

Title (en)
LASER PROCESSING OF A WORKPIECE WITH A CURVED SURFACE

Title (de)
LASERBEARBEITUNG EINES WERKSTUECKS MIT EINER GEKRUEMMTEN OBERFLAECHE

Title (fr)
TRAITEMENT AU LASER D'UNE PIÈCE À TRAVAILLER AYANT UNE SURFACE INCURVÉE

Publication
EP 4196312 A1 20230621 (DE)

Application
EP 21758351 A 20210805

Priority
• DE 102020121283 A 20200813
• EP 2021071896 W 20210805

Abstract (en)
[origin: WO2022033958A1] A method is disclosed for processing the material of a workpiece (9) using a laser beam (3), wherein the workpiece (9) comprises a material which is largely transparent to the laser beam (3) and which has a curved surface (9A). The method comprises the steps of: beam shaping (step 101) the laser beam (3) to form an elongate focal zone (7) in the material of the workpiece (9), the beam shaping being carried out using an arrangement of diffractive and/or refractive optical units and comprising: - focus-forming beam shaping (step 101A), which brings about an arrival of beam components (3A) at an arrival angle (δ') at a beam axis (5) of the laser beam (3) to form the elongate focal zone (7) along the beam axis (5) in the workpiece (9) by interference, and - phase-correcting beam shaping (step 101B), which counteracts influencing of the interference by an entry of the laser beam (3) into the workpiece (9), and adjusting (step 105) beam parameters of the laser beam (3) in such a way that the material of the workpiece (9) is modified in the elongate focal zone (7).

IPC 8 full level
B23K 26/0622 (2014.01); **B23K 26/06** (2014.01); **B23K 26/53** (2014.01); **C03B 33/02** (2006.01); **G02B 27/00** (2006.01); **B23K 101/06** (2006.01)

CPC (source: EP KR US)
B23K 26/046 (2013.01 - US); **B23K 26/0622** (2015.10 - US); **B23K 26/0624** (2015.10 - EP KR); **B23K 26/0648** (2013.01 - EP KR US); **B23K 26/53** (2015.10 - EP KR); **B28D 5/00** (2013.01 - EP); **C03B 33/0222** (2013.01 - EP); **C03B 33/06** (2013.01 - EP); **C03B 33/095** (2013.01 - EP); **G02B 3/06** (2013.01 - KR); **G02B 5/001** (2013.01 - KR); **G02B 27/0068** (2013.01 - EP KR); **G02B 27/0944** (2013.01 - EP); **B23K 2101/06** (2018.07 - EP KR); **G02B 3/06** (2013.01 - EP); **G02B 5/001** (2013.01 - EP)

Citation (search report)
See references of WO 2022033958A1

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)
WO 2022033958 A1 20220217; CN 116033994 A 20230428; DE 102020121283 A1 20220217; EP 4196312 A1 20230621; KR 20230031955 A 20230307; US 2023166352 A1 20230601

DOCDB simple family (application)
EP 2021071896 W 20210805; CN 202180055442 A 20210805; DE 102020121283 A 20200813; EP 21758351 A 20210805; KR 20237003974 A 20210805; US 202318163298 A 20230202