

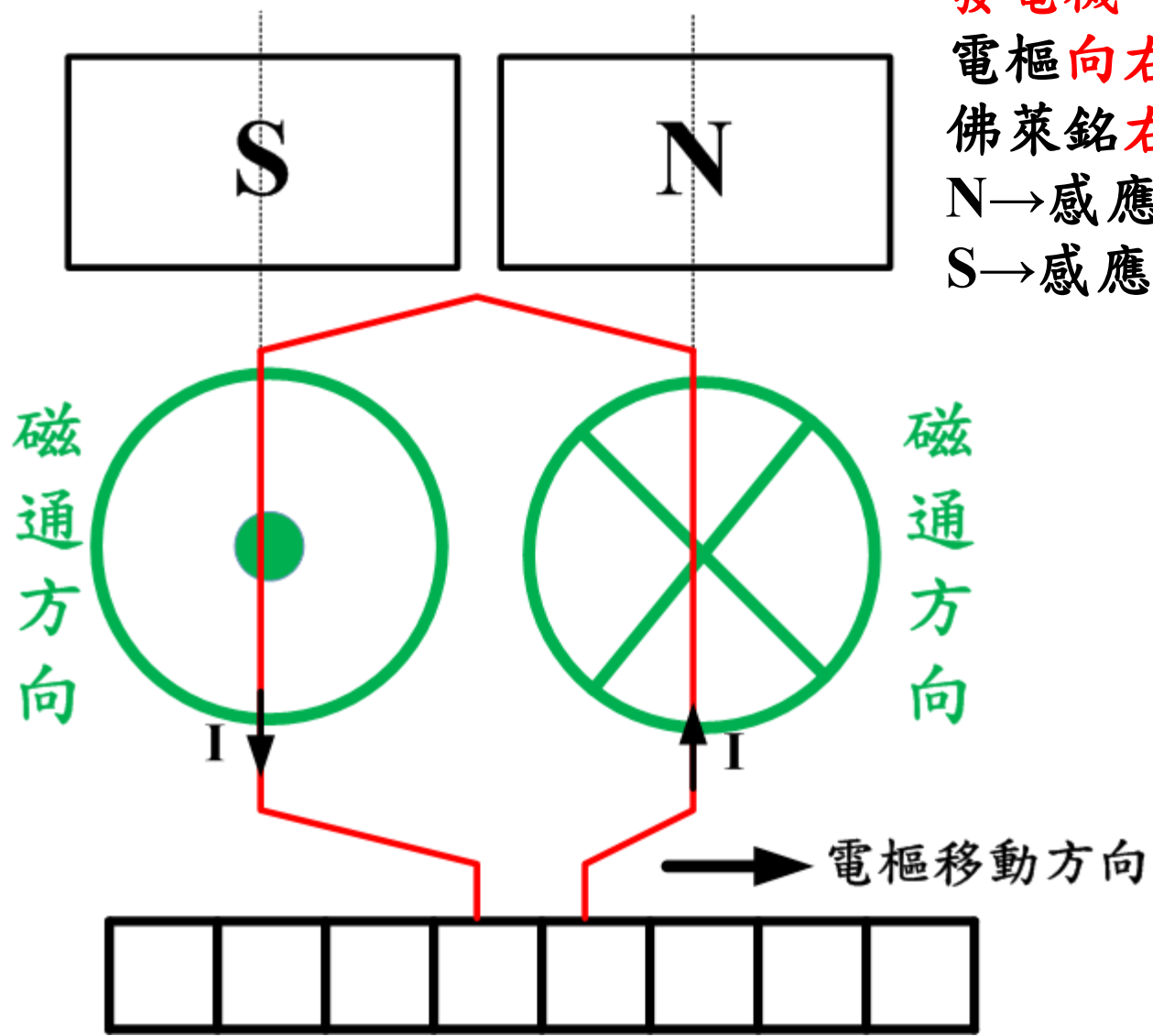
發電機

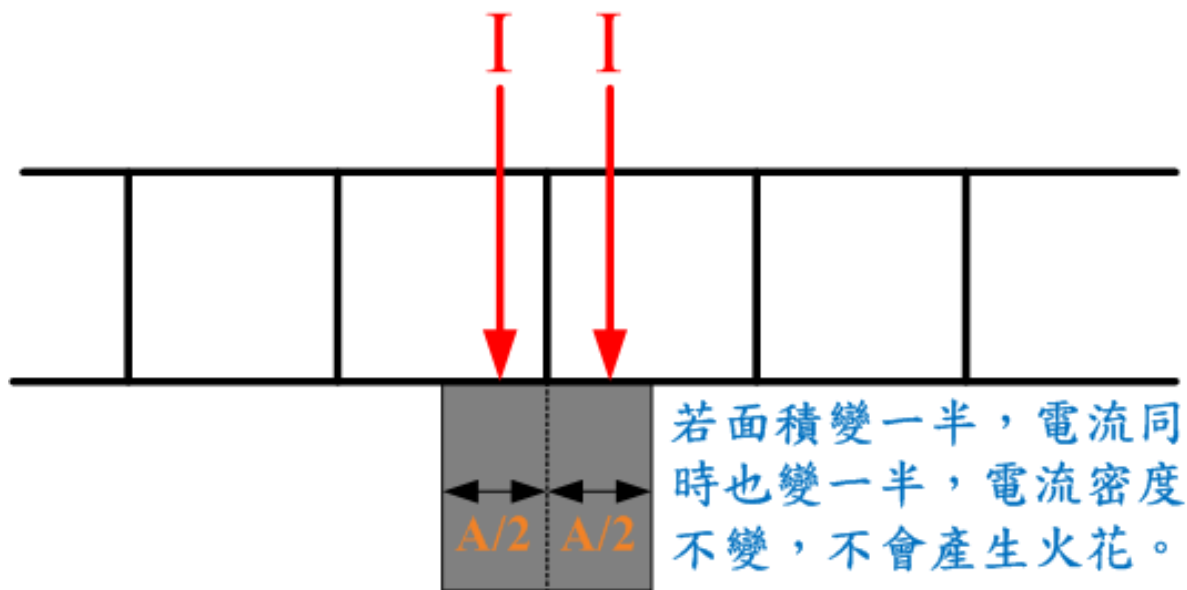
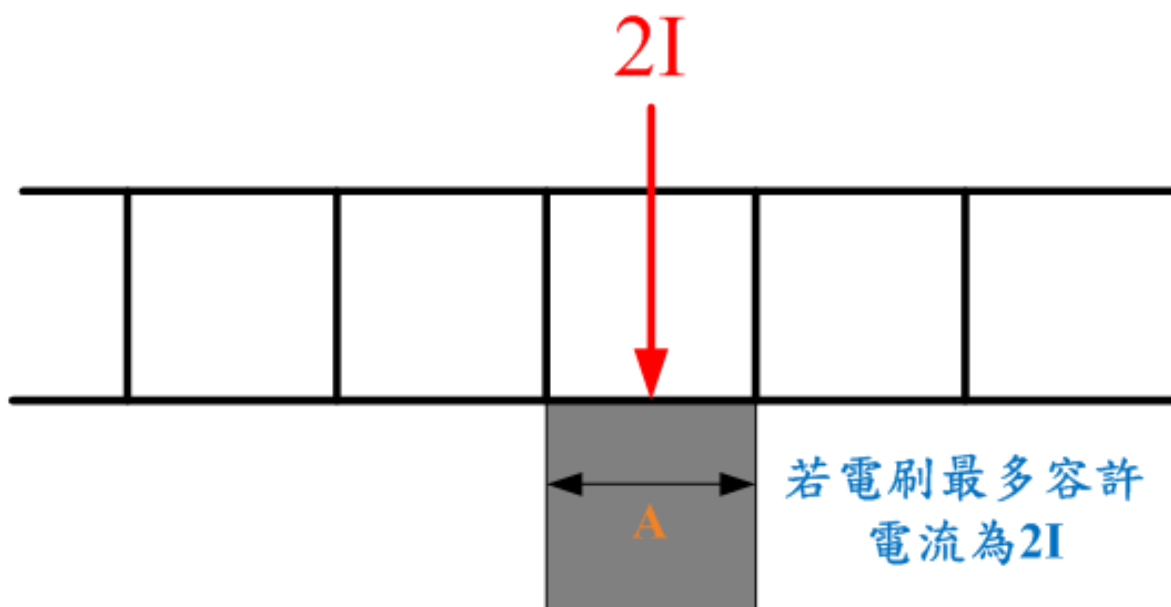
電樞向右旋轉移動

佛萊銘右手定則

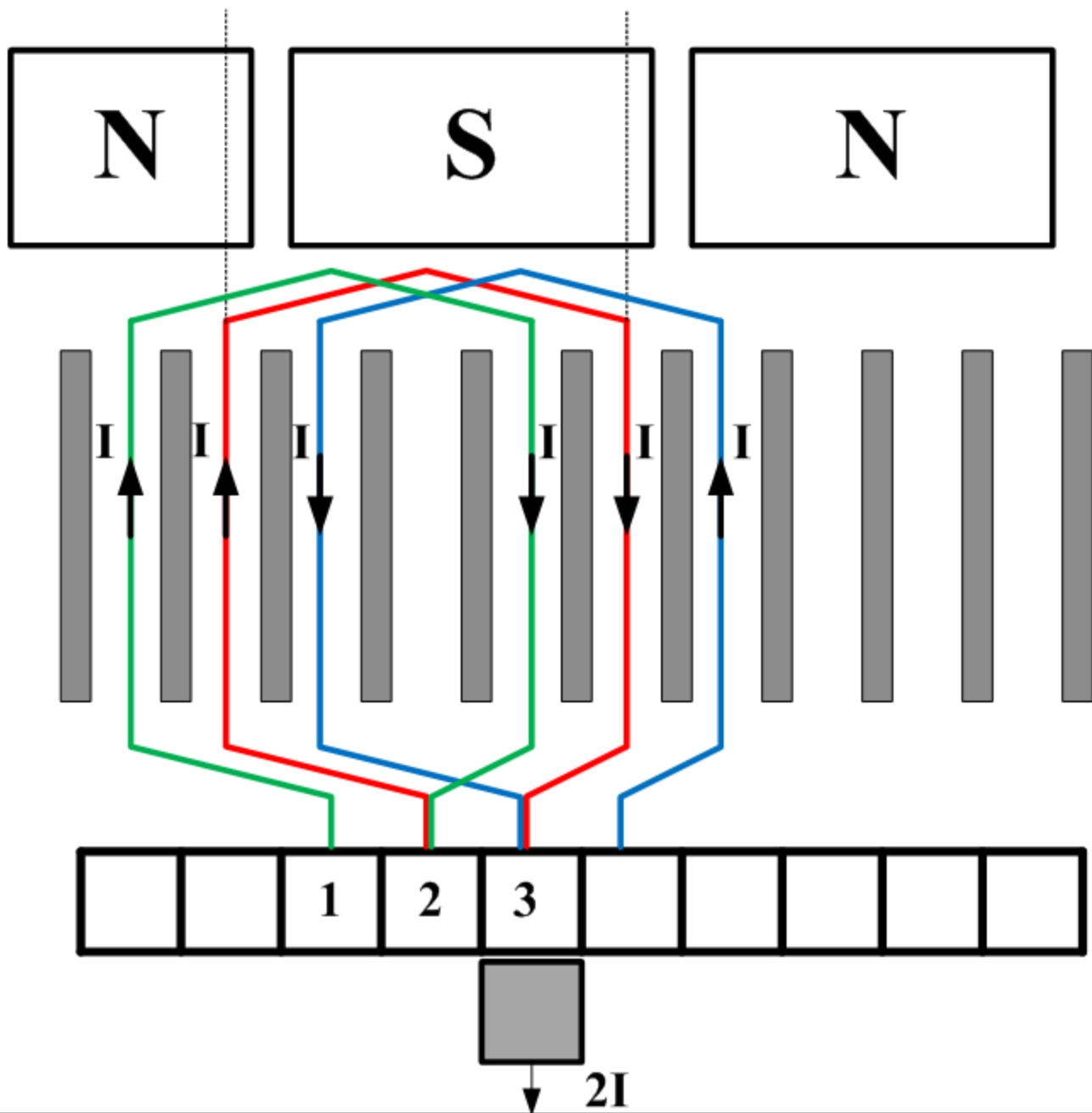
N → 感應向上電流

S → 感應向下電流





換向前

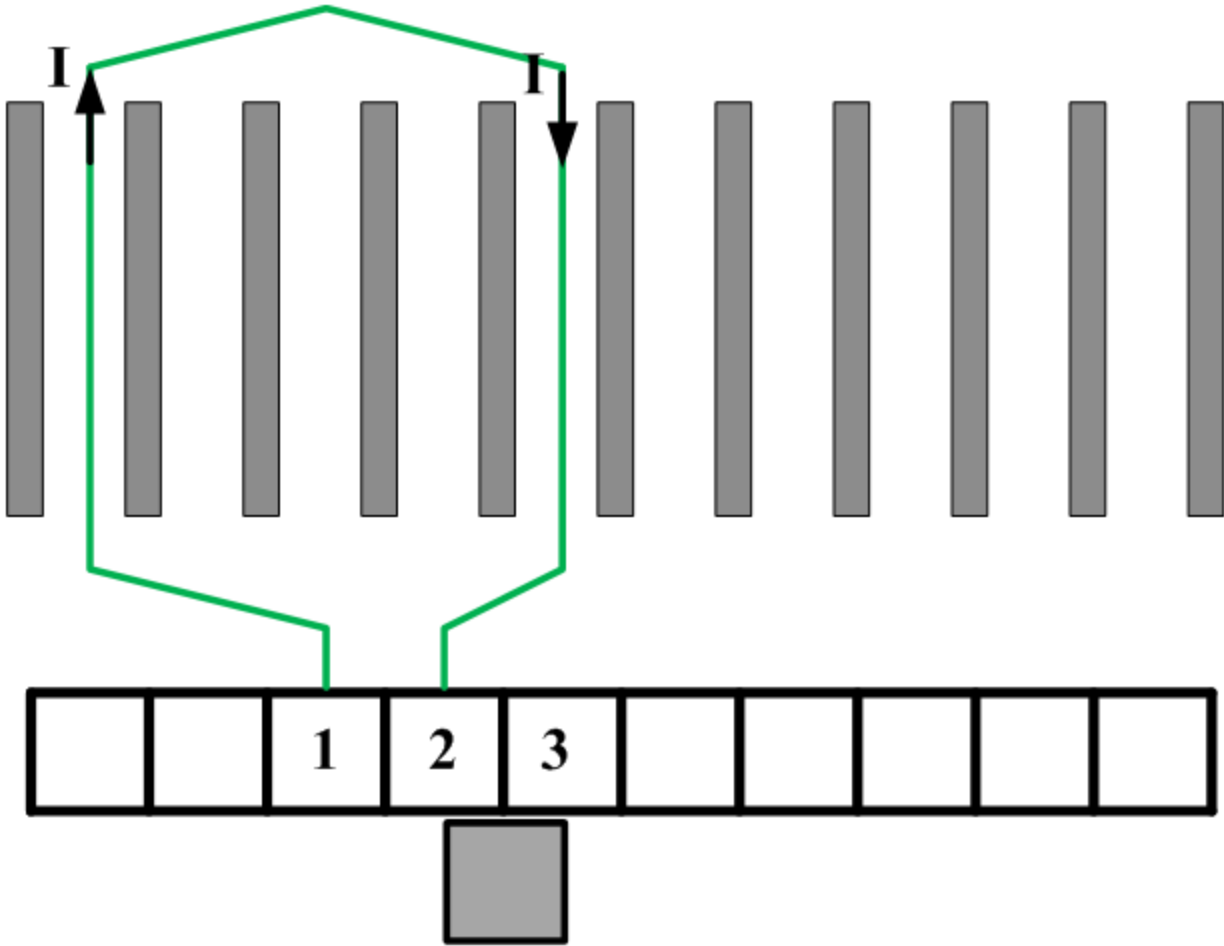


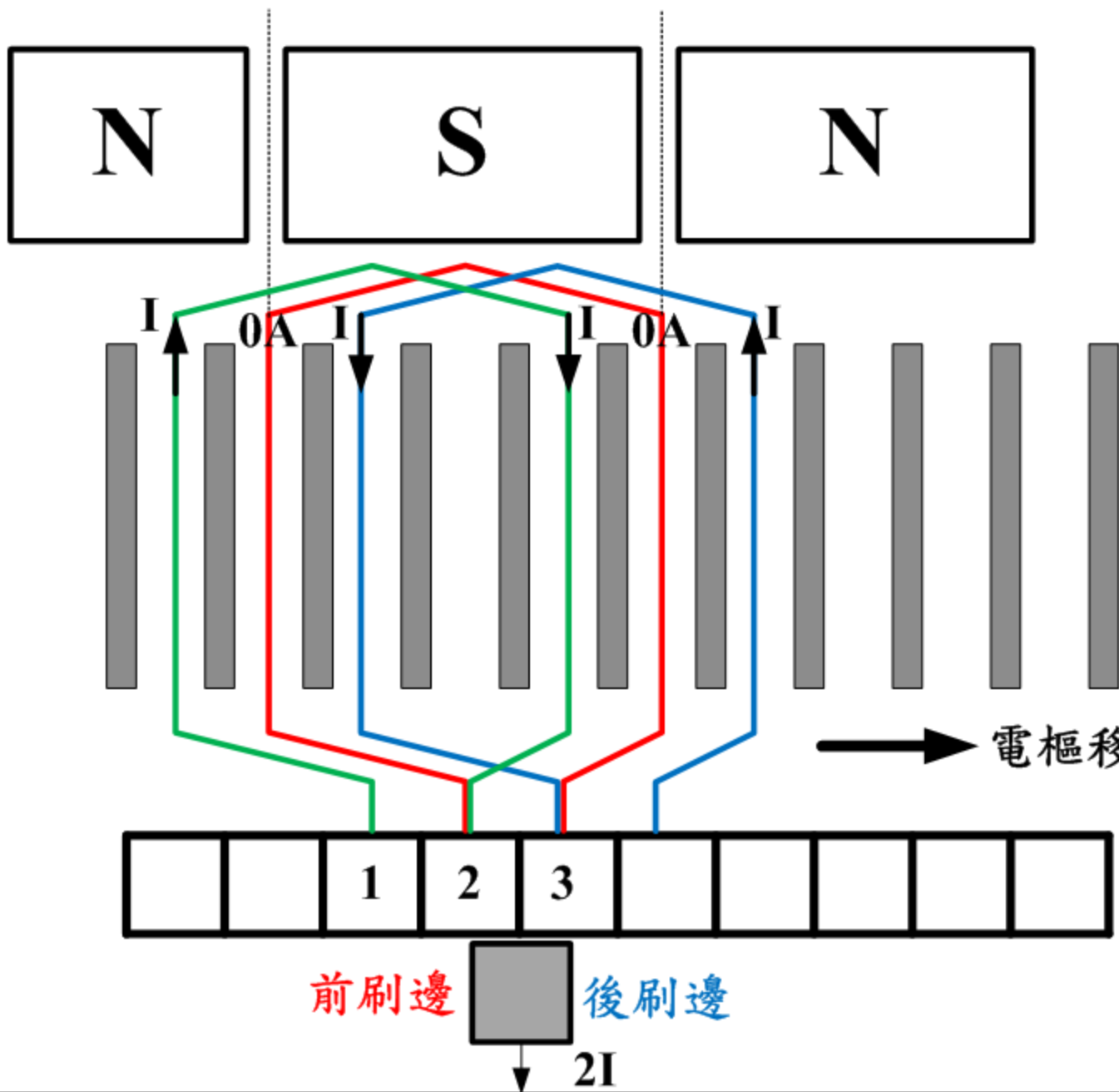
N

S

N

換向中





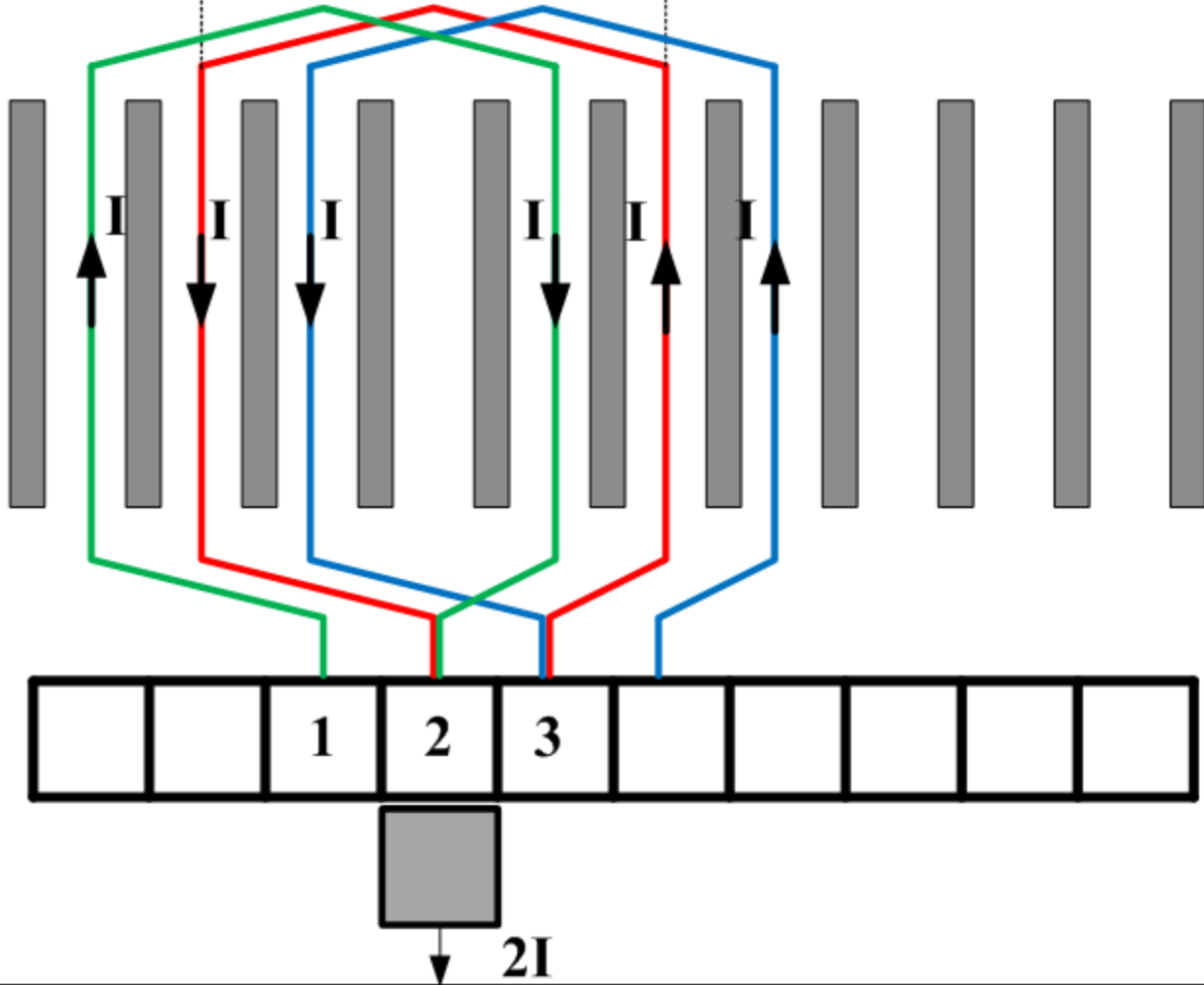
換向中

N

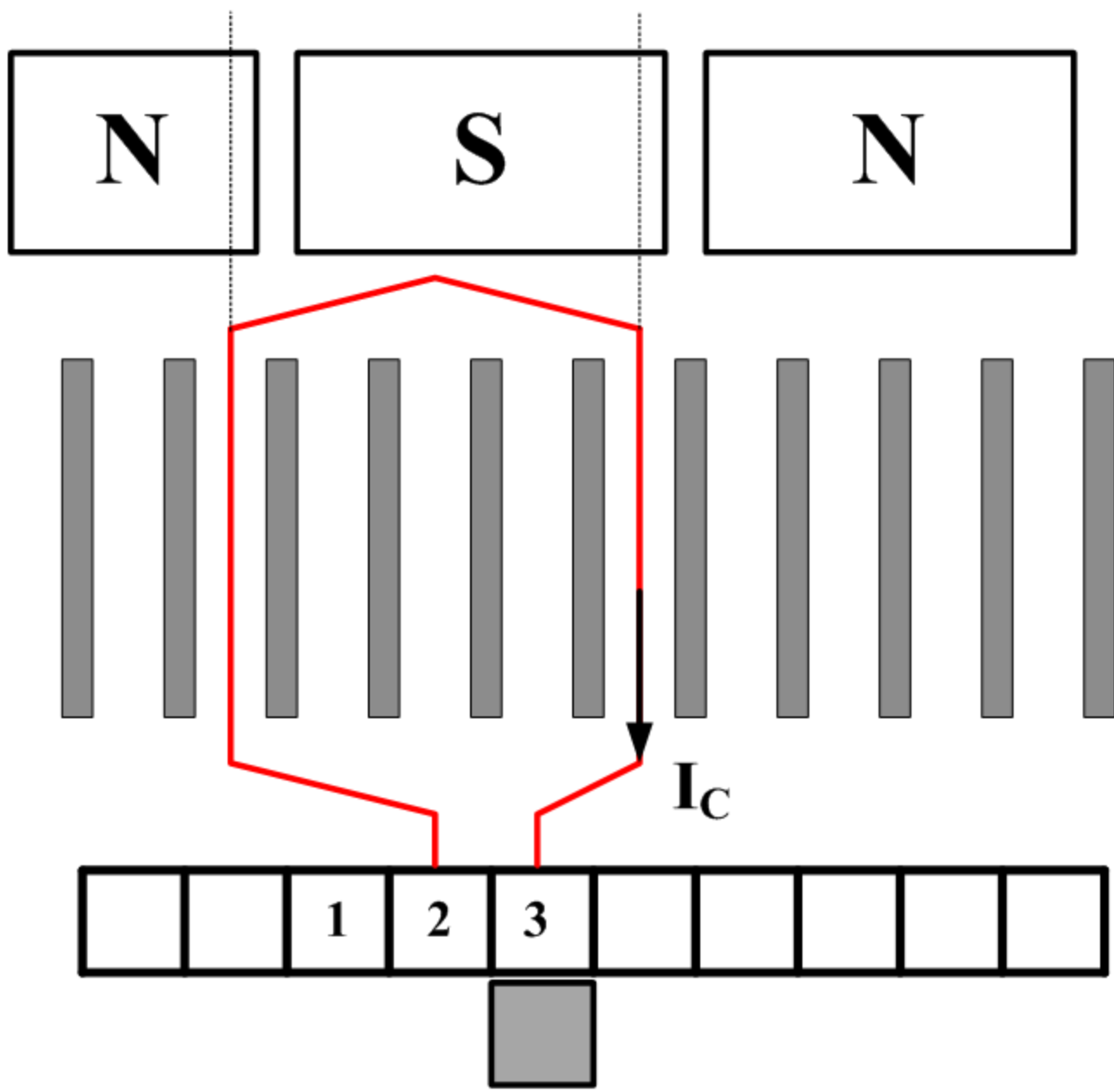
S

N

換向後



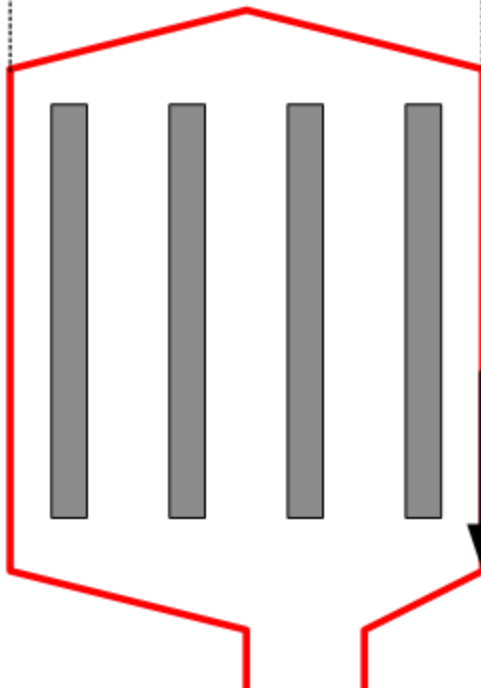
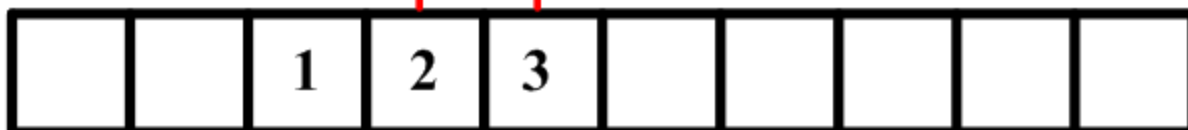
直線換向
(不會產生火花)



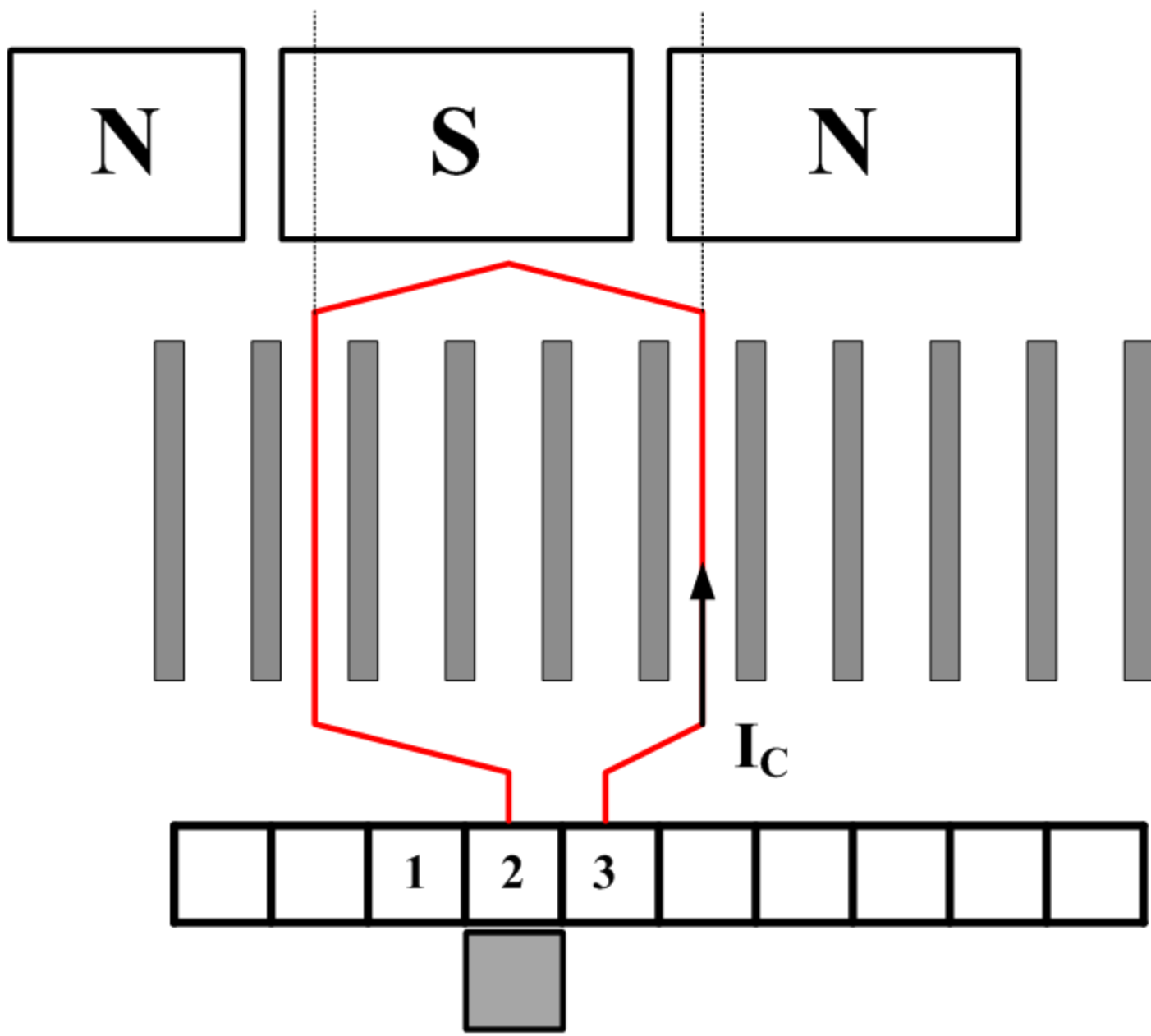
N

S

N



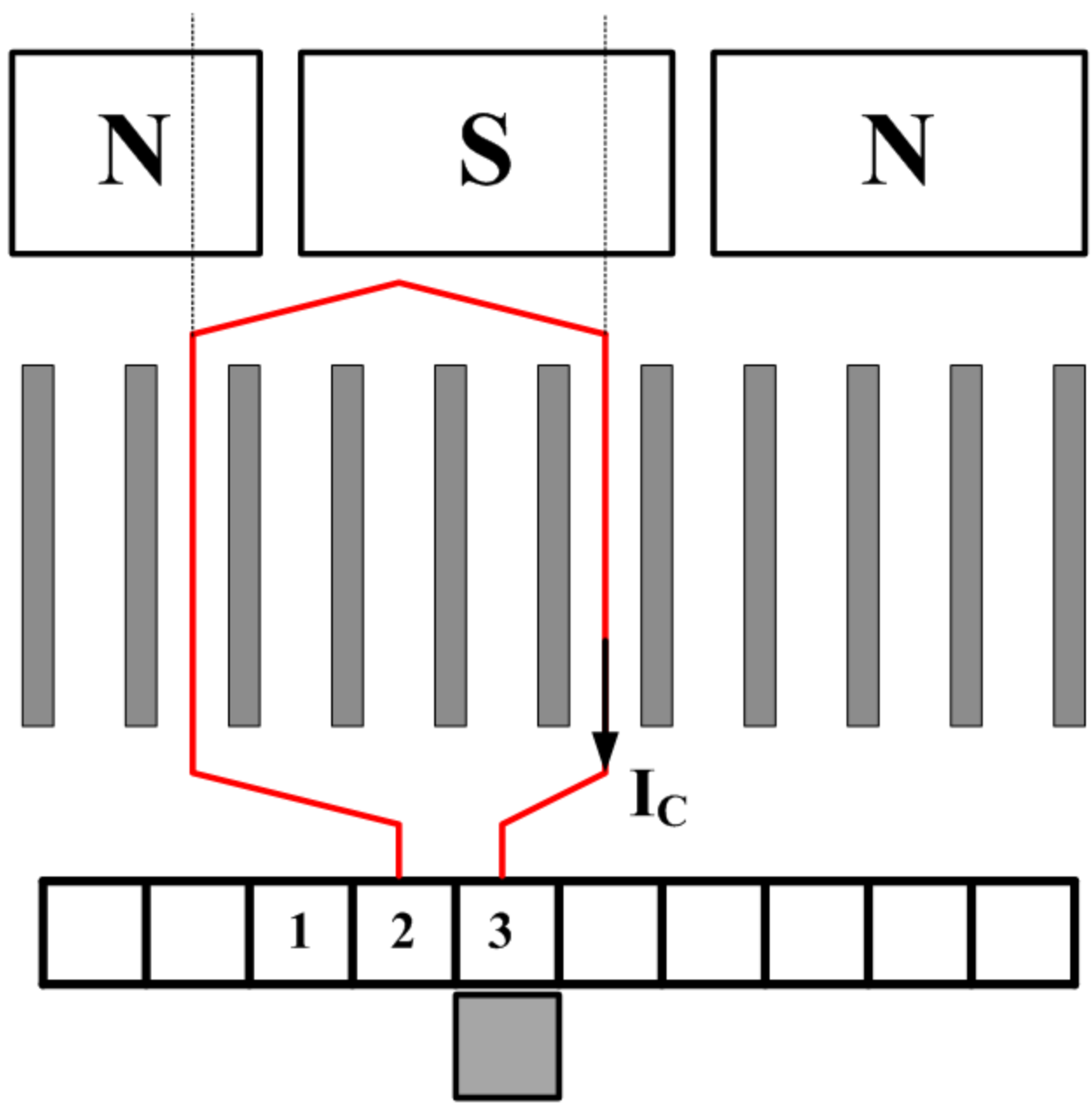
0A

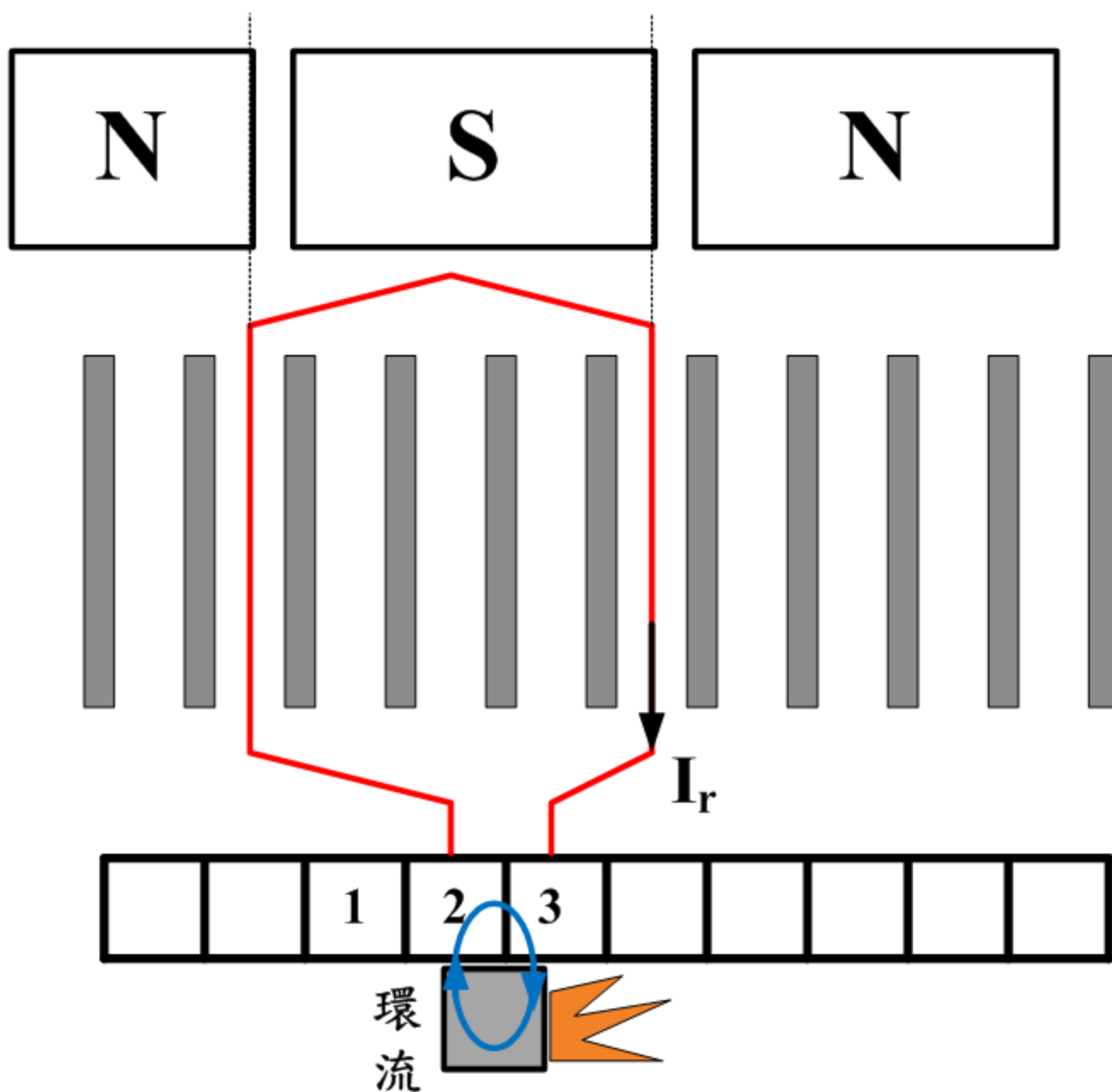


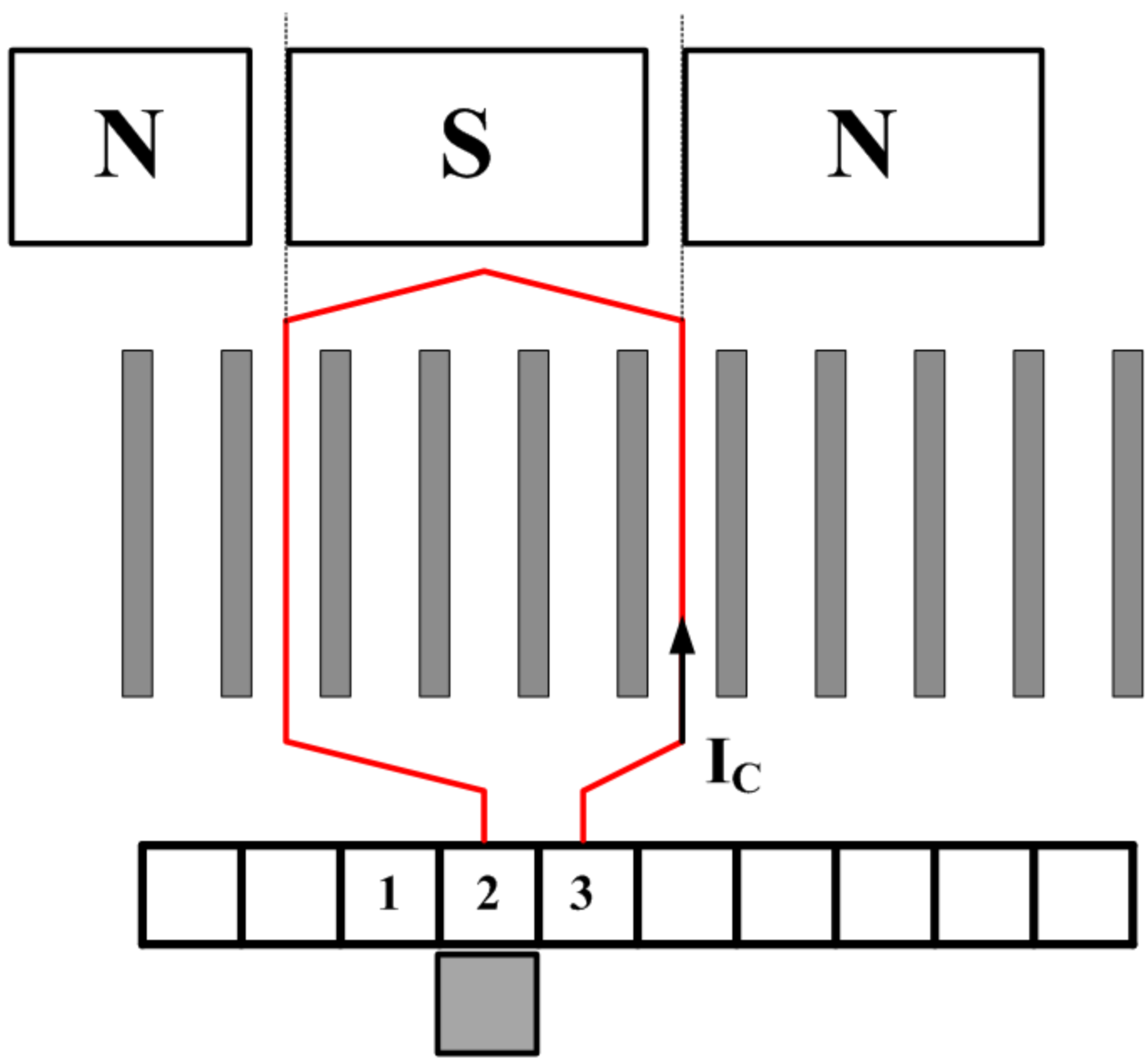
欠速換向

(後刷邊產生火花)

P. S. 換向線圈無在磁中心面上
尚未到達磁中性面換向線圈就被短路



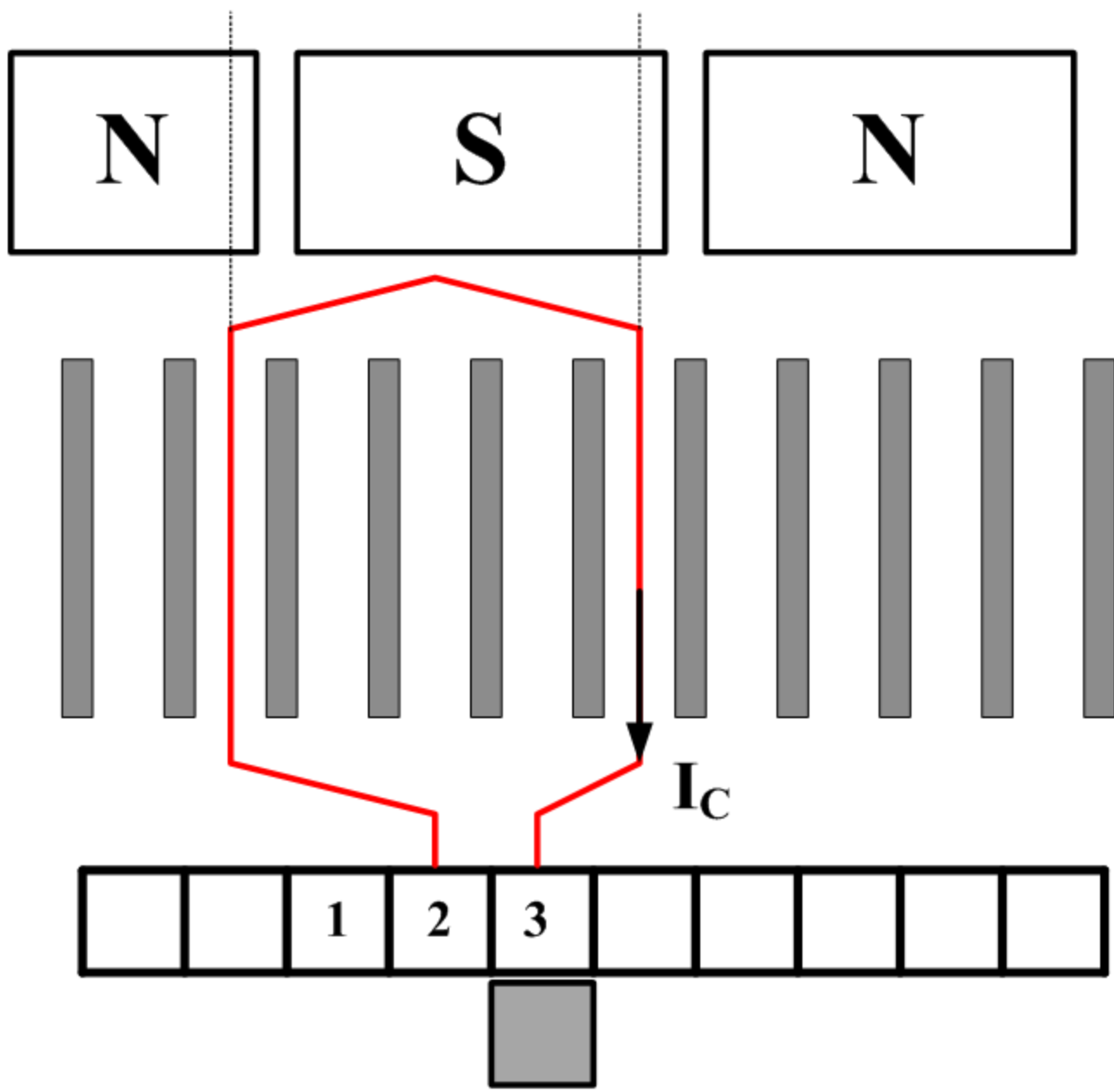


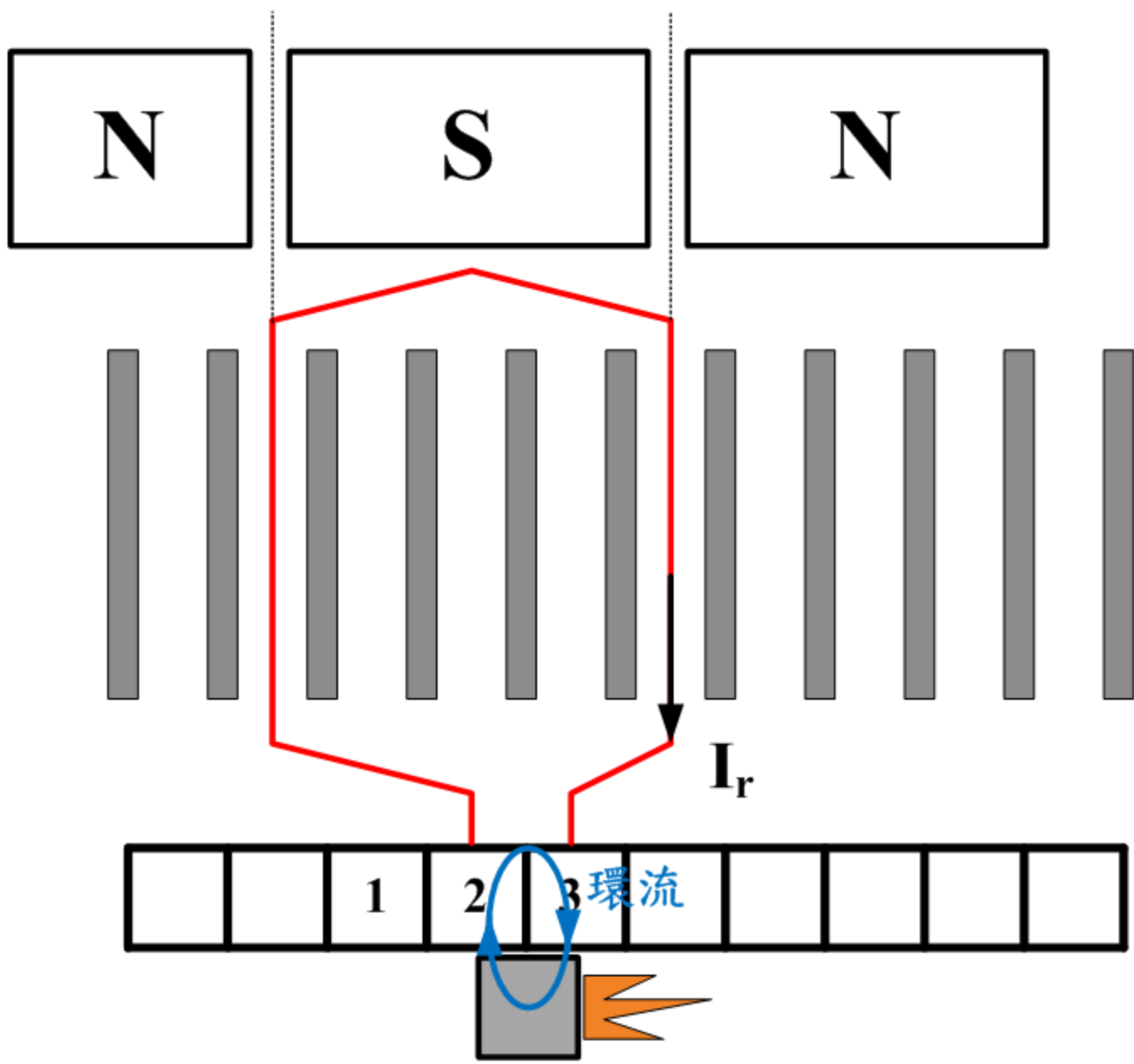


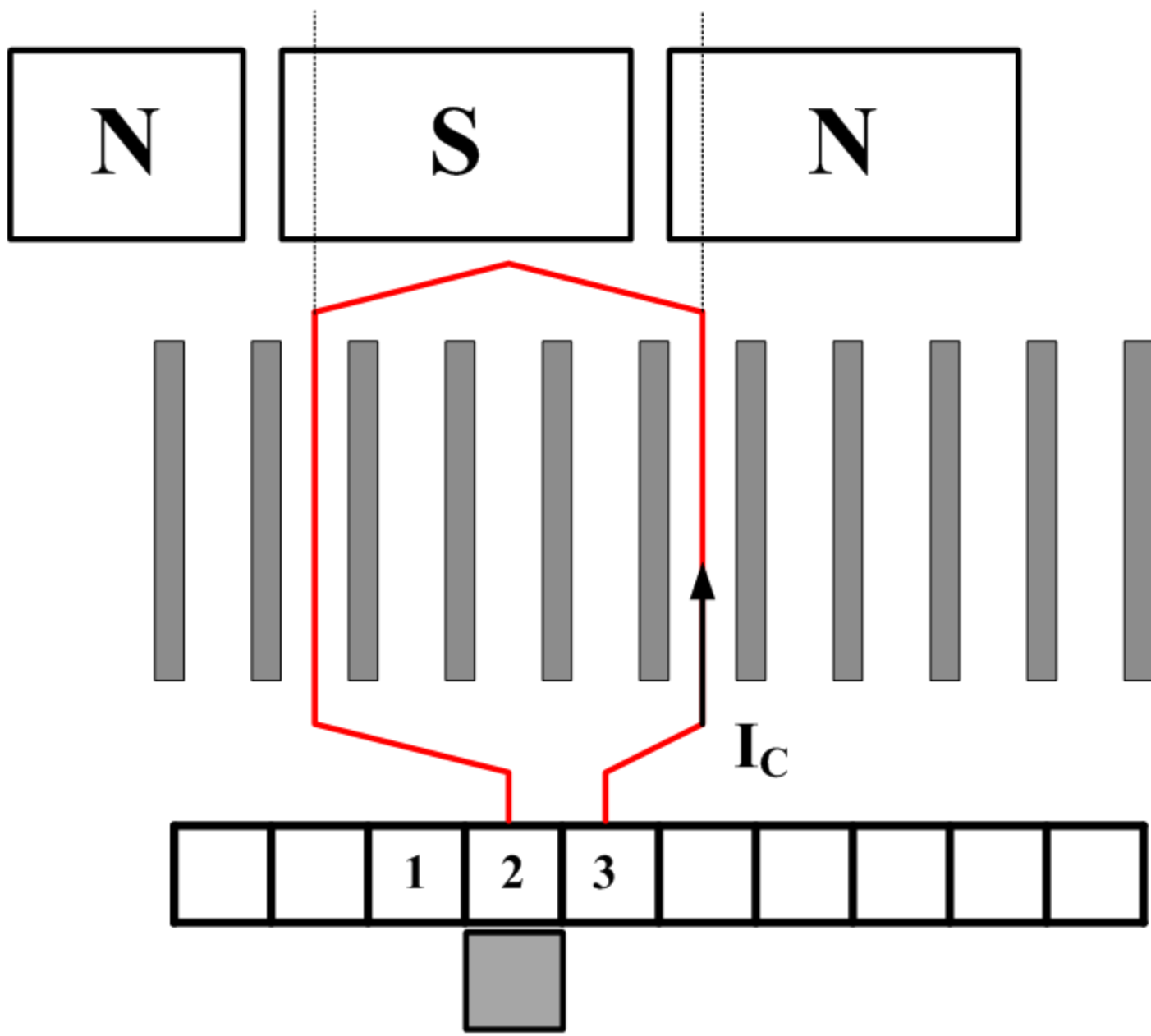
欠速換向

(後刷邊產生火花)

P. S. 換向線圈在磁中心面上，但有電抗電壓。
電抗電壓：線圈上自感與互感產生的電壓，
有阻礙換向的作用。



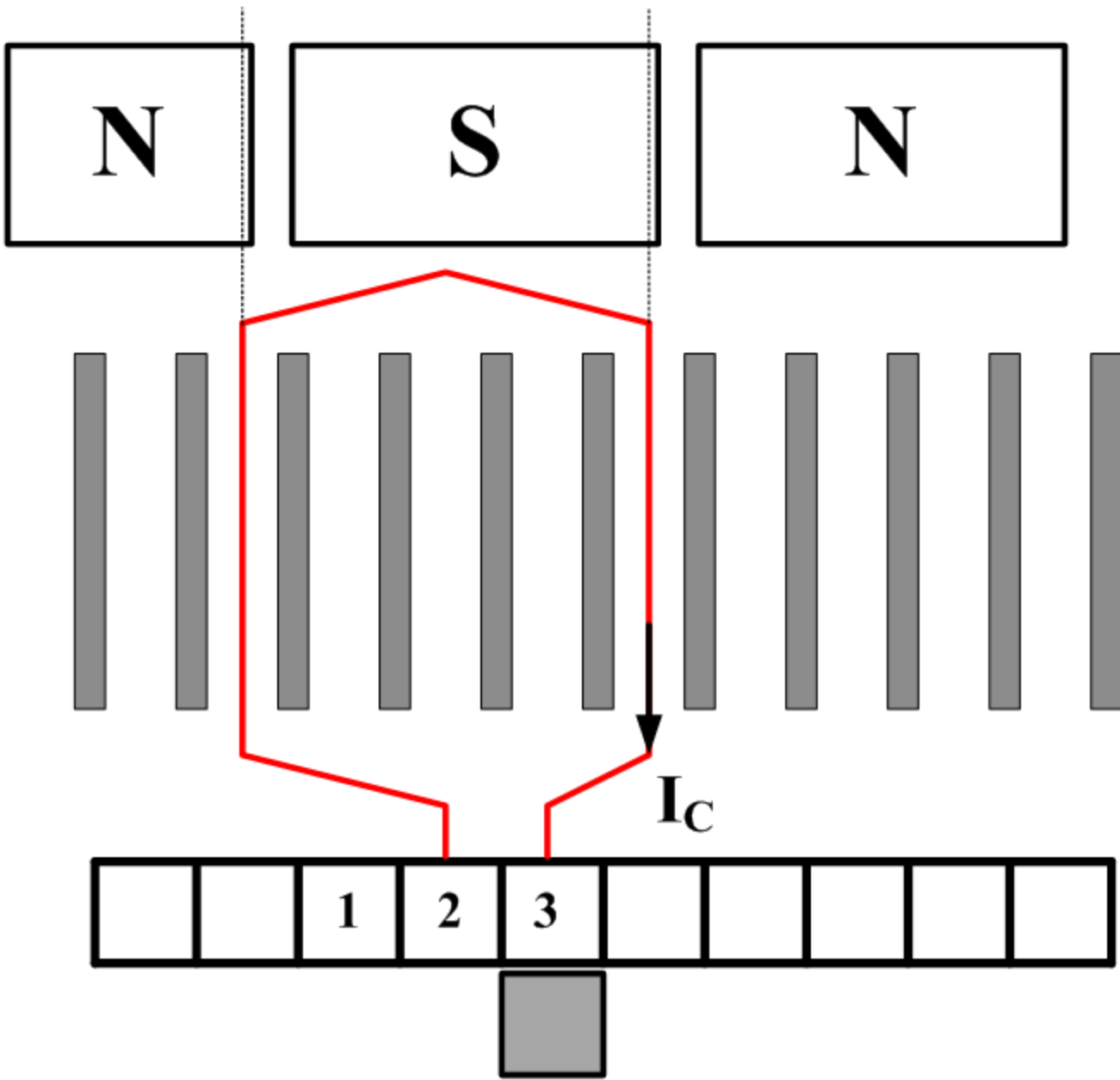


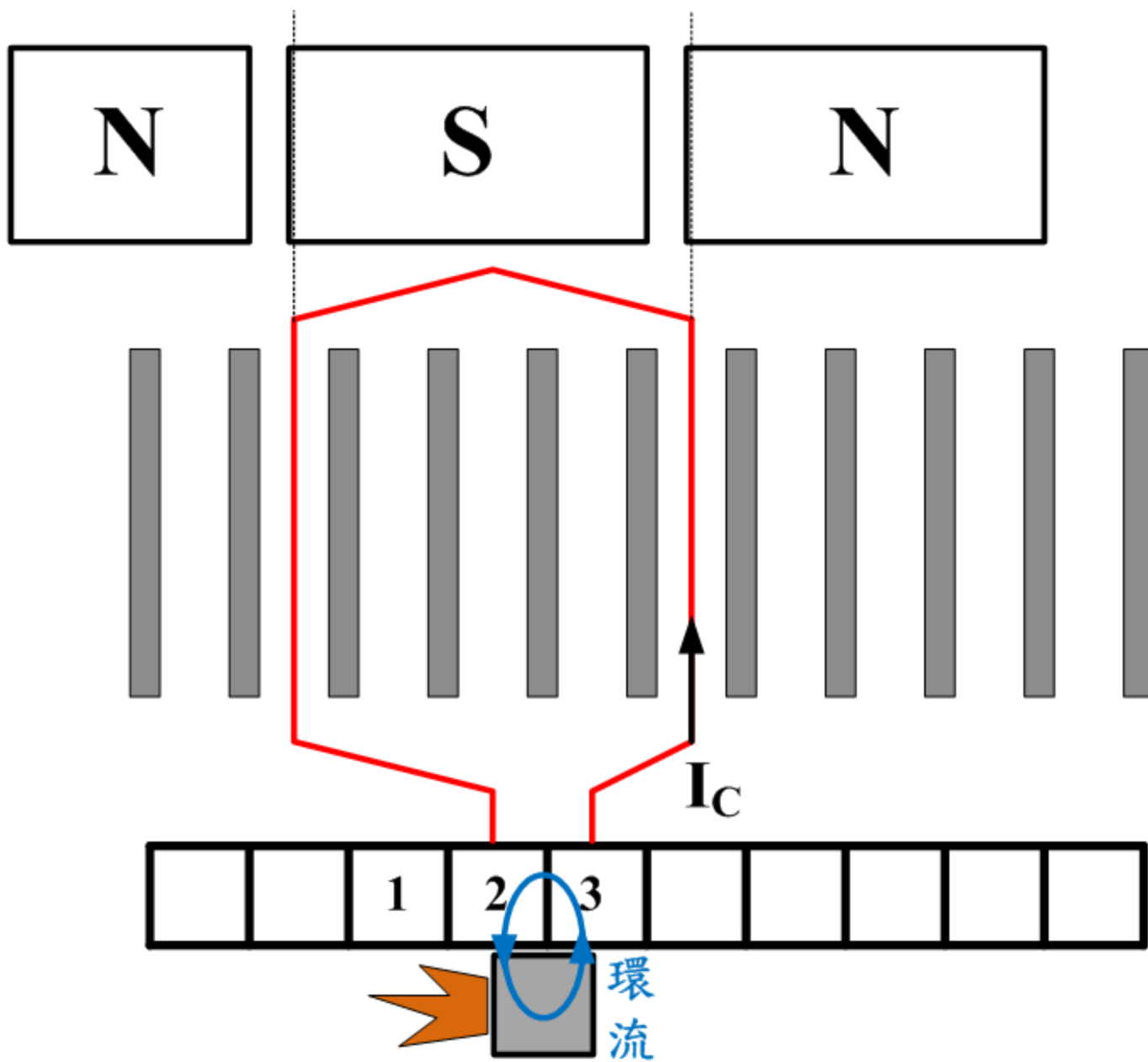


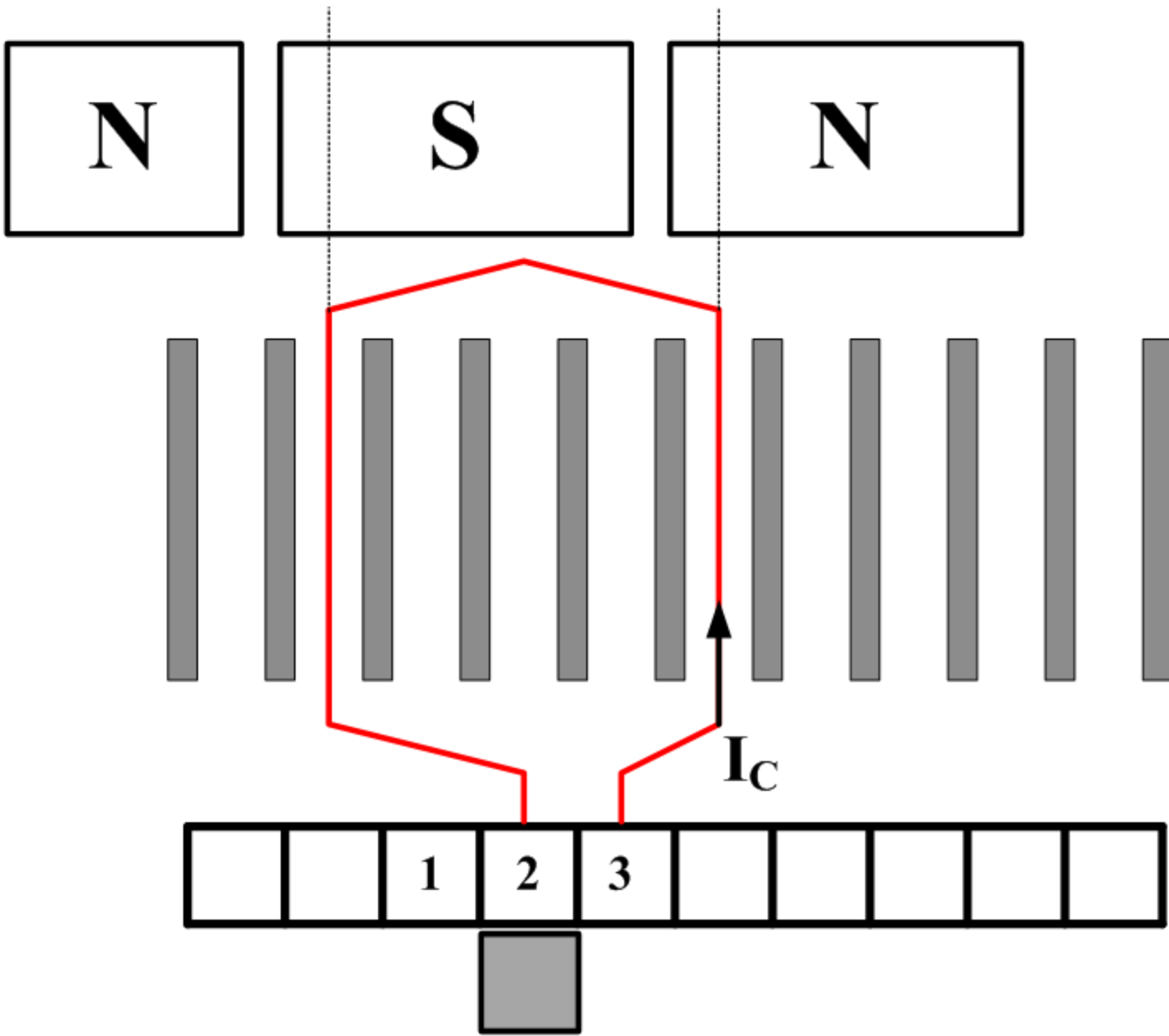
過速換向

(前刷邊產生火花)

P. S. 換向線圈無在磁中心面上
已超過磁中性面換向線圈才被短路



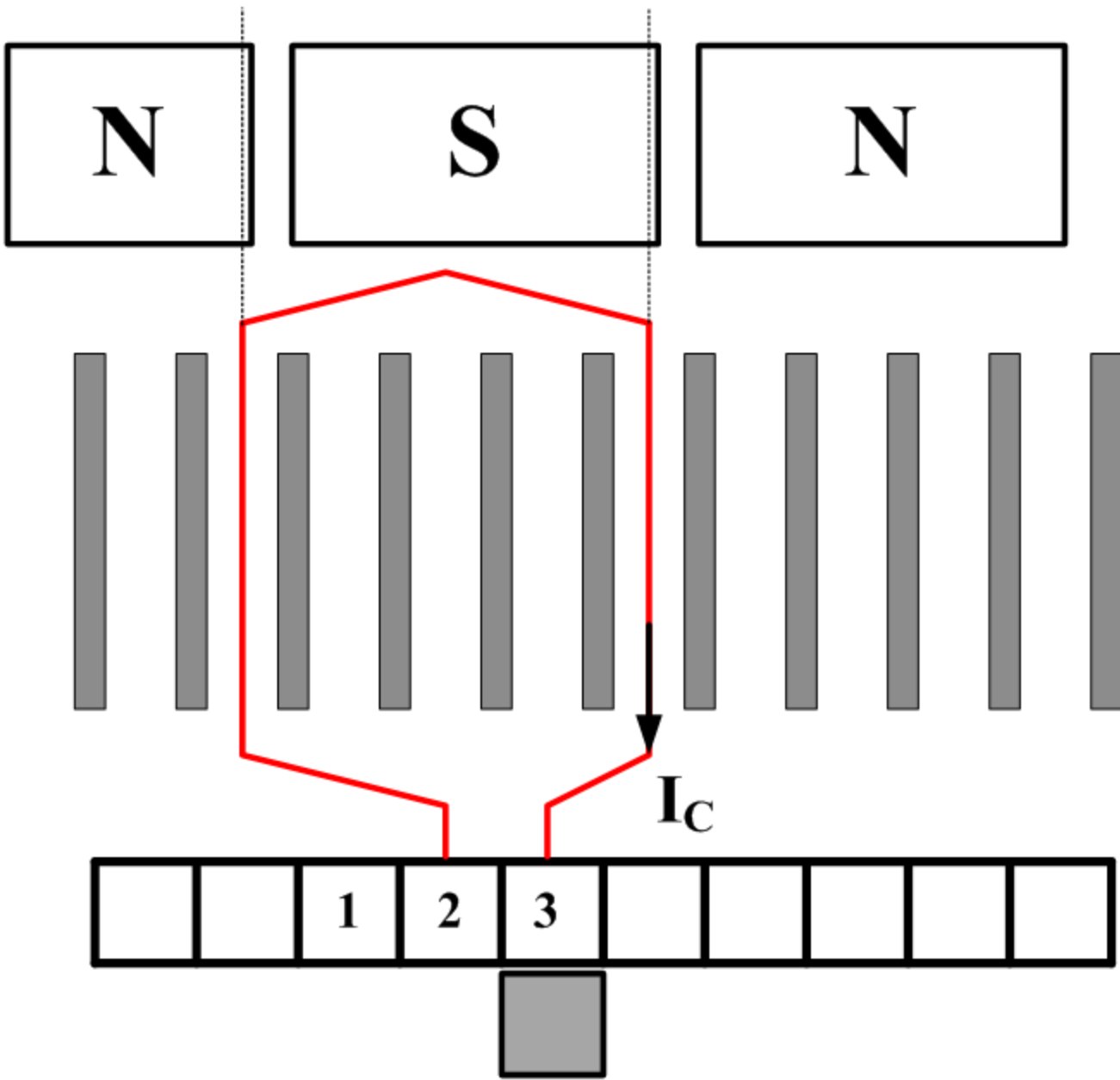


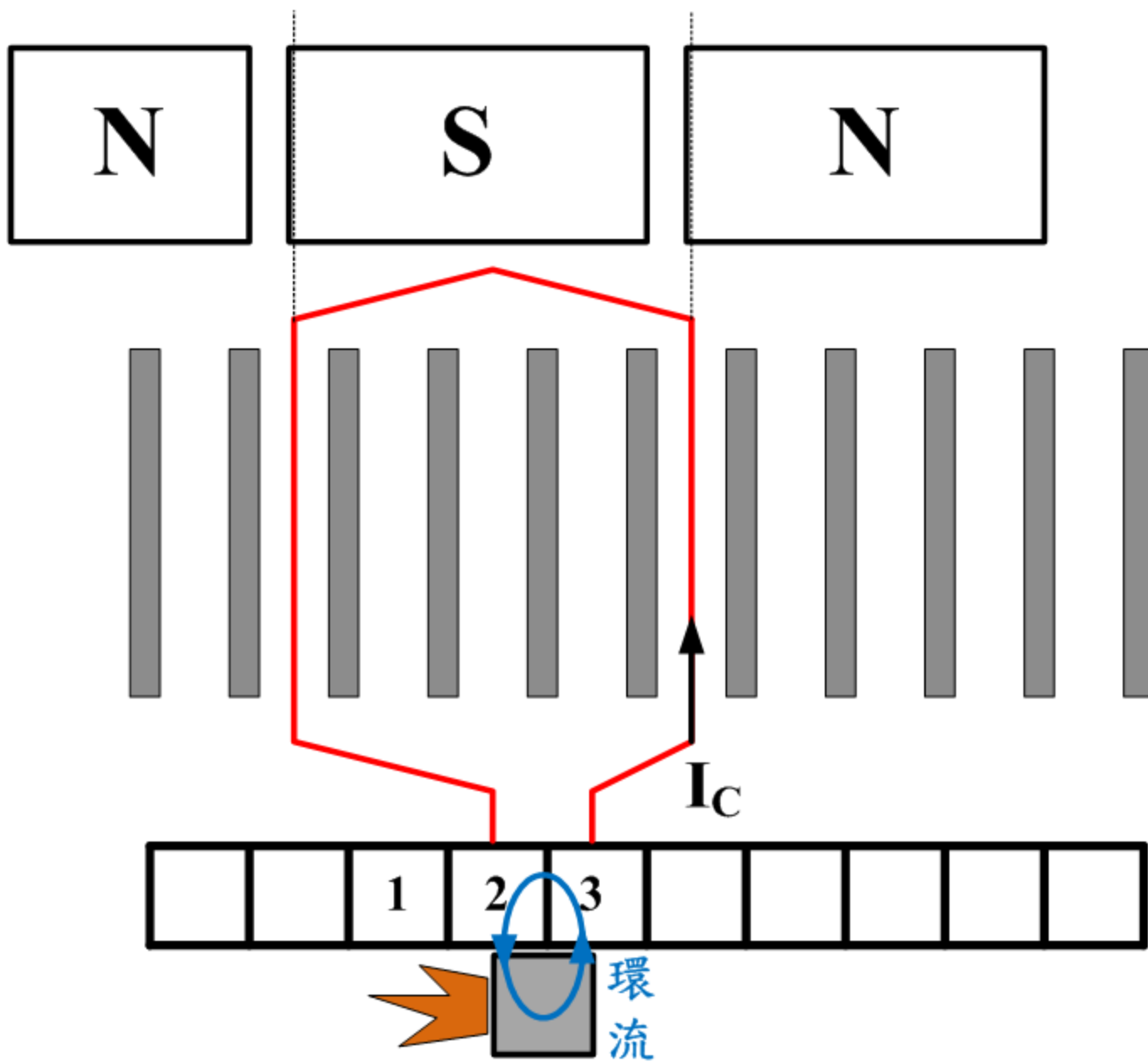


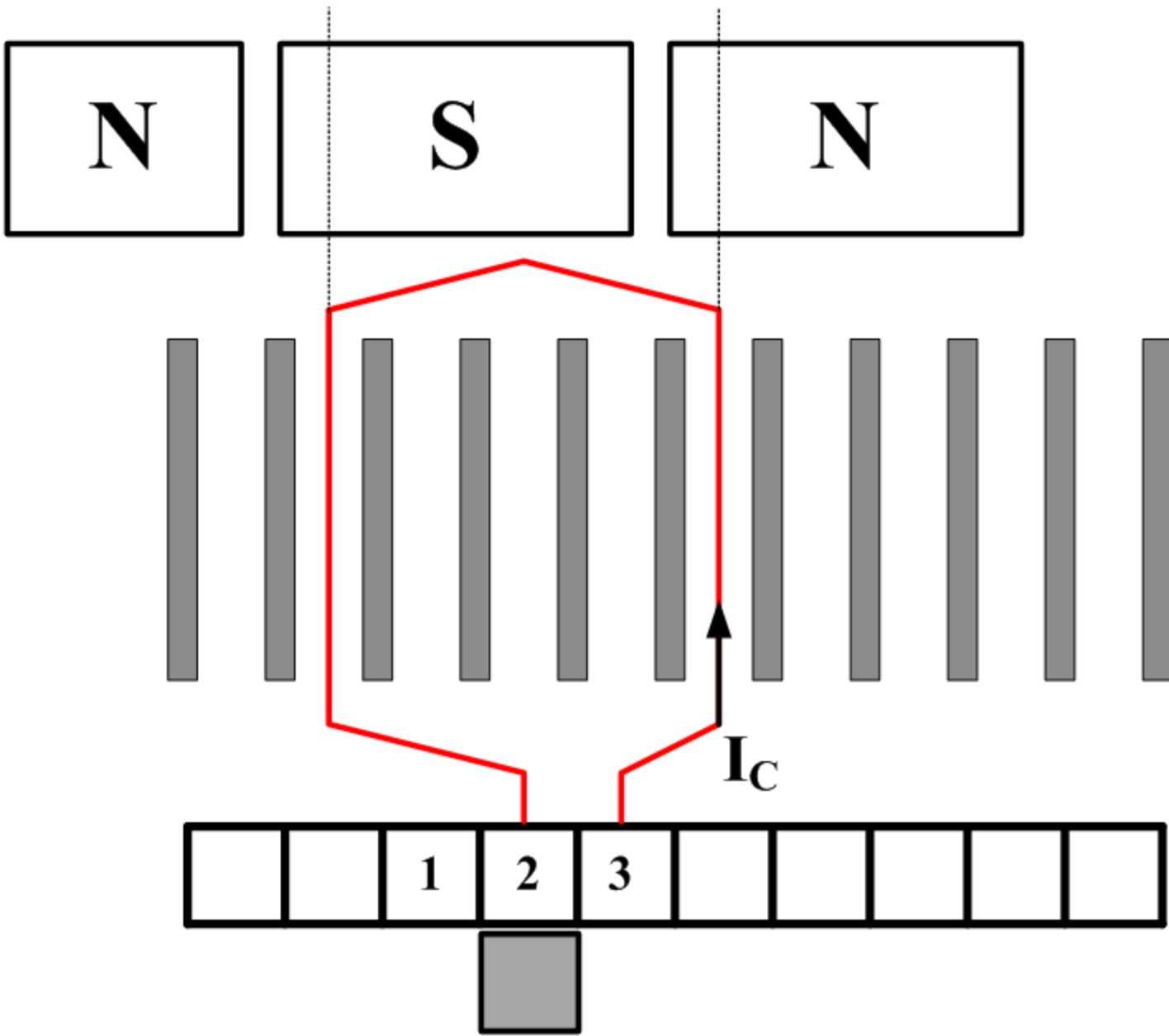
過速換向

(前刷邊產生火花)

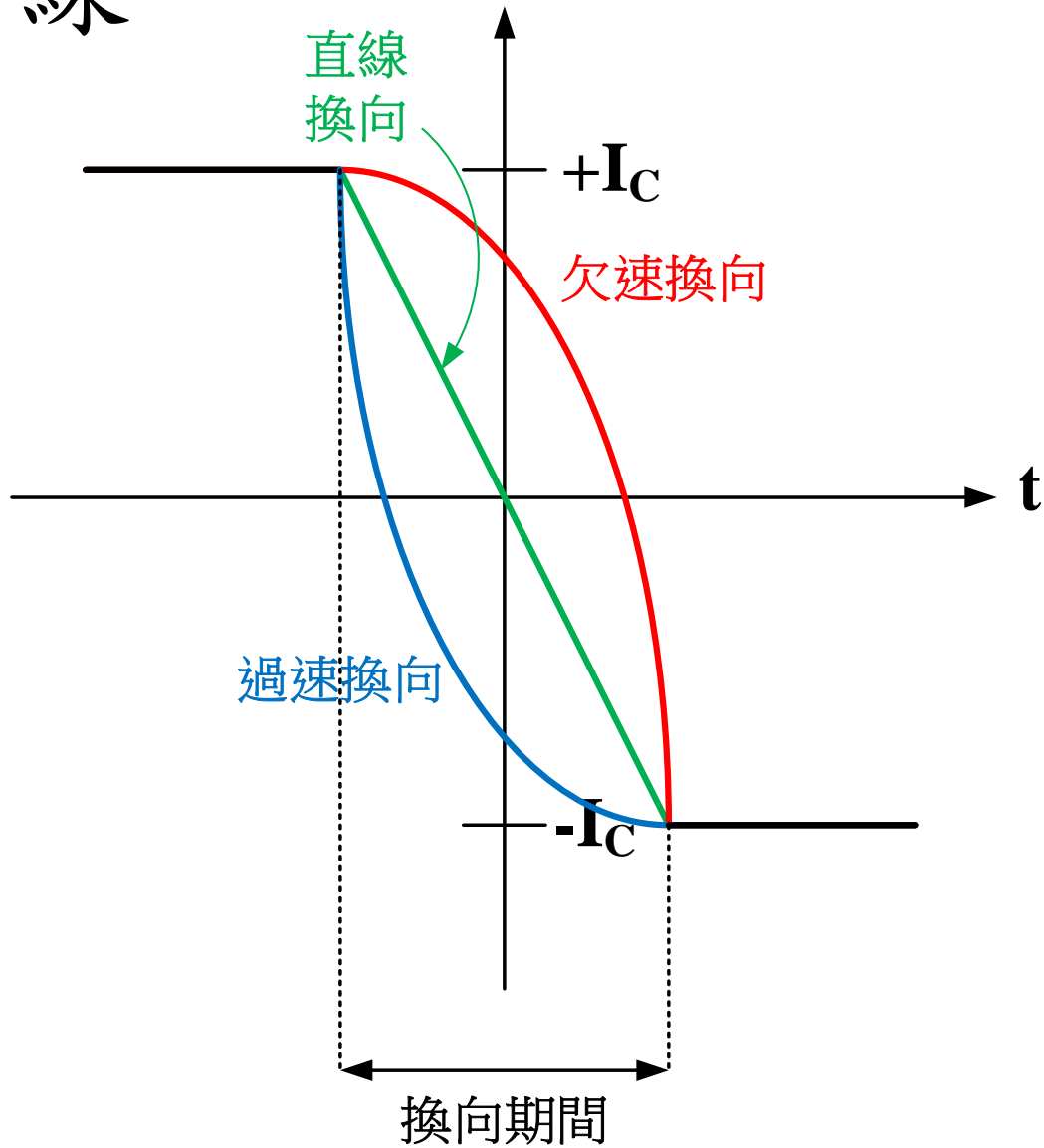
P. S. 換向線圈在磁中心面上，但有換向電壓。
電抗電壓：線圈切割到幫助換向磁極所產生的電壓，有幫助換向的作用。







換向曲線



結論

欠速換向 → 後刷邊產生火花

($E_r > E_c$)

『依轉向』換向線圈未達磁中性面即被短路。

過速換向 → 前刷邊產生火花

($E_c > E_r$)

『依轉向』換向線圈已過磁中性面才被短路。

發電機

