

Title (en)

METHOD FOR PRODUCING AND DESIGNING COMPLEX THREE-DIMENSIONAL MAGNETIC SHIELDING ELEMENTS, SHIELDING ELEMENTS AND USE THEREOF

Title (de)

VERFAHREN ZUM HERSTELLEN UND DESIGN KOMPLEXER DREIDIMENSIONALER MAGNETISCHER ABSCHIRMELEMENTE, ABSCHIRMELEMENTE UND DEREN VERWENDUNG

Title (fr)

PROCÉDÉ DE FABRICATION ET DE CONCEPTION D'ÉLÉMENTS DE BLINDAGE MAGNÉTIQUES TRIDIMENSIONNELS COMPLEXES, ÉLÉMENTS DE BLINDAGE ET LEUR UTILISATION

Publication

EP 4214342 A2 20230726 (DE)

Application

EP 21782652 A 20210916

Priority

- DE 102020124189 A 20200916
- EP 2021075544 W 20210916

Abstract (en)

[origin: WO2022058461A2] The invention relates to a method for producing three-dimensional magnetic shields having sufficient permeability from unannealed, soft-annealed or magnetically annealed magnetically soft metal sheets, wherein the metal sheet is cold formed into the three-dimensional component either in a one-stage or multi-stage process, subsequently subjected to (magnetic) annealing in order to increase permeability, and then transferred to a forming tool in which it is held and/or pressed in a tool in the hot state or at room temperature, which tool has the target contour of the component and is shape-corrected or calibrated by the tool as applicable and is left to cool in the tool, or a sheet is heated for the purposes of forming and increasing permeability and then formed to the target geometry and held in a hot forming tool and left to cool in the tool, or the three-dimensional component is produced by additive manufacturing and subsequently subjected to (magnetic) annealing in order to increase permeability. The invention also relates to a shielding apparatus.

IPC 8 full level

C21D 7/10 (2006.01); **B21D 22/00** (2006.01); **B22F 1/00** (2022.01); **B22F 3/00** (2021.01); **C21D 1/26** (2006.01); **C21D 1/32** (2006.01); **C21D 6/00** (2006.01); **C21D 7/13** (2006.01); **C21D 8/04** (2006.01); **C21D 8/12** (2006.01); **C21D 9/48** (2006.01); **C22C 19/03** (2006.01); **C22C 19/07** (2006.01); **C22C 33/02** (2006.01); **C22C 38/02** (2006.01); **C22C 38/08** (2006.01); **C22C 38/10** (2006.01); **H05K 9/00** (2006.01)

CPC (source: EP KR US)

B21D 22/022 (2013.01 - EP KR US); **B21D 37/16** (2013.01 - EP KR); **B22F 3/162** (2013.01 - EP KR); **B22F 3/164** (2013.01 - EP KR); **B22F 5/006** (2013.01 - EP KR US); **B22F 7/04** (2013.01 - EP KR); **B22F 7/08** (2013.01 - EP KR); **B22F 10/64** (2021.01 - EP KR US); **B22F 10/66** (2021.01 - EP KR); **B33Y 10/00** (2014.12 - EP KR US); **B33Y 40/20** (2020.01 - EP KR US); **B33Y 80/00** (2014.12 - EP KR US); **C21D 1/26** (2013.01 - EP); **C21D 1/32** (2013.01 - EP KR); **C21D 6/001** (2013.01 - EP KR); **C21D 6/002** (2013.01 - US); **C21D 6/005** (2013.01 - US); **C21D 6/007** (2013.01 - EP KR US); **C21D 6/008** (2013.01 - EP KR US); **C21D 7/10** (2013.01 - EP KR); **C21D 7/13** (2013.01 - EP KR); **C21D 8/0405** (2013.01 - EP KR); **C21D 8/0421** (2013.01 - EP KR); **C21D 8/0447** (2013.01 - EP KR); **C21D 8/1216** (2013.01 - EP KR US); **C21D 8/1244** (2013.01 - EP KR US); **C21D 9/46** (2013.01 - US); **C21D 9/48** (2013.01 - EP KR); **C22C 19/03** (2013.01 - EP KR); **C22C 19/057** (2013.01 - US); **C22C 19/07** (2013.01 - EP KR); **C22C 38/02** (2013.01 - EP KR US); **C22C 38/04** (2013.01 - US); **C22C 38/06** (2013.01 - US); **C22C 38/08** (2013.01 - EP KR); **C22C 38/10** (2013.01 - EP KR); **C22C 38/22** (2013.01 - US); **C22C 38/24** (2013.01 - US); **C22C 38/26** (2013.01 - US); **C22C 38/28** (2013.01 - US); **C22C 38/30** (2013.01 - US); **C22F 1/10** (2013.01 - US); **H05K 9/0075** (2013.01 - EP KR US); **B22F 2998/10** (2013.01 - US); **C21D 2251/00** (2013.01 - EP KR); **C22C 2202/02** (2013.01 - EP KR US); **Y02P 10/25** (2015.11 - EP KR)

Citation (search report)

See references of WO 2022058461A2

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

Designated validation state (EPC)

KH MA MD TN

DOCDB simple family (publication)

DE 102020124189 A1 20220317; EP 4214342 A2 20230726; EP 4310200 A2 20240124; EP 4310200 A3 20240508; KR 20230070251 A 20230522; US 2023332276 A1 20231019; WO 2022058461 A2 20220324; WO 2022058461 A3 20220512

DOCDB simple family (application)

DE 102020124189 A 20200916; EP 2021075544 W 20210916; EP 21782652 A 20210916; EP 23205888 A 20210916; KR 20237012762 A 20210916; US 202118245645 A 20210916