In rigidity theory, a framework is specified by giving $n$ full-dimensional rigid bodies in $R^d$ and a set of geometric constraints among them. The fundamental question is to determine if the framework is rigid or if it admits relative motions between the bodies. Such a framework has an associated multigraph $G$ encoding the combinatorics of the constraints, a rigidity matrix describing the conditions imposed on infinitesimal motions, and a bracket polynomial $P_G$ that lives in the homogeneous coordinate ring of a certain Grassmannian. The polynomial $P_G$ is the determinant of the rigidity matrix, and the variety it defines consists of special embeddings of the framework with nongeneric behavior. We will discuss how the combinatorics of $G$ can be used to understand the structure of $P_G$. (Received September 19, 2015)