INTERLOCKING STRUCTURES. Infinitesimal Layer.

In this section of the problem we study interlocking properties of an "infinitely thin" layer. Let us consider a layer L between two parallel planes α_1, α_2. Let us call this layer *infinitesimal* if for any two parallel planes β_1, β_2 the layer $L' \subset L$ between β_1 and β_2 is locked.

One can speak about *one-side locked* and *two-side locked* infinitesimal layer.

G1. Is it possible to place convex solids in a layer L between two parallel planes α_1, α_2 as follows:

1) the number of possible shapes is finite;

2) every layer $L' \subset L$ between two parallel planes β_1, β_2 is two-side locked? (The planes β_1, β_2 are not necessarily parallel to α_1 and α_2.)

G2. Does there exist a partition of a layer between two parallel planes into convex solids F_i such that:

1) the number of possible shapes is finite;

2) every layer $L' \subset L$ between two parallel planes β_1, β_2 is one-side locked? (The planes β_1, β_2 are not necessarily parallel to α_1 and α_2.)

G3. Solve G2 for a two-side locked layer.

G4. Solve G3 for stably locked layer. (See F6.)

G5. Generalize these questions for dimensions higher than 3.