

Title (en)  
METHOD FOR CHARGING RAW MATERIAL INTO BELL-LESS BLAST FURNACE, AND BLAST FURNACE OPERATION METHOD

Title (de)  
VERFAHREN ZUR BESCHICKUNG EINES GLOCKENLOSEN HOCHOFENS MIT ROHMATERIAL UND VERFAHREN ZUM BETRIEB EINES HOCHOFENS

Title (fr)  
PROCÉDÉ D'ENFOURNEMENT DE MATIÈRE PREMIÈRE DANS UN HAUT FOURNEAU SANS CLOCHE, ET PROCÉDÉ D'EXPLOITATION DE HAUT FOURNEAU

Publication  
**EP 3896177 A4 20211103 (EN)**

Application  
**EP 20755670 A 20200130**

Priority  
• JP 2019025211 A 20190215  
• JP 2020003337 W 20200130

Abstract (en)  
[origin: EP3896177A1] Provided are a method for charging raw materials into a bell-less blast furnace, the method enabling raw materials to be charged into a predetermined position in a furnace interior without compromising productivity, and a blast furnace operation method that uses the method for charging raw materials. A method for charging raw materials into a bell-less blast furnace includes charging an iron source material and a carbonaceous material into a furnace interior of the blast furnace by rotating a distribution chute. The distribution chute includes a diversion plate at an end of the distribution chute, the diversion plate being inclined downward relative to a conveying direction of the distribution chute, and a rotational speed of the distribution chute is greater than 10 rpm.

IPC 8 full level  
**C21B 5/00** (2006.01); **C21B 7/20** (2006.01); **F27B 1/20** (2006.01); **F27D 3/00** (2006.01); **F27D 3/10** (2006.01)

CPC (source: EP KR)  
**C21B 5/008** (2013.01 - EP KR); **C21B 7/20** (2013.01 - EP KR); **F27B 1/20** (2013.01 - EP KR); **F27D 3/0033** (2013.01 - EP); **F27D 3/10** (2013.01 - EP KR)

Citation (search report)  
• [X] JP S58123808 A 19830723 - SUMITOMO METAL IND  
• [XI] JP 2012036425 A 20120223 - SUMITOMO METAL IND  
• [X] JP 2015117388 A 20150625 - NIPPON STEEL & SUMITOMO METAL CORP  
• [X] JP 2011140705 A 20110721 - NIPPON STEEL CORP  
• [A] US 4941792 A 19900717 - CIMENTI GIOVANNI [LU], et al  
• See also references of WO 2020166347A1

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 3896177 A1 20211020; EP 3896177 A4 20211103; EP 3896177 B1 20230607**; BR 112021015745 A2 20211026; CN 113423844 A 20210921; JP 6943339 B2 20210929; JP WO2020166347 A1 20210311; KR 102635629 B1 20240208; KR 20210113339 A 20210915; WO 2020166347 A1 20200820

DOCDB simple family (application)  
**EP 20755670 A 20200130**; BR 112021015745 A 20200130; CN 202080013727 A 20200130; JP 2020003337 W 20200130; JP 2020519148 A 20200130; KR 20217025429 A 20200130