I will explain a construction of Fano varieties with torsion in their third cohomology group. The examples are constructed as double covers of linear sections of rank loci of symmetric matrices, and can be seen as higher-dimensional analogues of the Artin-Mumford threefold. As an application, we answer a question of Voisin on the coniveau and strong coniveau filtrations of rationally connected varieties. This is joint work with Jørgen Rennemo.