Goodwillie calculus, also known as the calculus of functors, is a method of approximating a functor $F : \mathcal{C} \to \mathcal{D}$ between two well-behaved model categories by more homotopically friendly functors similar to how one uses Taylor series to approximate functions by polynomial functions. The category of small categories, denoted $\mathcal{C}at$, has small categories as objects and functors as morphisms. I will show that the derivatives of the identity functor on $\mathcal{C}at$ are zero, i.e. the zero object in the category of spectra on $\mathcal{C}at$. This example is analogous to the example $f(x) = e^{-1/x^2}$ for $x \neq 0$ and $f(0) = 0$ in regular calculus. That is, the derivatives of the identity functor exist for all objects of $\mathcal{C}at$, but the Taylor tower only converges to the value of the functor at the zero object. (Received September 16, 2014)