Velocity Selector

A charged particle is moving horizontally into a region with “crossed” uniform fields:

- an electric field $\vec{E}$ pointing down,
- a magnetic field $\vec{B}$ pointing into the plane.

Forces experienced by particle:

- electric force $F = qE$ pointing down,
- magnetic force $B = qvB$ pointing up.

Forces in balance: $qE = qvB$.

Selected velocity: $v = \dfrac{E}{B}$.

Trajectories of particles with selected velocity are not bent.