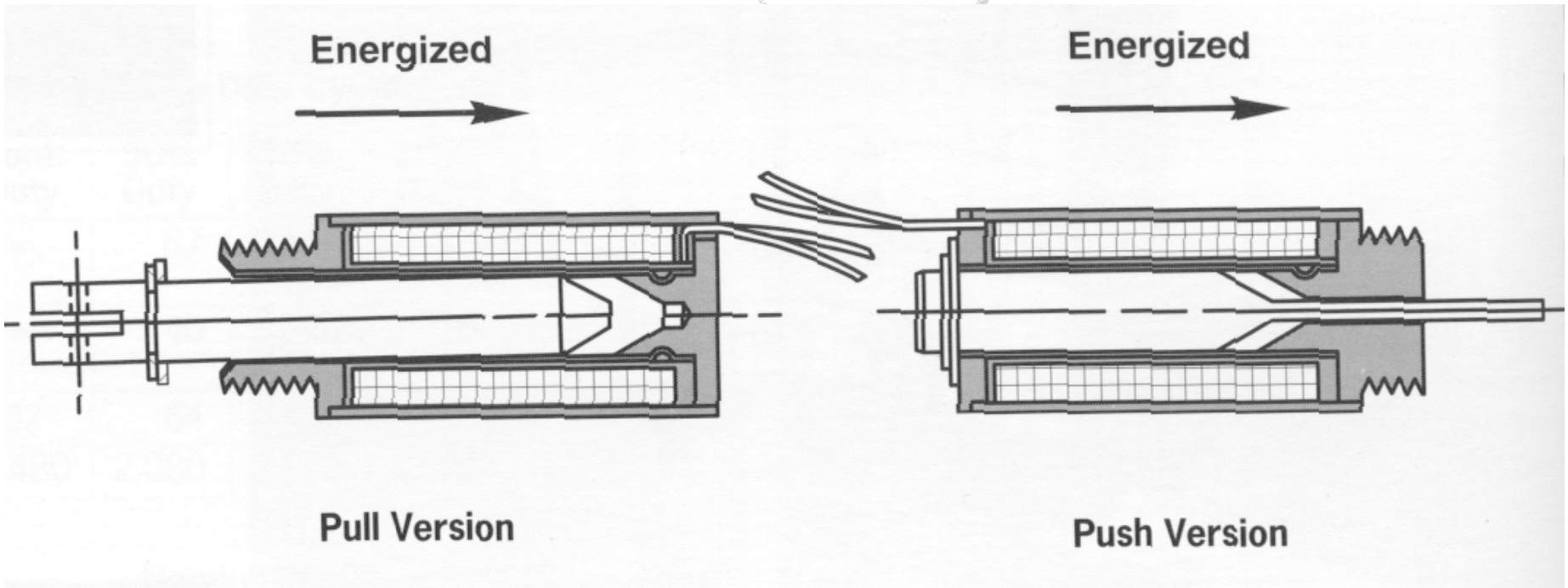
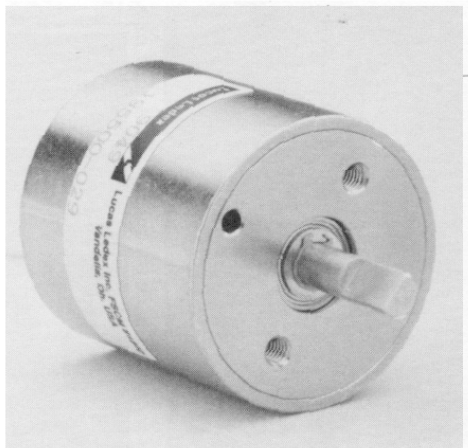
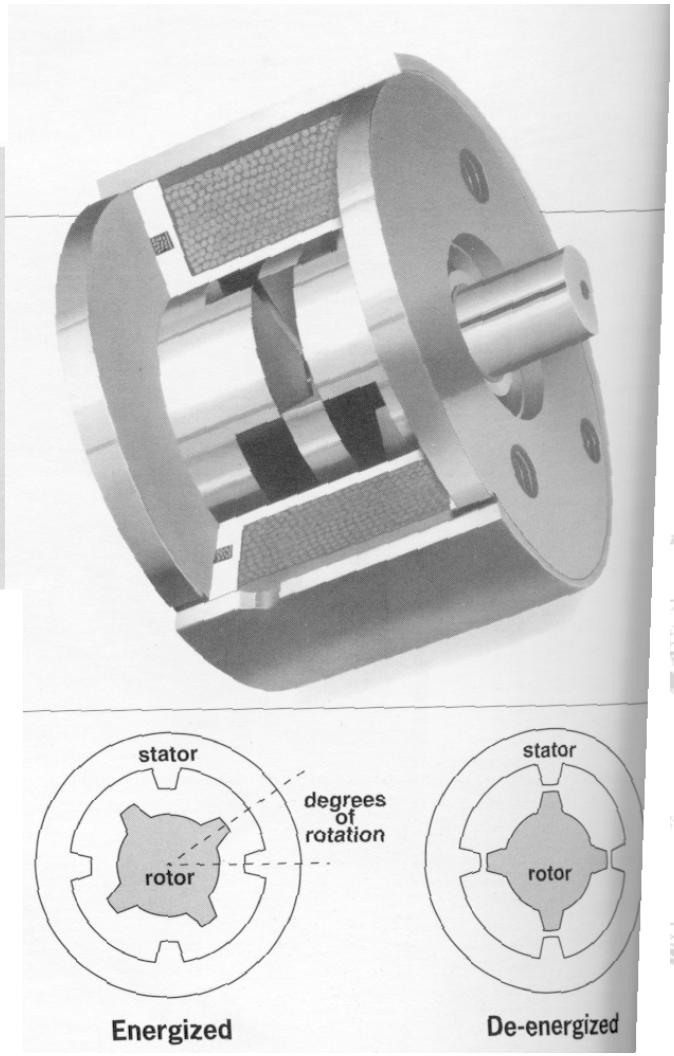
Electric Solenoids



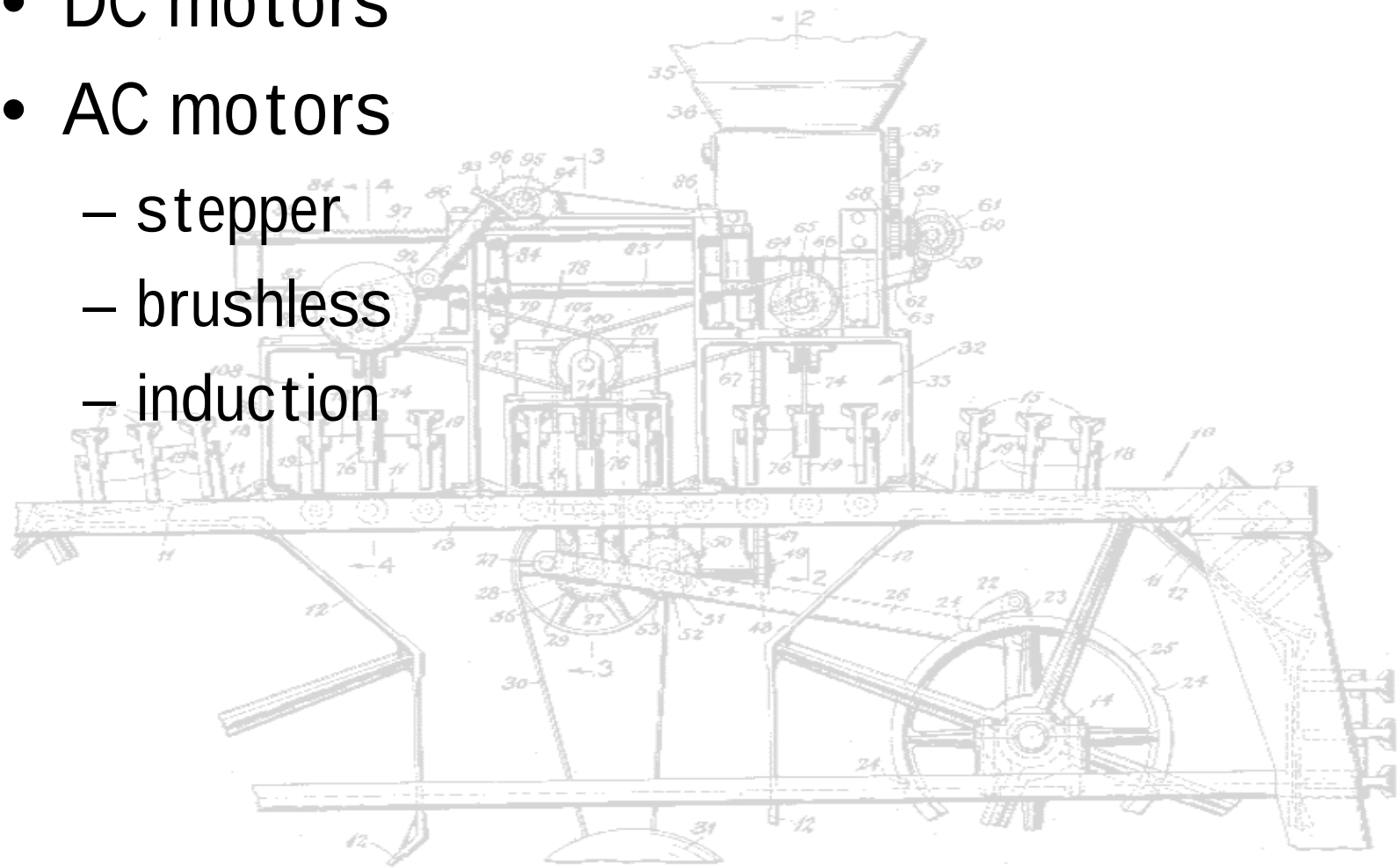
Electric Rotary Actuator - BTA



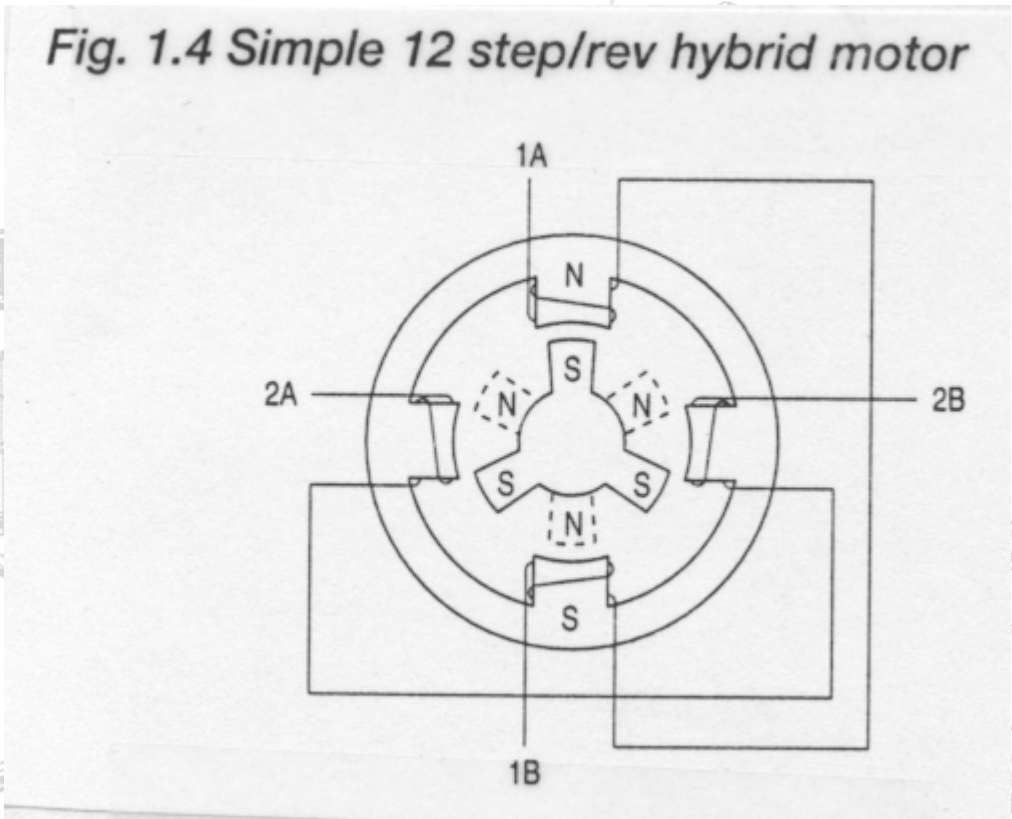


Electric Rotary Actuators

- DC motors
- AC motors
  - stepper
  - brushless
  - induction



Stepper Motors



Stepper Motors

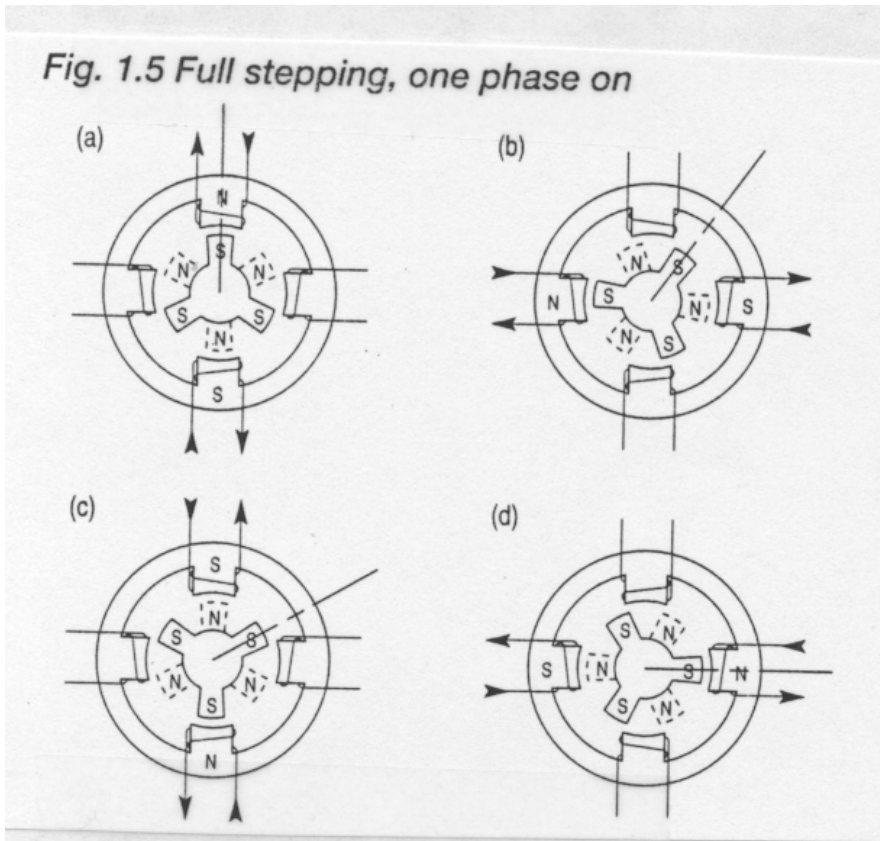


Fig. 1.5 Full stepping, one phase on

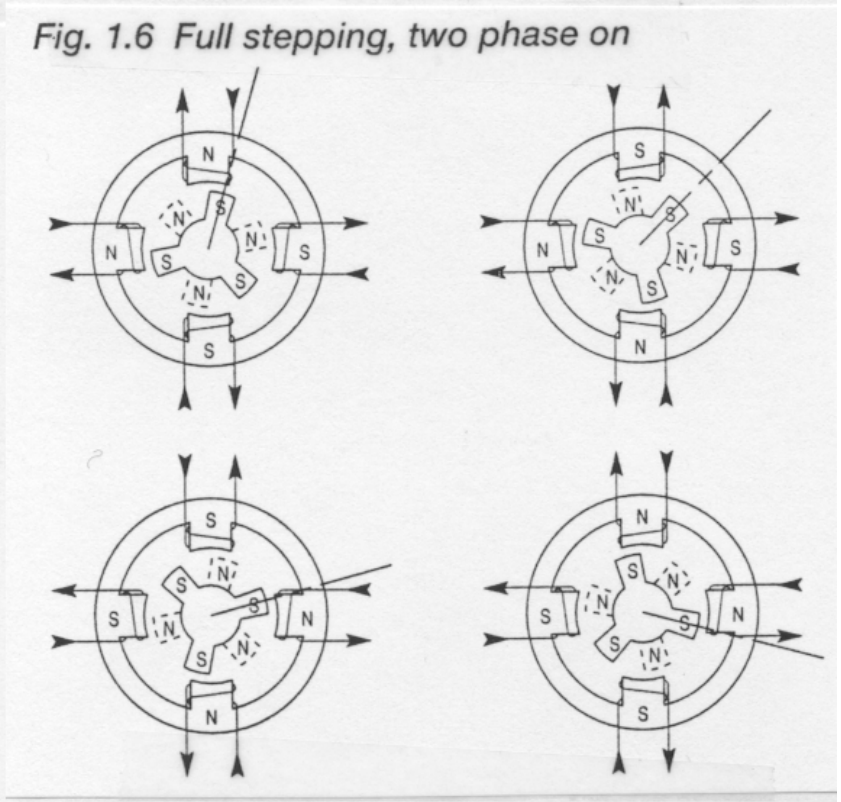
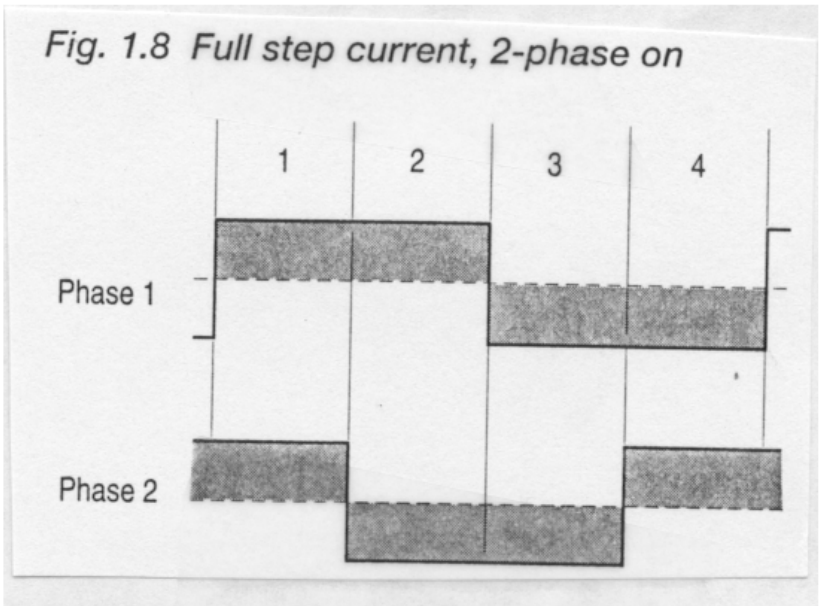
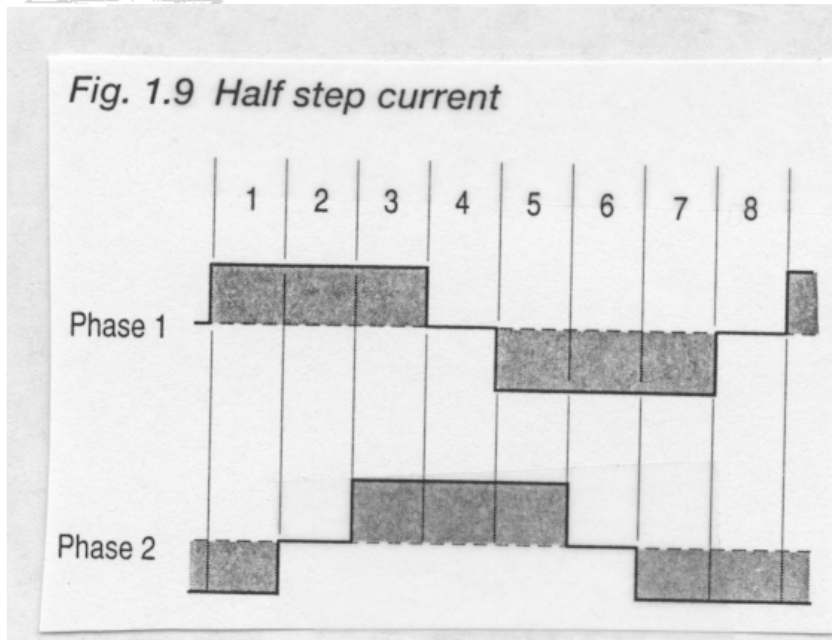


Fig. 1.6 Full stepping, two phase on

Stepper motors





Stepper Motors

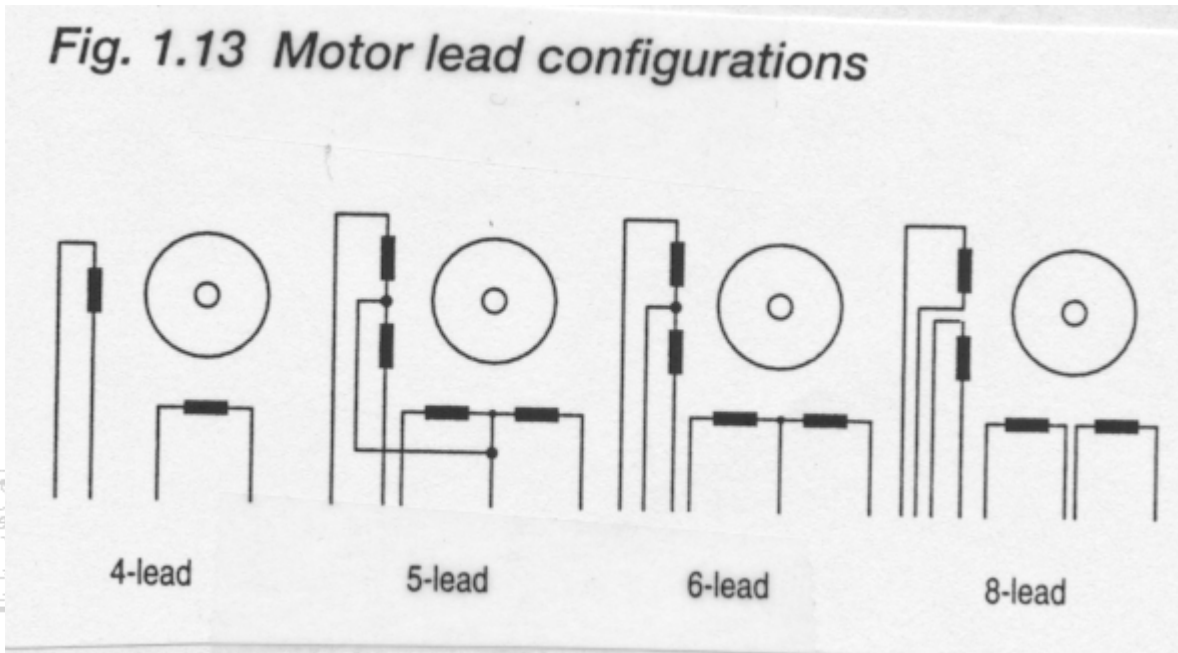
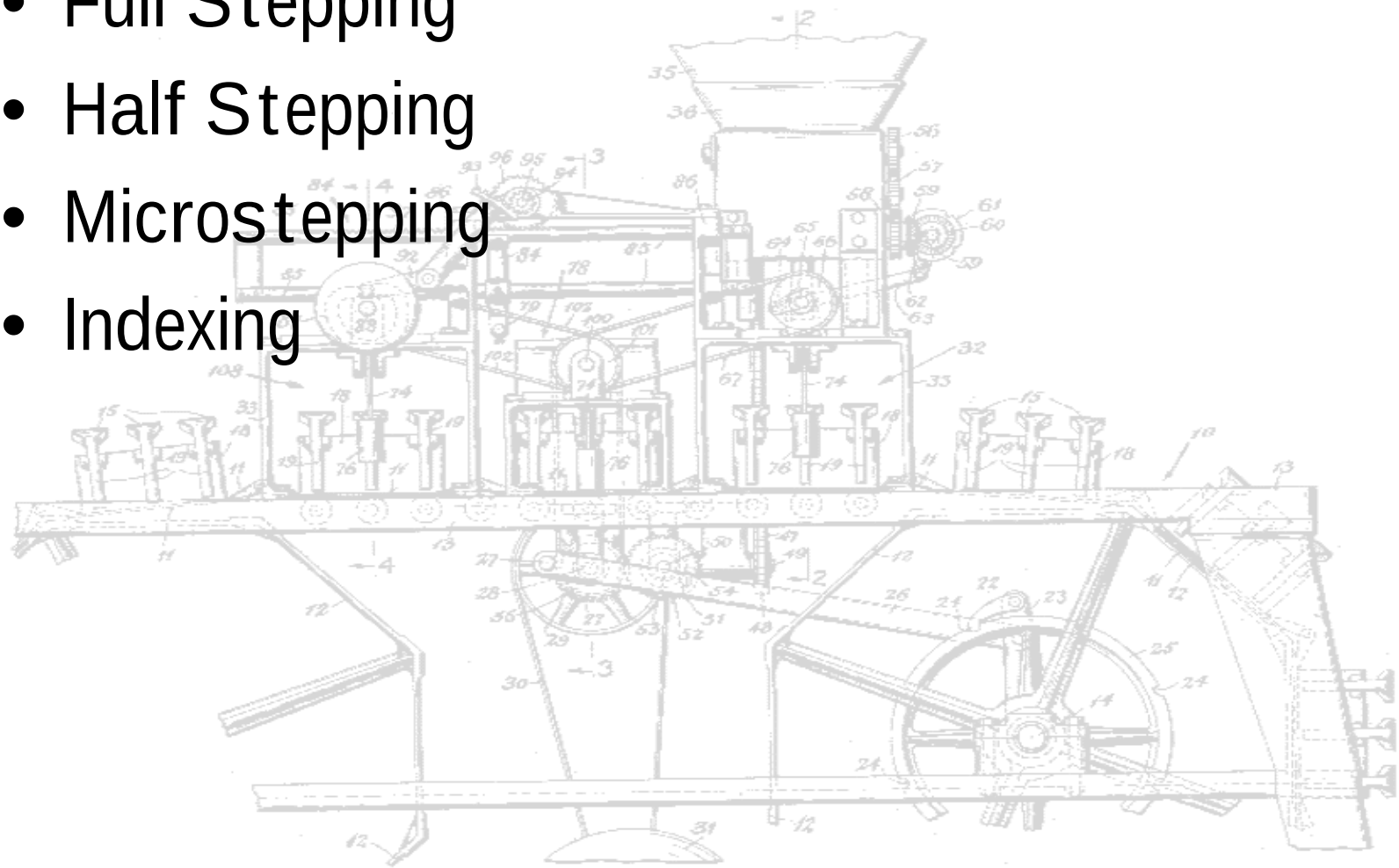


Fig. 1.13 Motor lead configurations

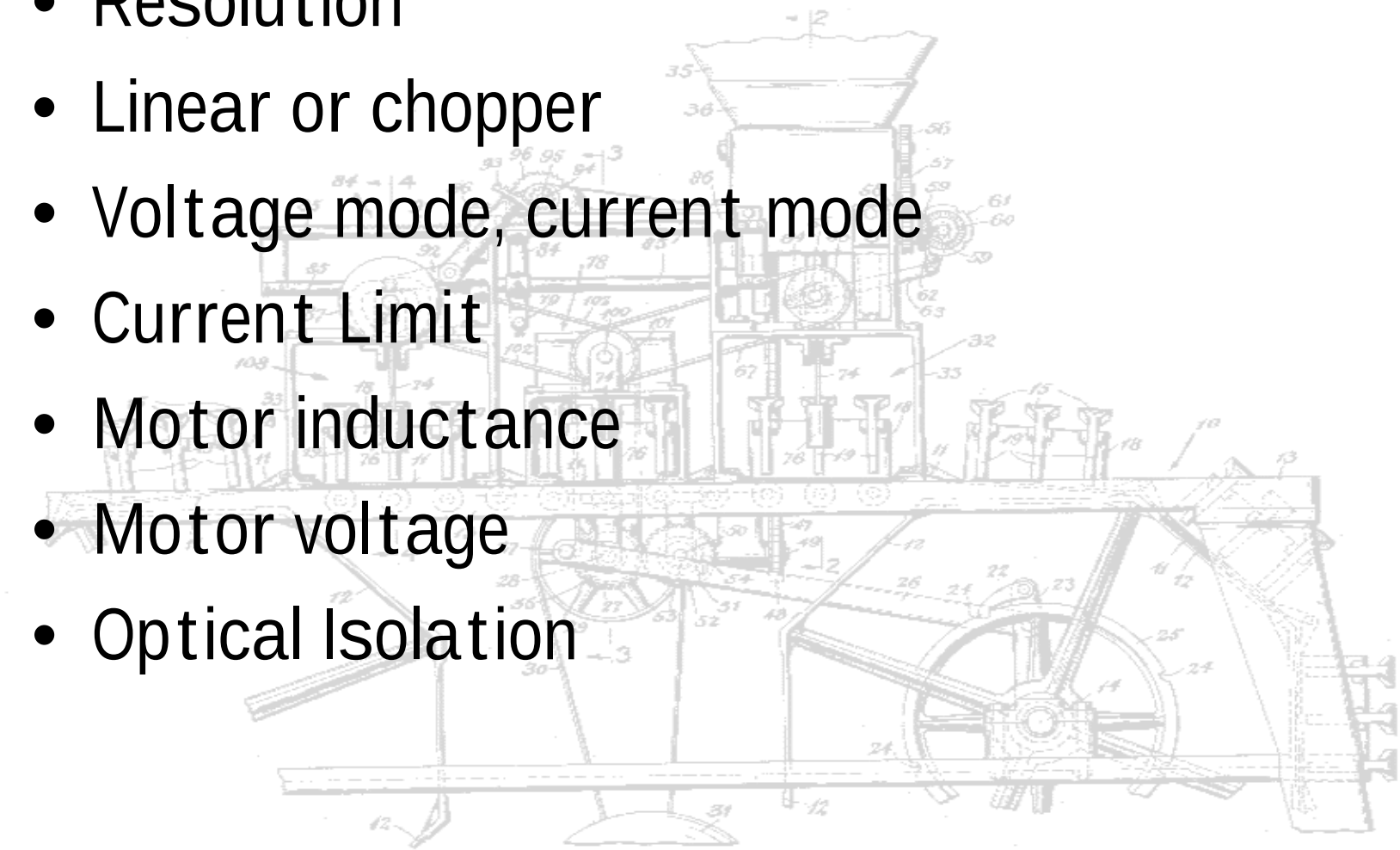
Stepper Motor Drives

- Full Stepping
- Half Stepping
- Microstepping
- Indexing



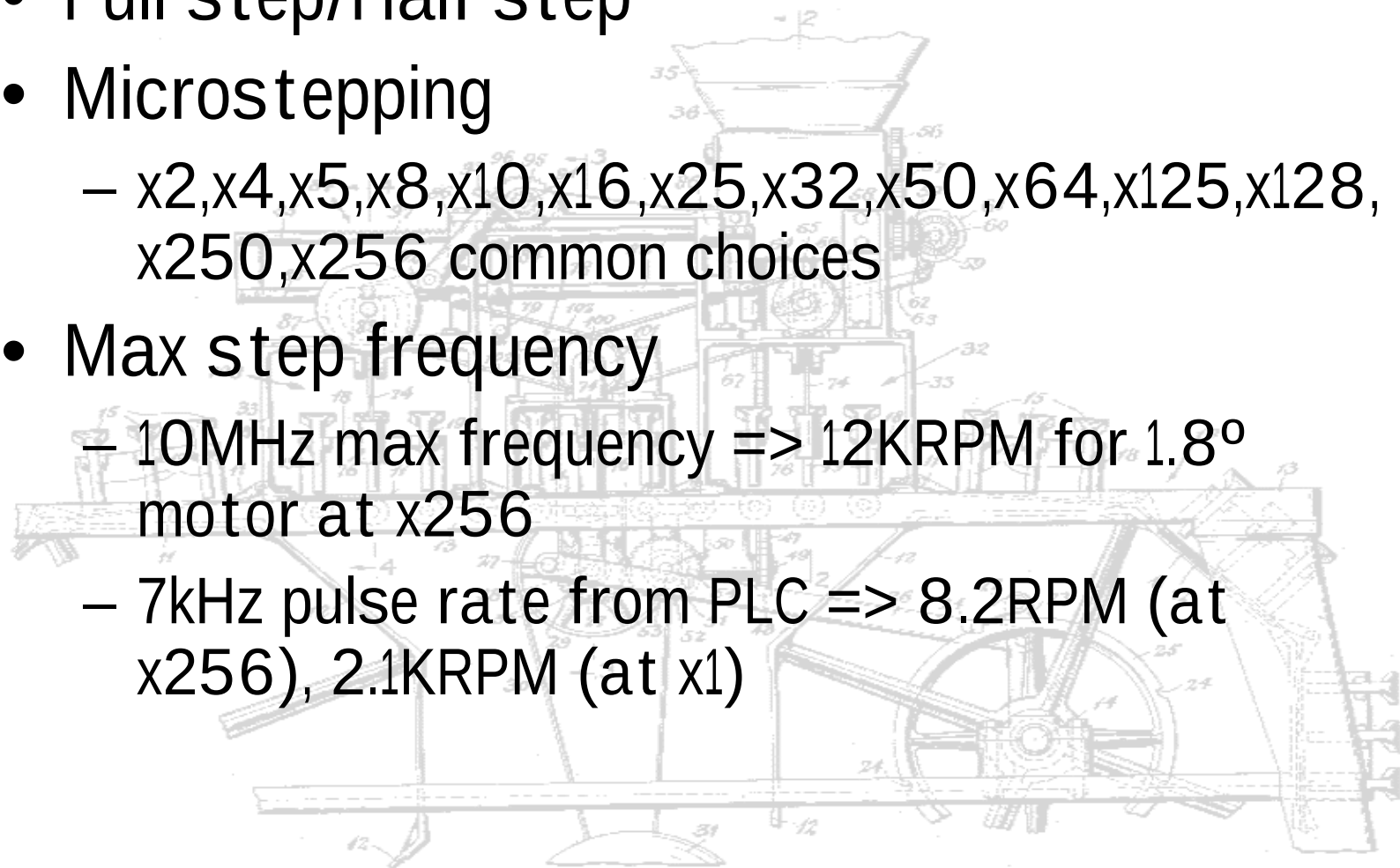
Drive Parameters

- Resolution
- Linear or chopper
- Voltage mode, current mode
- Current Limit
- Motor inductance
- Motor voltage
- Optical Isolation



Resolution

- Full step/Half step
- Microstepping
  - x2,x4,x5,x8,x10,x16,x25,x32,x50,x64,x125,x128, x250,x256 common choices
- Max step frequency
  - 10MHz max frequency => 12KRPM for 1.8º motor at x256
  - 7kHz pulse rate from PLC => 8.2RPM (at x256), 2.1KRPM (at x1)



Current Limit

- Must not exceed rated motor current
- Resistor, jumper or DIP-switch setting