

Title (en)  
SECURITY ELEMENT WITH AN OPTICALLY VARIABLE SURFACE PATTERN

Title (de)  
SICHERHEITSELEMENT MIT OPTISCH VARIABLEM FLÄCHENMUSTER

Title (fr)  
ÉLÉMENT DE SÉCURITÉ COMPRENANT UN MOTIF DE SURFACE OPTIQUEMENT VARIABLE

Publication  
**EP 3969292 A1 20220323 (DE)**

Application  
**EP 20725772 A 20200508**

Priority  
• DE 102019003518 A 20190517  
• EP 2020025214 W 20200508

Abstract (en)  
[origin: WO2020233833A1] The invention relates to a security element (12) for securing valuable objects, the security element having an optically variable surface pattern (14) which generates a predefined greyscale image (18-A) with different lightness values when viewed in reflected light at a predefined viewing angle (16-A). The optically variable surface pattern (14) is formed from a plurality of facets (20) which have a substantially geometrically optical effect and the lateral dimensions of which are less than 100  $\mu\text{m}$  and the orientation of which is characterised in each case by an inclination angle  $\alpha$  to the plane of the surface pattern (14) and by an azimuth angle  $\varphi$  in the plane of the surface pattern (14), the orientation of a facet corresponding in each case to an associated characteristic viewing angle (24), and the greyscale image (18-A) being generated from a multiplicity of facets (20) of the optically variable surface pattern (14). The different lightness values of the greyscale image (18-A) are generated by different angle differences ( $\delta$ ) between the characteristic viewing angle (24) of the facets (20) involved in the image generation and the predefined viewing angle (16-A), smaller angle differences corresponding to lighter greyscales and larger angle differences corresponding to darker greyscales.

IPC 8 full level  
**B42D 25/324** (2014.01)

CPC (source: CN EP)  
**B42D 25/29** (2014.10 - CN EP); **B42D 25/324** (2014.10 - CN EP); **B42D 25/373** (2014.10 - CN EP); **B42D 25/425** (2014.10 - CN EP)

Citation (search report)  
See references of WO 2020233833A1

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)  
BA ME

DOCDB simple family (publication)  
**DE 102019003518 A1 20201119**; CN 113840740 A 20211224; CN 113840740 B 20230627; EP 3969292 A1 20220323; WO 2020233833 A1 20201126

DOCDB simple family (application)  
**DE 102019003518 A 20190517**; CN 202080036391 A 20200508; EP 2020025214 W 20200508; EP 20725772 A 20200508