Traditionally, the instability of geomaterials is considered as a consequence of either translational movement (sliding) or crack accumulation and growth. Recently recognised has been the role of rotational degrees of freedom in the failure processes. However, the rotational degrees of freedom are usually thought of as being associated with rotation of spherical particles and modelled as such. Real grains and blocks are however non-spherical. As soon as the grains or blocks start rotating the moment balance under the combined action of shear and compressive forces produces the effect of apparent negative shear modulus whose value is proportional to the magnitude of the compressive stress. We model the geomaterial in such conditions as an elastic matrix with inclusions having negative shear modulus, while the bulk modulus remains the same as that of the matrix. There is a certain critical value of the negative shear modulus which depends upon the concentration of rotating grains or blocks. When this critical value is reached, the overall (effective) stiffness of the geomaterial abruptly becomes negative and the geomaterial loses stability. The loss of stability manifests itself as the strain localisation and the development of shear fractures. The described mechanism introduces a new controlling parameter - the ratio of the compressive stress magnitude to the shear modulus of the geomaterial before rotations. A special case is when this parameter is equal to unity. Then the concentration of rotating grains/blocks is formally zero. This means that the first rotating grain or block should cause global collapse.