Let R be von Neumann regular, and P_R be f.g. projective of rank 1. Since R is a semihereditary ring. Albrecht's Theorem implies that $P = P_1 \oplus ... \oplus P_n$ where each P_i is isomorphic to a f.g. ideal of R. But then $P_i \cong e_i R$ for suitable idempotents $e_i \in R$, so P is a direct sum of cyclic modules. But f.g. projective module P_R of rank 1 is a direct sum of cyclic modules iff P is isomorphic R, so we have Pic(R) = {I}.