

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
07 May 2020 (07.05.2020)



(10) International Publication Number
WO 2020/088795 A1

(51) International Patent Classification:
F23C 13/00 (2006.01) *F23C 5/08* (2006.01)

(21) International Application Number:
PCT/EP2019/025367

(22) International Filing Date:
28 October 2019 (28.10.2019)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
18020568.4 01 November 2018 (01.11.2018) EP

(71) Applicant: **L'AIR LIQUIDE, SOCIETE ANONYME
POUR L' ETUDE ET L' EXPLOITATION DES
PROCEDES GEORGES CLAUDE** [FR/FR]; 75, Quai
d'Orsay, 75007 Paris (FR).

(72) Inventors: **TADIELLO, Jean-Philippe**; WoogstraBe
30C, 60431 Frankfurt am Main (DE). **TUDORACHE, Di-
ana**; 1 rue du Fond Garant, 91440 Bures sur Yvette (FR).

(74) Agent: **STANG, Stefan**; AIR LIQUIDE FORSCHUNG
UND ENTWICKLUNG GMBH, Gwinnerstraße 27-33,
60388 Frankfurt am Main (DE).

(81) Designated States (*unless otherwise indicated, for every
kind of national protection available*): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP,
KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME,
MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ,
OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA,

(54) Title: FURNACE FOR ENDOTHERMIC PROCESS AND PROCESS FOR OPERATING A FURNACE WITH IMPROVED
BURNER ARRANGEMENT

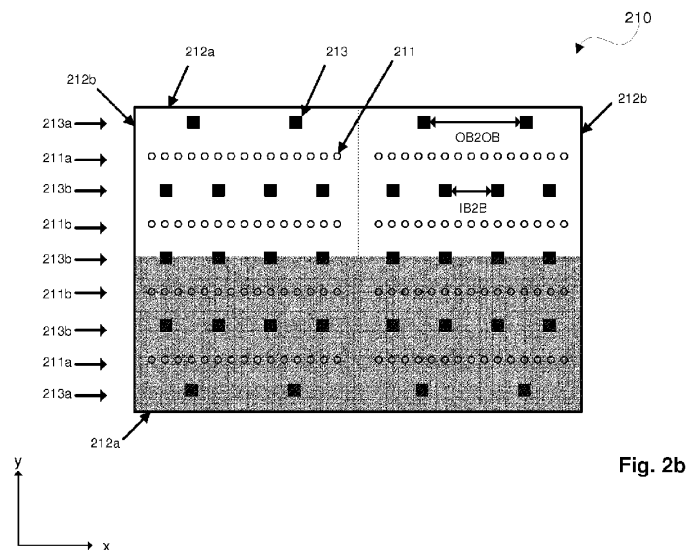


Fig. 2b

(57) Abstract: The invention relates to a furnace for performing an endothermic process, the furnace comprising a plurality of process tubes containing a catalyst for converting a gaseous feed, wherein said process tubes are arranged in rows within the furnace, each row of process tubes thereby defining a process tube row, a plurality of inner burners arranged in rows, each row of inner burners being arranged between and parallel to process tube rows, thereby defining an inner burner row, and a plurality of outer burners arranged in rows, each row of outer burners being arranged between and parallel to a process tube row and a furnace wall, thereby defining an outer burner row. The invention is characterized in that a number of burners of an outer burner row is smaller than a number of burners of an inner burner row. The invention also relates to a process for operating a furnace for performing an endothermic process and the use of the furnace according to the invention in steam methane reforming or hydrocarbon steam cracking.

[Continued on next page]

SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))