An annulus is the domain between two pseudoconvex domains, the smaller of which, called the hole, is a relatively compact subset of the larger one. We show that the $\bar{\partial}$-operator from square integrable functions to square integrable $(0, 1)$-forms has closed range for various classes of piecewise smooth holes. This is then used to obtain new Sobolev estimates on the $\bar{\partial}$-problem on piecewise smooth domains. (Received November 28, 2016)