

Title (en)
COLLISION-FREE GUIDANCE OF A LOAD SUSPENDED FROM A CABLE

Title (de)
KOLLISIONSFREIE WEGFÜHRUNG EINER AN EINEM SEIL HÄNGENDEN LAST

Title (fr)
GUIDAGE SANS COLLISION D'UNE CHARGE SUSPENDUE À UN CÂBLE

Publication
EP 3873844 A1 20210908 (DE)

Application
EP 20704401 A 20200123

Priority
• EP 19155318 A 20190204
• EP 2020051574 W 20200123

Abstract (en)
[origin: WO2020160918A1] A crane has an upper load suspension point (1), from which a load (3) is suspended via a cable system (2) such that the load (3) can swing about the upper load suspension point (1). A control unit (9) of the crane controls drives (4a, 4b) of the crane so that the upper load suspension point (1) and, together therewith, the load (3) are moved by the control unit (9) according to its actuation. As the upper load suspension point (1) is moved, the control unit (9) repeatedly determines dynamically an inner safety zone (13) around the load (3) according to state variables (x, v, 1, φ_1 , ω , vW) of the crane. The state variables (x, v, 1, φ_1 , ω , vW) comprise at least a position (x) of the upper load suspension point (1), a speed of movement (v) of the upper load suspension point (1) and an effective pendulum length (1) of the load (3) about the upper load suspension point (1). The control unit (9) checks, on the basis of further information known by the control unit (9), whether an object (14) different from the load (3) has entered the inner safety zone (13). As soon as an object (14) enters the inner safety zone (13), the control unit (9) stops the movement of the upper load suspension point (1) or outputs a message (M) to stop the movement of the upper load suspension point (1) to an operator (12) of the crane. Otherwise, the control unit (9) maintains the movement of the upper load suspension point (1) or does not output a message (M) to stop the movement of the upper load suspension point (1) to the operator (12) of the crane.

IPC 8 full level
B66C 15/04 (2006.01)

CPC (source: EP KR US)
B66C 13/16 (2013.01 - US); **B66C 13/46** (2013.01 - US); **B66C 15/04** (2013.01 - EP KR US); **B66C 2700/084** (2013.01 - KR US)

Citation (search report)
See references of WO 2020160918A1

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)
EP 3689807 A1 20200805; CN 113396123 A 20210914; CN 113396123 B 20220805; EP 3873844 A1 20210908; EP 3873844 B1 20221019; ES 2935716 T3 20230309; KR 102422217 B1 20220715; KR 20210113418 A 20210915; US 11390496 B2 20220719; US 2022089417 A1 20220324; WO 2020160918 A1 20200813

DOCDB simple family (application)
EP 19155318 A 20190204; CN 202080012413 A 20200123; EP 2020051574 W 20200123; EP 20704401 A 20200123; ES 20704401 T 20200123; KR 20217028196 A 20200123; US 202017428217 A 20200123