A maximum independent set of vertices in a graph is a set of pairwise nonadjacent vertices of largest cardinality α. Plummer defined a graph to be *well-covered*, if every independent set is contained in a maximum independent set of G. Every well-covered graph G without isolated vertices has a perfect [1,2]-factor F_G, i.e. a spanning subgraph such that each component is 1-regular or 2-regular. Here, we characterize all well-covered graphs G satisfying $\alpha(G) = \alpha(F_G)$ for some perfect [1,2]-factor F_G. This class contains all well-covered graphs G without isolated vertices of order n with $\alpha \geq (n-1)/2$, and in particular all very well-covered graphs.