(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3: 28.08.2024 Bulletin 2024/35

(43) Date of publication A2: 19.06.2024 Bulletin 2024/25

(21) Application number: 24173024.1

(22) Date of filing: 13.12.2019

(51) International Patent Classification (IPC): H05B 1/02 (2006.01) H05B 6/06 (2006.01)

(52) Cooperative Patent Classification (CPC): H05B 6/062; H05B 1/0261; H05B 2213/06; H05B 2213/07

(84) Designated Contracting States:

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

(62) Document number(s) of the earlier application(s) in accordance with Art. 76 EPC: 19215902.8 / 3 836 746 (71) Applicant: Ztove ApS 5260 Odense S (DK)

(72) Inventor: Favrholdt, Peter 5230 Odense M (DK)

(74) Representative: Patentgruppen A/S
Aaboulevarden 31, 4th Floor
8000 Aarhus C (DK)

(54) CONTROL DELEGATION IN AN AUTOMATED LOOP COOKING PROCESS

(57)Digital control means employed for food cooking provide many benefits to the food preparation process and result, allow creative and versatile cooking. Cookware with sensors, induction cooktops with remote controls, external apps for remote management is known prior art solutions. However, most induction cooktops lack the functionality to control the cooking process flexibly with external devices and apps. Smart cookware items have their digital controls, however, mostly limited by data input, display, and power supply capabilities. Smart devices/apps (smartphones, tablets) are flexible by software, bringing compatibility between cookware and cooktops, allow smart data input and display for cooking sophisticated recipes, however, with limitation on reliable, uninterrupted and "fail-safe" controls. This invention is directed to improve induction cooking, providing flexibility and safety throughout the cooking process until the food prepared and cooktop switched-off. The invention discloses method, system, and device to control at least cooking temperature precisely and safely, by delegating controls from the external application to the induction cooktop digital control module and cookware digital control module.

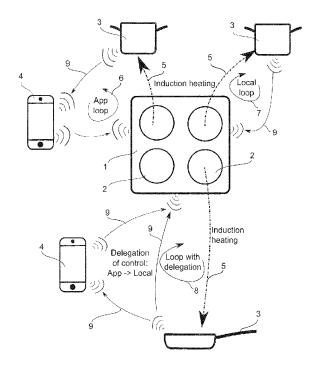


FIG. 1



EUROPEAN SEARCH REPORT

Application Number

EP 24 17 3024

| | | RED TO BE RELEVANT | | | | | |
|--|---|--|--|---|--|--|--|
| Category | Citation of document with in- of relevant passa | | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) | | | |
| X,D | DE 10 2017 220815 A GERAETEBAU GMBH [DE 23 May 2019 (2019-0) * paragraph [0035]; * paragraph [0038] * * paragraph [0041] |) 5-23) figures 1-3 * | 1-15 | INV. H05B1/02 H05B6/06 | | | |
| x | DE 10 2017 220814 A GERAETEBAU GMBH [DE 23 May 2019 (2019-09 * paragraph [0047] figure 1 * |) 5-23) | 1,7-10, 12,14 | | | | |
| X | WO 2015/128578 A2 (3 3 September 2015 (20 * page 7, line 17 - | | 1,2, 8-10,12, 14 | , | | | |
| | * * page 8, line 14 - * page 11, line 22 * page 15, line 1 - | line 17 * · page 12, line 5 * | | TECHNICAL FIELDS SEARCHED (IPC) | | | |
| x | • | | 1,2 | н05в | | | |
| A | EP 3 236 709 A1 (EGG GMBH [DE]) 25 Octobe * paragraph [0023] figure 1 * | | 1-15 | | | | |
| A | EP 2 989 855 B1 (CUC 12 June 2019 (2019-0 * paragraph [0070] figure 1 * | 06-12) | 1-15 | | | | |
| | The present search report has b | een drawn up for all claims | | | | | |
| Place of search Munich | | Date of completion of the search $12 \ \mathtt{July} \ 2024$ | Gea | Examiner Haupt, Martin | | | |
| CATEGORY OF CITED DOCUMENTS X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background | | T : theory or princip E : earlier patent do after the filing de er D : document cited L : document cited | T: theory or principle underlying the inventio E: earlier patent document, but published or after the filing date D: document cited in the application L: document cited for other reasons | | | | |
| O : non | -written disclosure rmediate document | | & : member of the same patent family, corresponding | | | | |

page 1 of 2



EUROPEAN SEARCH REPORT

Application Number

EP 24 17 3024

40

45

50

55

5

EPO FORM 1503 03.82 (P04C01)

| | DOCUMENTS CONSID | ERED TO BE REL | EVANT | | | |
|---|--|--|--|--|-------------------|-----------------------------|
| Category | Citation of document with in of relevant pass | | ate, | Relevant to claim | | CATION OF THE TION (IPC) |
| A,D | US 2017/299195 A1 (19 October 2017 (20 * paragraph [0038]; * | 17-10-19) claims 1-14; f | | 1-15 | | |
| A,D | DE 10 2017 220958 A [DE]) 7 June 2018 (* claim 1; figure 1 * paragraph [0036] | 2018-06-07) | | 1-15 | | |
| A | WO 2015/032419 A1 (SEFA [TR] ET AL.) 12 March 2015 (2015 * abstract; claim 1 | -03-12) | | 1-15 | | |
| A | US 2015/334785 A1 (AL) 19 November 201 * abstract; claim 1 | 5 (2015-11-19) | | 1-15 | | |
| | | | | - | TECHNIC SEARCH | CAL FIELDS ED (IPC) |
| | | | | | | |
| | The present search report has | been drawn up for all clai Date of completion | | | Examiner | |
| | Munich | 12 July | | Gea | Haupt, | Martin |
| X : part Y : part doci A : tech O : non | ATEGORY OF CITED DOCUMENTS icularly relevant if taken alone icularly relevant if combined with anotument of the same category innoicial backgroundwritten disclosure rmediate document | E:0 6 her D:: L:0 &:1 | heory or principle earlier patent docu after the filing date document cited in document cited fo member of the sa document | ument, but publise the application r other reasons | shed on, or | |

page 2 of 2

EP 4 387 394 A3

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 24 17 3024

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

12-07-2024

| | Patent document ed in search report | | Publication date | | Patent family member(s) | | Publication date |
|----|-------------------------------------|----|------------------|---------------|-------------------------|----|------------------|
| DE | 102017220815 | A1 | 23-05-2019 | CN | 109814430 | A | 28-05-20 |
| | | | | DE | 102017220815 | A1 | 23-05-20 |
| | | | | EP | 3489583 | A1 | 29-05-20 |
| | | | | ES | 2832553 | Т3 | 10-06-20 |
| | | | | JP | 7319773 | в2 | 02-08-20 |
| | | | | JP | 2019096613 | A | 20-06-20 |
| | | | | KR | 20190059235 | A | 30-05-20 |
| | | | | PL | 3489583 | т3 | 06-04-20 |
| | | | | US | 2019154266 | A1 | 23-05-20 |
| DE | 102017220814 | A1 | 23-05-2019 | DE | 102017220814 | A1 | 23-05-20 |
| | | | | \mathbf{EP} | 3489584 | A1 | 29-05-20 |
| | | | | KR | 20190059248 | A | 30-05-20 |
| | | | | US | 2019162418 | A1 | 30-05-20 |
| WO | 2015128578 | A2 | 03-09-2015 | CN | 106104161 | A | 09-11-20 |
| | | | | CN | 113864833 | A | 31-12-20 |
| | | | | EP | 3111144 | A2 | 04-01-20 |
| | | | | FR | 3018110 | A1 | 04-09-20 |
| | | | | JP | 6659561 | в2 | 04-03-20 |
| | | | | JP | 2017512366 | A | 18-05-20 |
| | | | | KR | 20160127769 | | 04-11-20 |
| | | | | WO | 2015128578 | A2 | 03-09-20 |
| WO | 2010080738 | A1 | 15-07-2010 | CN | 102342178 | A | 01-02-20 |
| | | | | GВ | 2478674 | A | 14-09-20 |
| | | | | JP | 2012514495 | A | 28-06-20 |
| | | | | KR | 20110104987 | A | 23-09-20 |
| | | | | TW | 201041452 | A | 16-11-20 |
| | | | | US | 2012000903 | A1 | 05-01-20 |
| | | | | WO | 2010080738 | A1 | 15-07-20 |
| EP | 3236709 | A1 | 25-10-2017 | CN | 107305358 | A | 31-10-20 |
| | | | | DE | 102016206912 | A1 | 26-10-20 |
| | | | | EP | 3236709 | A1 | 25-10-20 |
| | | | | ES | 2818724 | Т3 | 13-04-20 |
| | | | | JP | 6830851 | в2 | 17-02-20 |
| | | | | JP | 2017201780 | A | 09-11-20 |
| | | | | KR | 20170121078 | | 01-11-20 |
| | | | | PL | 3236709 | т3 | 28-12-20 |
| | | | | US | 2017310810 | A1 | 26-10-20 |
| EP | 2989855 | в1 | 12-06-2019 | DE | 102013104107 | A1 | 23-10-20 |
| | | | | EP | 2989855 | | 02-03-20 |
| | | | | ES | 2745400 | | 02-03-20 |
| | | | | US | 2016088685 | | 24-03-20 |

page 1 of 2

EP 4 387 394 A3

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 24 17 3024

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

12-07-2024

| 10 | Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|----|--|------------------|-------------------------------------|--------------------------|
| | | | WO 2014173897 A1 | 30-10-2014 |
| | US 2017299195 A1 | 19-10-2017 | NONE | |
| 15 | DE 102017220958 A1 | 07-06-2018 | DE 102017220958 A1 ES 2670992 A1 | 07-06-2018 04-06-2018 |
| 20 | WO 2015032419 A1 | 12-03-2015 | EP 3042542 A1 WO 2015032419 A1 | 13-07-2016 12-03-2015 |
| 20 | US 2015334785 A1 | 19-11-2015 | NONE | |
| 25 | | | | |
| 25 | | | | |
| | | | | |
| 30 | | | | |
| | | | | |
| 35 | | | | |
| | | | | |
| 40 | | | | |
| | | | | |
| 45 | | | | |
| | | | | |
| 50 | | | | |
| 50 | A P0459 | | | |
| | WE OO OO For more details about this annex : see O | Ne. : 1 | D O | |
| | For more details about this annex : see C | Of the Euro | opean Patent Office, No. 12/82 | |

55

page 2 of 2