A derivation on an algebra which is not inner.

Suppose that $A$ is an algebra with unit 1 and $a$ is an element of $A$ which is not algebraic (i.e. $\{1, a, a^2, \cdots\}$ isn't a linearly independent set). Let $B$ be the subalgebra of $A$ generated by 1 and $a$. Define a mapping $D$ of $B$ into $B$ by $D(\lambda_0 + \lambda_1 a + \cdots + \lambda_n a^n) = \lambda_1 + 2\lambda_2 a + \cdots + n\lambda_n a^{n-1}$. Obviously $D$ is a derivation on $B$ and isn’t inner, since $B$ is commutative and $D \neq 0$. 