The state-flipping algorithm will not always find this configuration

For example, Let G be a graph consisting of a cycle of length four: there are nodes v_1, v_2, v_3, v_4 and edges (v_1, v_2), (v_2, v_3), (v_3, v_4), (v_4, v_1). Then if we start the state-flipping algorithm in a configuration where nodes v_1 and v_2 have state $+1$, and nodes v_3 and v_4 have state -1, then no improving move is possible.

[1] ex652.266.676