Maslov-type index iteration theory are applied to study the linear stability of the criss-cross orbit in the planar three-body problem. This orbit was first found by Broucke and Hénon, and later rediscovered and named by Moore. The symmetry group of this orbit is shown to be $D_4$. Following Hu and Sun’s recent work, we show that this orbit is linearly stable. Surprisingly, the variational structure of this orbit guarantees its linear stability. (Received June 01, 2012)