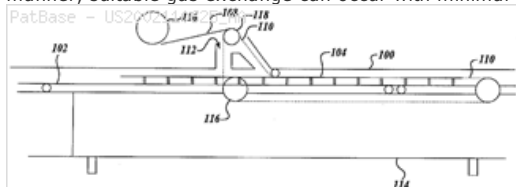


1) Family number: 29750624 (US2002110625A)

Title: CONTINUOUS PACKAGING IN ENCLOSED CONDUITS

Abstract:

Source: US2002110625A The invention relates to a package having a first web defining a cavity and a second web bonded to the first web, wherein the second web includes microperforations at a location that is specific to minimize the escape of liquids from the cavity to the exterior of the package. In one particular embodiment, the first web defines a four sided cavity with walls and corresponding flaps attached to the walls that can be folded and bonded to the cavity walls. The second web is an overwrapping lidding web, wherein microperforations are provided on the web material so that the microperforations are aligned with a flap recess, which in turn is in communication with the interior of the tray cavity. In this manner, suitable gas exchange can occur with minimal to no escape of liquids from the tray cavity.



International class (IPC 8-9): A22C17/00 A22C17/08 A22C17/10 A22C18/00 A23B4/00 A23B4/12 A23B4/16 A23B4/18 A23B4/20 A23B4/24 A23B4/26 A23K1/18 A23L1/015 A23L1/27 A23L1/31 A23L1/312 A23L1/313 A23L1/317 A23L1/48 A23L13/00 A23L13/20 A23L13/30 A23L13/60 A23L3/015 A23L3/34 A23L3/3418 A23L3/3445 A23L35/00 A23L5/20 A23L5/40 A23P1/00 A23P1/02 A23P1/10 A61L2/16 B01D21/02 B01D21/26 B04B3/04 B32B37/00 B60K6/12 B61J1/08 B65B25/06 B65B31/00 B65B31/02 B65B47/02 B65B55/00 B65B55/12 B65B7/16 B65D21/00 B65D21/06 B65D5/42 B65D6/10 B65D77/20 B65D81/00 B65D81/20 B65D81/26 B65D81/28 B65D85/00 B65G47/61 C10L1/18 C10L5/00 C10L5/40 C12C3/04 F02B57/08 G01N21/00 G01N31/12 G01N33/12 G06Q30/00 (Advanced/Invention); B04B1/20 (Advanced/Non-invention); A23B4/00 A23B4/12 A23B4/14 A23B4/26 A23L1/015 A23L1/27 A23L1/31 A23L1/317 A23L3/015 A23L3/34 A23P1/02 A61L2/16 B01D21/02 B32B37/00 B65B25/00 B65B31/02 B65B7/16 B65D21/06 B65D6/00 B65D77/10 B65D81/20 B65D81/26 B65D81/28 C12C3/00 G01N33/02 (Core/Invention)

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US class: 1/1 123/44.00RS 123/44R 156/164 156/292 156/292S 156/494 156/494S 180/165 220/675 422/255 422/255S 422/261 422/268 422/269 422/273 422/274 422/275 426/108 426/118 426/127 426/127S 426/129 426/129P 426/2 426/231 426/231P 426/231S 426/232 426/235 426/235P 426/2P 426/312 426/312P 426/312S 426/315 426/315P 426/316 426/320 426/321 426/321P 426/326 426/326P 426/332 426/335 426/335S 426/35 426/35P 426/383 426/383P 426/392 426/392P 426/392S 426/393 426/393S 426/394 426/394S 426/395 426/398 426/398P 426/416 426/416S 426/417 426/417S 426/425 426/437 426/442 426/442P 426/478 426/478P 426/480 426/480P 426/480S 426/495 426/506 426/518 426/518S 426/519 426/524 426/574 426/641 426/646 426/656 44/307 44/307S 44/308 44/308S 44/589 44/605 44/628 452/150 452/150S 452/155 452/155S 452/173 452/173S 53/478 53/478P 705/1 705/1.1 705/1.100S 705/26 705/26.5

Family:

Publication number	Pub. date	Application number	App. date
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WO0130655 A2 20010503 WO2000US29038 20001019
WO244026 A1 20020606 WO2001US45146 20011128
WO244026 C2 20030410 WO2001US45146 20011128
WO3057566 A2 20030717 WO2003US00167 20030102
WO3057566 A3 20040603 WO2003US00167 20030102
WO30101210 A1 20031211 WO2003US17643 20030603
WO5099482 A2 20051027 WO2005US12245 20050411
WO5099482 A3 20070208 WO2005US12245 20050411
WO6060596 A2 20060608 WO2005US43507 20051202
WO6060596 A3 20060908 WO2005US43507 20051202

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Cited documents: WO9913741 A1, WO9912664 A1, WO9624470 A1, WO9510944, WO9427868 A2, WO9424875 A1, WO9406689 A1, WO9400997, WO9325082, WO9317562, WO9210939, WO9110593 A1, WO9103407 A1, WO9103400 A1, WO03101210 A1, WO0111993 A1, WO0070579 A1, WO0034100 A1, USRE36173 E, USRE36064 E, USRE33067 E, US8178144 BB, US8137722 BB, US7690 A, US7666456 BB, US75755 A, US75754 A, US7455704 BB, US7185574 BB, US7169421 BB, US7164749 BB, US6997089 BB, US6949265 BA, US6916493 BB, US6912434 BB, US6908376 BB, US6895775 BB, US6882434 BA, US6878052 BB, US6859672 BB, US6853978 BB, US6844018 BA, US6758397 BB, US6730341 BB, US6724309 BB, US6694867 BA, US6692785 BB, US6691871 BA, US6685549 BB, US6653641 BB, US665349 A, US6592919 BA, US6577241 BB, US6575084 BB, US6551182 BB, US6549891 BA, US6546304 BB, US6544925 BA, US6543047 BA, US6539360 BA, US6510383 BA, US6481220 BB, US6434950 BB, US6434950 BA, US6430467 BA, US6411916 BA, US6411567 BA, US6407555 BB, US6406728 BA, US6397163 BA, US6389838 BA, US6387426 BA, 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A, US5479759 A, US5478990 A, US5476759 A, US5460833 A, US5458901 A, US5447736 A, US5439132 A, US5435443 A, US5433142 A, US5427015 A, US5419101 A, US5419097 A, US5419096 A, US5393547 A, US5389390 A, US5378418 A, US5352467 A, US5348752 A, US5334405 A, US5326538 A, US5324228 A, US5323590 A, US5313051 A, US5306466 A, US5290959 A, US5254473 A, US5247460 A, US5226531 A, US5221554 A, US5194036 A, US5179885 A, US5171593 A, US5155974 A, US5147672 A, US5129512 A, US5115624 A, US5113754 A, US5104232 A, US5103618 A, US5087462 A, US5053237 A, US5048268 A, US5042540 A, US5038283 A, US5034235 A, US5025611 A, US5005125 A, US4994294 A, US4992287 A, US4988725 A, US4987725 A, US4974781 A, US4953469 A, US4927677 A, US4920731 A, US4901876 A, US4882564 A, US4844619 A, US4840271 A, US4827694 A, US4826065 A, US4818548 A, US4813543 A, US4810515 A, US4798324 A, US4778682 A, US4753059 A, US4744419 A, US4744199 A, US4726173 A, US4714618 A, US4688296 A, US4688026 A, US4687672 A, US4685274 A, US4642239 A, US4601080 A, US4597503 A, US4597495 A, US4594253 A, US4585274 A, US4583348 A, US4580475 A, US4576278 A, US4569204 A, US4552600 A, US4476686 A, US4419205 A, US4399157 A, US4395132 A, US4388811 A, US4372098 A, US4363263 A, US4314451 A, US43050 A, US42841 A, US4252268 A, US4244978 A, US4201030 A, US4199958 A, US4171164 A, US4144697 A, US4142541 A, US4137335 A, US4114348 A, US4062981 A, US4022384 A, US4012808 A, US4003728 A, US4001446 A, US3992985 A, US3967433 A, US3930040 A, US3915098 A, US3910775 A, US3890825 A, US3857988 A, US3851080 A, US3811148 A, US3780191 A, US3773715 A, US3773175 A, US3714887 A, US3705813 A, US3681092 A, US3667087 A, US366309 A, US3662513 A, US36064 A, US3587839 A, US3481100 A, US3480197 A, US3468369 A, US3451990 A, US3442660 A, US3396430 A, US3393077 A, US3366309 A, US3348954 A, US3304733 A, US3125450 A, US3108569 A, US3088290 A, US3067015 A, US3050399 A, US3011898 A, US3006768 A, US3003768 A, US2964412 A, US2860056 A, US2836825 A, US2824011 A, US2596514 A, US2456909 A, US2348509 A, US2237877 A, US2086072 A, US2080179 A, US2065358 A, US2012231131 AA, US2011171353 AA, US2011008505 AA, US2010112168 AA, US2009226586 AA, US2009214733 AA, US2006147588 AA, US2006127545 AA, US2006029699 AA, US2005261991 AA, US2005208188 AA, US2005142250 AA, US2005042346 AA, US2004185156 AA, US2004185155 AA, US2004185154 AA, US2004185152 AA, US2004146602 AA, US2004081729 AA, US2004047952 AA, US2003215551 AA, US2003185948 AA, US2003185937 AA, US2003175392 AA, US2003170359 AA, US2003170357 AA, US2003165602 AA, US2003155362 AA, US2003152679 AA, US2003129274 AA, US2003091708 AA, US2003058809 AA, US2003054074 AA, US2003054073 AA, US2003054072 AA, US2003017252 AA, US2003017203 AA, US2003009370 AA, US2002166858 AA, US2002162971 AA, US2002150659 AA, US2002138350 AA, US2002134317 AA, US2002122856 AA, US2002110624 AA, US2002095231 AA, US2002082745 AA, US2002075755 AA, US2002075754 AA, US2002054940 AA, US2002043050 AA, US2002021015 AA, US2002017203 AA, US2002015777 AA, US2002010624 AA, 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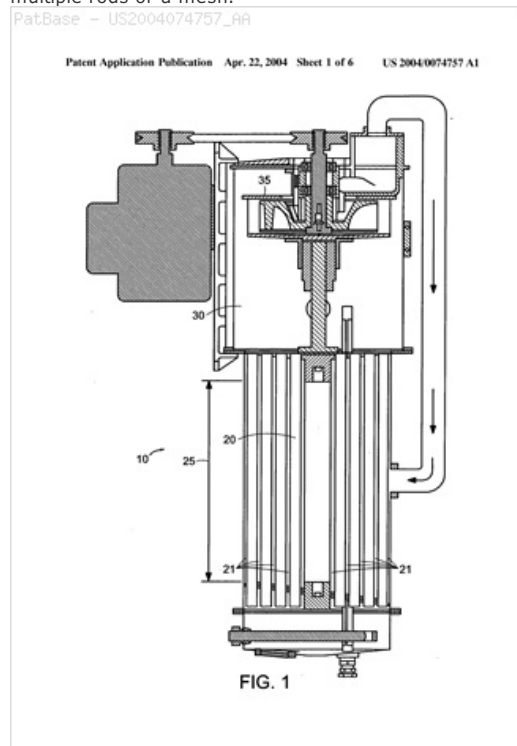
US1648 A, US162971 A, US150659 A, US134317 A, US110624 A, US1052862 A, US0145146, NZ505770 A, JPS58212740 A2, JP9264797 A2, JP61141863 A2, JP58212740 A2, JP58021274 A2, JP361141863, GB484195, GB393935, GB357207 A, GB2315584 A1, GB2285126 A1, GB2247524 A1, FR2744920 A1, FR2290153 A1, EP1061315 A1, EP0899209 A2, EP0820029 A3, EP0820029 A2, EP0755875 B1, EP0755875 A1, EP0649283 B1, EP0649283, EP0649282 B1, EP0649282, EP0415521 A1, EP0368056 A1, EP0356165 A1, EP0284502 A1, DE2628858 A1, **Assignee(s)**: (std): ATKINSON KEVAN J ; CASE READY SOLUTIONS LLC ; GARWOOD ANTHONY J ; GARWOOD ANTHONY J M ; STEPHENS ROBERT M ; SAFEFRESH TECHNOLOGIES LLC ; AGB LLC ; GARWOOD NICHOLAS J
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Inventor(s): (std): ANTHONY J ; ANTHONY J GARWOOD ; ANTHONY J M GARWOOD ; ANTHONY JM GARWOOD ; ATKINSON KEVAN J ; GARWOOD ANTHONY J ; GARWOOD ANTHONY J M ; STEPHENS ROBERT M ; GARWOOD NICHOLAS J
Inventor(s): GARWOOD ANTHONY JM ; KEVAN J ATKINSON ; ROBERT M STEPHENS ; GARWOOD ANTHONY
Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LC LT LU LV LY MA MC MD MG MK ML MN MR MW MX MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

2) Family number: 31031593 (US2004074757A)

Title: METHOD AND APPARATUS FOR PHASE CHANGE ENHANCEMENT

Abstract:

Source: US2004074757A A method and device for enhancing distillation in an evaporator. The evaporator includes phase change chambers, such as vertically-oriented cylindrical evaporation tubes. Each chamber has an evaporation region that can be heated externally. Each chamber has an inlet for introducing liquid to the chamber and an outlet opening for allowing vapor to exit from the chamber. Packing is inserted into one or more chambers to enhance distillation. The packing may include a rod with bristles emanating from the rod. Other chamber packing may include multiple rods or a mesh.



International class (IPC 8-9): A23L2/52 A23L2/60 A23L2/68 A23L33/10 B01D1/00 B01D1/02 B01D1/04 B01D1/06 B01D1/22 B01D1/28 B01D1/30 B01D24/48 B01D29/01 B01D29/31 B01D29/50 B01D29/52 B01D29/60 B01D29/66 B01D29/96 B01D3/00 B01D3/02 B01D3/04 B01D3/08 B01D3/10 B01D3/14 B01D3/28 B01D3/32 B01D3/34 B01D3/38 B01D3/42 B01D3/44 B01D3/512 B01D3/516 B01D3/522 B01D45/00 B01D45/08 B01D45/14 B01D5/00 B01D53/00 B67D1/00 B67D1/08 B67D7/08 C01D3/10 C02F1/00 C02F1/02 C02F1/04 C02F1/08 C02F1/16 C02F1/18 C02F1/20 C02F1/32 C02F1/46 C02F1/48 C02F1/68 C02F9/00 C12M1/12 F01B29/10 F02C9/00 F02G1/043 F02G1/044 F02G1/053 F02G1/055 F02G1/06 F02G5/00 F02G5/04 F04B35/04 F04B49/03 F04B49/04 F04C19/00 F04C29/00 F04D1/12 F04D13/06 F04D23/00 F04D25/02 F04D29/00 F04D29/02 F04D29/057 F04D29/063 F04F5/06 F04F99/00 F16J3/02 F16K1/00 F16K15/00 F16K15/03 F16K17/00 F17D3/01 F22B1/08 F22B37/18 F24H3/02 F25B1/00 F25B19/00 F25B39/00 F25B9/00 F25B9/14 F25D21/14 F28D15/00 F28D21/00 F28D7/00 F28D7/16 F28D9/00 F28F1/00 F28F1/40 F28F13/00 F28F3/00 G01D4/00 G01F9/00 G01N11/02 G01N27/10 G01N33/18 G05B15/02 G05D1/02 G05D7/00 G05D7/06 G06F11/30 G06Q50/06 H02P9/04 H04Q9/00 (Advanced/Invention); B01D1/02 B01D1/06 B01D1/28 B01D29/66 B01D3/00 B01D3/08 B01D3/10 B01D3/42 B01D45/14 B01D5/00 C02F1/08 C02F103/06 (Advanced/Non-invention); B01D1/00 B01D1/22 B01D29/01 B01D3/00 B01D3/34 B01D3/42 B01D35/00 B01D45/00 B01D5/00 B67D7/08 C02F1/04 C02F1/08 C02F1/18 C02F1/32 F01B29/00 F04C19/00 F04C29/00 F04D1/00 F16K15/02 F24H3/02 F25B1/00 F25B9/14 F28D7/00 F28D9/00 F28F1/10 H04Q9/00 (Core/Invention); B01D3/10 (Core/Non-invention)

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US class: 1/1 137/1 137/489 137/489S 137/513.5 137/527.8 137/613 15/398 15/88 159/13.2 159/13.4 159/14 159/24.1 159/24.2 159/26.1 159/27.1 159/28.6 159/42 159/44 159/46 159/47.1 159/47.3 159/49 159/49P 159/DIG.008 159/DIG.015 159/DIG.15 159/DIG.15S 159/DIG.2 159/DIG.20 159/DIG.32 159/DIG.4 159/DIG.40 159/DIG.6 159/DIG.8 159/DIG.8S 165/104.19 165/104.190P 165/115 165/121 165/121S 165/140 165/140S 165/144 165/164 165/184 165/184S 202/155 202/158 202/158S 202/162 202/160 202/172 202/172S 202/176 202/177 202/180 202/181 202/182 202/185.1 202/185.100P 202/185.2 202/185.3 202/185.300P 202/186 202/187 202/197 202/200 202/202 202/205 202/206 202/206S

202/232 202/234 202/235 202/236 202/237 202/238 202/242 202/262 202/262S 202/267.1 202/267.100P 202/267.100S 202/269 203/1 203/10 203/100 203/10S 203/11 203/11P 203/1P 203/1S 203/2 203/21 203/22 203/22S 203/23 203/24 203/24S 203/25 203/26 203/26S 203/27 203/2S 203/3 203/34 203/34S 203/3P 203/4 203/40 203/40S 203/50 203/57 203/61 203/87 203/87S 203/89 203/89S 203/91 203/DIG.008 203/DIG.18 203/DIG.2 203/DIG.20 203/DIG.8 203/DIG.8S 210/103 210/108 210/137 210/313 210/333.01 210/333.1 210/411 210/483 210/710 210/739 210/744 210/748.1 210/766 210/774 210/774S 210/85 210/96.1 222/52 290/1R 415/169.3 417/200 417/208 417/297.5 417/410.1 417/410.100S 417/423.12 417/54 417/54S 417/572 417/66 417/66S 417/68 417/68P 417/69 417/69S 417/72 417/72S 55/404 55/405 55/405P 55/434.2 60/39.2 60/517 60/517S 60/525 60/660 60/783 62/285 62/291 62/291CD 62/498 62/498S 62/6 62/6P 621/291 700/20 700/275 700/282 700/287 700/302 702/188 702/188P 702/50 702/50S 702/61 702/61P 705/412 705/412S 95/1 95/39

JP class F-Term: 3L103 3L103/AA01 3L103/BB01 3L103/CC01 3L103/DD15 3L103/DD22 3L103/DD52 4D016 4D030 4D034 4D034/BA03 4D034/CA12 4D034/DA02 4D037 4D037/AA02 4D037/AB03 4D037/BA18 4D037/BA23 4D037/BB02 4D037/BB08 4D037/BB09 4D037/CA02 4D039 4D076 4D076/AA22 4D076/BB01 4D076/CA19 4D076/CD33 4D076/DA12 4D076/DA28 4D076/EA02 4D076/EA03 4D076/EA11 4D076/EA14 4D076/EA16 4D076/FA02 4D076/FA18 4D076/HA01 4D076/JA04 4D116 3G105 4D076/BA00 4D076/BC01 4D076/CD12 4D076/CD32 4D076/DA02 4D076/DA22 4D076/EA12/X 4D076/EA14/X 4D076/FA04 4D076/FA11 4D076/JA03 4D076/JA05 4D076/BB11 4D076/BC03 4D076/DA03 4D076/BA30 4D076/CD14 4D076/DA37 4D076/EA08/X 4D076/EA14/Y 4D076/EA14/Z 4D076/FA12 4D076/GA10 4D034/CA21 4D076/BA02 4D076/CB02 4D076/CB04 4D076/CD21 4D076/CD25 4D076/DA04 4D076/DA08 4D076/DA15 4D076/DA25 4D076/DA35 4D076/DA36 4D076/EA02/Y 4D076/EA04/Y 4D076/EA05/X 4D076/EA06/Y 4D076/EA13/Y 4D076/EA16/Y 4D076/EA19/X 4D076/EA49 4D034/AA11 4D034/CA01 4D076/BB03 4D076/CD03 4D076/CD36 4D076/CD42 4D076/EA10/Z 4D076/EA11/Z 4D076/FA03 4D076/FA31 4D034/DA03 4D076/CB06 4D076/EA08 4D076/EA15 3L095 4D037/CA04 4D037/CA11 4D046 4D061 4D061/DA03 4D061/DB19 4D061/EA11 4D061/FA02 4D061/FA03 4D061/FA07 4D061/FA13 4D061/FA16 4D076/BC02 4D076/CA11 4D076/CD04 4D076/DA16 3J045 3J045/AA20 3J045/BA02 3J045/CA17 3J045/CA20 4D076/AA24 4D076/CB03 4D076/CB12 4D076/CB13 4D076/CD08 4D076/DA09 4D076/EA01 4D076/EA12 4D076/EA19 4D076/EA20 4D076/FA33 4D037/AA01 4D037/CA05 4D037/CA13 4D076/EA05 4D076/EA18 3L094 4B018 4B018/LB08 4B018/LE05 4B018/MD01 4B018/MD09 4B018/MD10 4B018/MD20 4B018/MD23 4B018/MD30 4B018/ME02 4B018/MF03 4B018/MF04 4B029 4B029/AA27 4B029/BB01 4B029/CC01 4B029/DD06 4B029/DG04 4B029/DG10 4B117 4B117/LC04 4B117/LC07 4B117/LK01 4B117/LK10 4B117/LK12 4B117/LK15 4B117/LK16 4B117/LL02 4B117/LL09 4B117/LP12 4B117/LP15 4B117/LT05 4D037/AB08 4D061/DB20 4D061/EA02 4D061/EA17 4D061/ED17 4D061/FA12 4D076/BA08 4D076/HA10 4D076/HA11 4D116/BB02 4D116/BC01 4D116/DD04 4D116/EE02 4D116/QA43 4D116/QA60 4D116/QB41 4D116/RR01 4D116/RR04 4D116/RR15

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Family:

Publication number	Pub. date	Application number	App. date
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WO4015351 A1	20040219	WO2003US24966	20030807
WO40403566 A2	20040527	WO2003US36540	20031113
WO40403566 A3	20040826	WO2003US36540	20031113
WO05013638 A1	20050210	WO2004US24335	20040728
WO05057015 A1	20050623	WO2003US37531	20031124
WO06096738 A2	20060914	WO2006US08144	20060307
WO06096738 A3	20070628	WO2006US08144	20060307
WO08154435 A2	20081218	WO2008US66198	20080606
WO08154435 A3	20090219	WO2008US66198	20080606
WO08154435 A9	20100114	WO2008US66198	20080606
WO10019891 A2	20100218	WO2009US53898	20090814
WO10019891 A3	20100624	WO2009US53898	20090814

WO13012744 A2	20130124	WO2012US46740	20120713
WO13012744 A3	20130314	WO2012US46740	20120713
WO14018896 A1	20140130	WO2013US52335	20130726

Priority: US20020401813P 20020807; US20020425820 20021113; US20020425820P 20021113; US20030490615 20030728; US20030490615P 20030728; US20030636303 20030807; WO2003US24966 20030807; US20030518782P 20031110; JP20050507175 20031113; EP20030768953 20031113; EP20120163481 20031113; JP20100112694 20031113; JP20140193618 20031113; JP20160014007 20031113; JP20050507175T 20031113; US20030713591 20031113; US20030714683 20031113; US20030713617 20031113; US20030713644 20031113; WO2003US36540 20031113; US20030720802 20031124; WO2003US37531 20031124; EP20040779401 20040728; EP20140185994 20040728; US20040566307 20040728; WO2004US24335 20040728; US20050073935 20050307; US20050168239 20050628; US20060566307 20060127; US20060480294 20060630; US20070933525P 20070607; US20070926922 20071029; US20070926680 20071029; US20070927823 20071030; US20070927879 20071030; US20070927812 20071030; US20070927907 20071030; CA20082689931 20080606; CN200880101158 20080606; US20080134986 20080606; US20080135035 20080606; WO2008US566198 20080606; US20080089295P 20080815; US20090358373 20090123; US20090541625 20090814; US20090541712 20090814; WO2009US53898 20090814; US20100871177 20100830; US20110184169 20110715; US20110311227 20111205; JP20140521674T 20120713; US2012US46740 20120713; US20120982022 20120713; US20120676597P 20120727; US20120645937 20121005; US20120674559 20121112; US20130751897 20130128; US20130758594 20130204; US20130819919P 20130506; US20130952263 20130726; US20130982022 20130726; US20130952195 20130726; US20130964565 20130812; US20130964389 20130812; US20130969200 20130812; US20130974579 20130823; US20130025279 20130912; US20130080176 20131114; US20130087397 20131122; US20140982022 20140109; US20140269742 20140505; US20140480196 20140908; EP20140185994 20140923; US20140543436 20141117; US20150714981 20150518; US20150942275 20151116; US20150948918 20151123; JP20160014007 20160128; US20160062854 20160307; US20160095679 20160411; US20160095696 20160411; CA20172689931 20170302; US20170457291 20170313; US20170468870 20170324; US20170477321 20170403; US20170483457 20170410; JP20170241449 20171218; US20180945153 20180404; US20180017458 20180625;

Cited documents: WOPW56680, WO9961125 A1, WO9940309, WO9845647 A1, WO9826246, WO9816289 A1, WO9720606 A1, WO9203203 A1, WO9105949, WO9008891, WO9005887, WO8912170 A1, WO12024764 A1, WO08154435 A2, WO06029540 A1, WO05105254 A3, WO05105254 A2, WO05022145 A2, WO05013638 A1, WO04043566 A2, WO04015351, WO03078334 A1, WO03062730 A2, WO03056680 A3, WO03056680 A2, WO0202202 A3, WO0165100 A2, WO0158814 A1, WO0152185 A2, WO00791114 A1, WO0035551 A1, USH658 H1, USH568 H1, US9617167 BB, US9309104 BB, US9278868 BB, US8888963 BB, US8534062 BB, US8517052 BB, US8511105 BB, US8359877 BB, US8307887 BB, US8282790 BB, US8006511 BB, US7981253 BB, US7955476 BB, US7886557 BB, US7785448 BB, US7707830 BB, US7670118 BB, US7597784 BB, US7465375 BB, US7340879 BB, US7325399 BB, US7319921 BB, US7313916 BB, US7310945 BB, US7309929 BB, US7308787 BB, US7188571 BB, US7111460 BB, US7044205 BB, US7036314 BB, US6977047 BB, US6966182 BB, US6954701 BB, US6936140 BB, US6926808 BB, US6910335 BB, US6908533 BB, US6891478 BB, 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US1840389 A, US1831574 A, US1769375 A, US17550202, US1668532 A, US1658063 A, US1571068 A, US1440558 A, US1413521 A, US1386020 A, US1371784 A, US1324515 A, US124805 A, US120222 A, US1179097 A, US1089651 A, US10585408, NL892962, NL704002, NL689484, NL675161, KR20060015451, KR20040050853, KR19970045639, JPS6380469 U, JPS6380469, JPS6250701 U, JPS6250701, JPS62265486, JPS59216601, JPS5895201 U, JPS582494, JPS5672285, JPM530, JPM247, JPM1066, JPM0989, JPM0956, JP989, JP956, JP9136001 A2, JP9015197, JP9, JP7293334 A2, JP7151402, JP7151084 A2, JP7151084, JP63080469 U1, JP63080469 U, JP63080469 A2, JP63068759 A2, JP62265486 A2, JP62265486, JP62050701 U1, JP62050701 U, JP62050701 U, JP62050701 A2, JP62013229, JP61128024, JP61128014, JP60193292 U1, JP59216601 A2, JP58117995, JP58095201 U1, JP58095201 U, JP58002494 A2, JP58002494, JP56133597, JP56081177 A2, JP56081177, JP56072285 A2, JP56072285, JP55037540, JP54020418 A2, JP54020418, JP530, JP5, JP4347410, JP37016575 B4, JP37016575 B1, JP3009058 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DE445033, DE4409338 A1, DE4401691 A1, DE4336982 A1, DE4308888 A1, DE4230825 C2, DE4219583 A1, DE4205283 A1, DE4123938 A1, DE4123938, DE4102306 A1, DE4018943 A1, DE3934545 A1, DE3924747, DE3734009 A1, DE3723950 A1, DE3721143, DE3711114 A1, DE3533098 C2, DE3500124 A1, DE3151867 C1, DE3103529 A1, DE29804939 U, DE29520864 U, DE19841568 A1, DE19820192 A1, DE19745167 A1, DE19733460 C1, DE19508114 A1, DE1741632 U, DE1741632, DE1528714, DE10325230 A1, DE10325230, DE1015691 B, DE10146086 A1, DE10108957 A1, DE10051422 A1, CN2082762, CN1738668, CN101765563 B, CN101765563 A, CN101658740 A,

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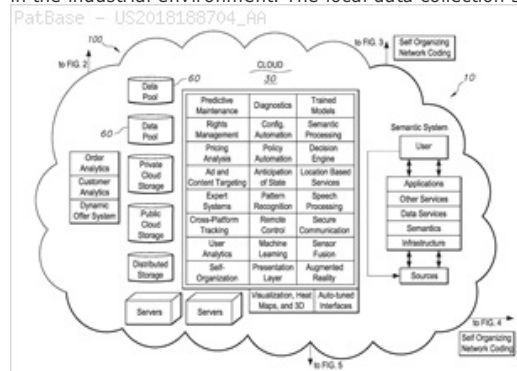
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3) Family number: 67496925 (US2018188704A)

Title: METHODS AND SYSTEMS FOR THE INDUSTRIAL INTERNET OF THINGS

Abstract:

Source: US2018188704A The system generally includes a crosspoint switch in the local data collection system having multiple inputs and multiple outputs including a first input connected to the first sensor and a second input connected to the second sensor. The multiple outputs include a first output and a second output configured to be switchable between a condition in which the first output is configured to switch between delivery of the first sensor signal and the second sensor signal and a condition in which there is simultaneous delivery of the first sensor signal from the first output and the second sensor signal from the second output. Each of multiple inputs is configured to be individually assigned to any of the multiple outputs. Unassigned outputs are configured to be switched off producing a high-impedance state. The local data collection system includes multiple multiplexing units and multiple data acquisition units receiving multiple data streams from multiple machines in the industrial environment. The local data collection system includes distributed complex programmable hardware device (CPLD) chips each dedicated to a data bus for logic control of the multiple multiplexing units and the multiple data acquisition units that receive the multiple data streams from the multiple machines in the industrial environment. The local data collection system is configured to manage data collection bands.



International class (IPC 8-9): G01H1/00 G05B11/32 G05B13/02 G05B19/042 G05B19/418 G05B23/02 G06F15/18 G06F3/0488 G06K9/62 G06N3/02 G06N3/04 G06N3/08 G06N5/04 G06N7/00 G06N99/00 H04B17/309 H04B17/318 H04L1/00 H04L29/08 H04Q9/00 H04W4/38 H04W84/18 (Advanced/Invention)

CPC: Y02P80/114 Y02P90/02 H04W84/20 H04L67/125 G05B19/4185 G06N99/005 G05B2219/31156 G06N5/047 G05B2219/33333 G05B19/418 G05B2219/23253 G05B2219/23258 G05B2219/25255 G05B2219/25268 G05B23/0283 G05B2219/31282 G06F3/0488 H04L67/10 G06N3/02 H04W84/18 G06F15/18 H04W4/38 G05B11/32 G05B19/042 G06N3/0427 G06N3/08 G05B2219/24015 G01H1/00 G05B2219/25174 G05B19/0423 H04Q2209/40 H04Q2209/20 G01M13/045 G05B19/4183 H04L67/12 G05B19/0425 G01M13/028 H04Q9/00 G05B23/0264 G05B2219/45129 H04L67/1097 H04B17/318 H04L5/0064 H04L1/0002 G05B2219/32287 G05B19/41865 G06N7/005 G05B23/0291 G05B2219/37434 G05B19/41845 G05B23/0286 G05B23/0229 G05B2219/37351 G05B2219/37337 G05B23/024 G05B23/0221 G05B19/4184 G06N5/046 G05B2219/35001 H04B17/309 G05B13/028 G05B23/0289 G05B2219/45004 G05B19/41875 G05B2219/40115 G05B23/0297 G05B23/0294 G06K9/6263

Family:

Publication number	Pub. date	Application number	App. date
US2018188704 AA	20180705	US20170859287	20171229
US2018188714 AA	20180705	US20170859238	20171229
US2018188715 AA	20180705	US20170859283	20171229
US2018210425 AA	20180726	US20170859248	20171229
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WO17196821 A4	20171207	WO2017US31721	20170509

Priority: US20160333589P 20160509; US20160350672P 20160615; US20160412843P 20161026; US20160427141P 20161128; WO2017US31721 20170509; US20170540557P 20170802; US20170562487P 20170924; US20170583487P 20171108; US20170859287 20171229; US20170859238 20171229; US20170859283 20171229; US20170859248 20171229; US20170859294 20171229; US20170859291 20171229; US20180907819 20180228; US20180907868 20180228; US20180907831 20180228; US20180907848 20180228; US20180907859 20180228; US20180907886 20180228; US20180907898 20180228; US20180907877 20180228; US20180907915 20180228; US20180907930 20180228; US20180907939 20180228; US20180907948 20180228; US20180907967 20180228; US20180973179 20180507; US20180973205 20180507; US20180973188 20180507; US20180973197 20180507; US20180973310 20180507; US20180973399 20180507; US20180973406 20180507; US20180973333 20180507; US20180973371 20180507; US20180973320 20180507; US20180973339 20180507; US20180973341 20180507; US20180973216 20180507; US20180973297 20180507; US20180973334 20180507; US20180973356 20180507; US20180973301 20180507; US20180973309 20180507; US20180973229 20180507; US20180973388 20180507; US20180973397 20180507; US20180973336 20180507;

Cited documents: US7710153 BA, US7142990 BB, US7043728 BA, US2014074433 AA, US2014067289 AA,

Assignee(s): (std): STRONG FORCE IOT PORTFOLIO 2016 LLC ; STRONGFORCE IOT PORTFOLIO 2016 LLC

Inventor(s): (std): CELLA CHARLES HOWARD ; DESAI MEHUL ; DUFFY JR GERALD WILLIAM ; MCGUCKIN JEFFREY P

Inventor(s): DUFFY JR

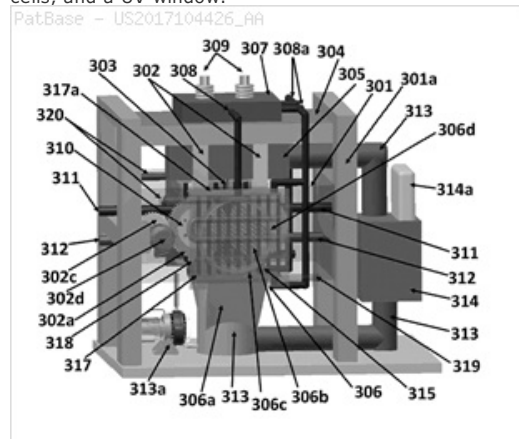
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4) Family number: 60956126 (US2017104426A)

Title: ELECTRICAL POWER GENERATION SYSTEMS AND METHODS REGARDING SAME

Abstract:

Source: US2017104426A A solid or liquid fuel to plasma to electricity power source that provides at least; one of electrical and thermal power comprising (i) at least one reaction cell for the catalysis of atomic hydrogen to form hydrides, (ii) a chemical feed mixture comprising at least two components chosen from: a source of H₂O catalyst or H₂O catalyst; a source of atomic hydrogen or atomic hydrogen; reactants to form the source of H₂O catalyst or H₂O catalyst and a source of atomic hydrogen or atomic hydrogen; one or more reactants to initiate the catalysis of atomic hydrogen; and a material to cause the feed to be highly conductive, (iii) a fuel injection system such as a railgun shot injector, (iv) at least one set of electrodes that confine the fuel and an electrical power source that provides repetitive short bursts of low-voltage, high-current electrical energy to initiate rapid kinetics of the hydride reaction and an energy gain due to forming hydrides to form a brilliant-light emitting plasma, (v) a product recovery system such as at least one of an augmented plasma railgun recovery system and a gravity recovery system (vi) a fuel pelletizer or shot maker comprising a source of hydrogen and a source of H₂O, a dropper and a water bath to form fuel pellets or shot, and an agitator to feed shot into the injector, and (vii) a power converter capable of converting the high-power light output of the cell into electricity such as a concentrated solar power device comprising a plurality of ultraviolet (UV) photoelectric cells or a plurality of photoelectric cells, and a UV window.



International class (IPC 8-9): B22F9/08 C25B1/04 C25B13/04 G21B G21B1/15 G21B1/21 G21B3/00 G21G5/00 G21G7/00 H01L31/0304 H01L31/0725 H01L31/0735 H02N3/00 H02S10/10 H02S10/30 H02S10/40 H02S40/22 H02S40/32 H02S40/38 H02S40/42 H02S40/44 H05H1/24 H05H1/48 (Advanced/Invention); G21B (Subclass/Invention)

CPC: G21B1/15 Y02E30/16 Y02E30/18 H05H2240/00 H02S10/40 H02N3/00 H05H1/24 H01L31/0725 H01L31/0735 H02S40/32 H02S40/38 H02S40/22 H02S40/42 C25B1/04 C25B13/04 H05H2277/13 H05H1/46 H05H2001/466 Y02E60/366 Y02E70/10 Y02P20/129 Y02P20/134 B22F2009/0888 B22F2009/0896 H01L31/0547 H01L31/0549 H02S10/10 H02S40/425 H02S40/44 H02S10/30 Y02E10/52 Y02E10/544 Y02E10/60 H05H1/48 G21B3/00

US class: 310/306

JP class F-Term: 2G084 2G084/AA11 2G084/AA15 2G084/AA28 2G084/BB23 2G084/CC02 2G084/CC03 2G084/CC04 2G084/CC05 2G084/CC06 2G084/CC14 2G084/CC23 2G084/CC33 2G084/DD18 2G084/DD25 2G084/FF19 2G084/FF29 2G084/FF32 2G084/GG30 5F151 5F151/AA08 5F151/CB08 5F151/DA07 5F151/DA15 5F151/GA03 5F151/GA04 5F151/JA23 5F151/JA25 2G081

JP class F-Index: H01L31/06/410 H01L31/06/430 H02S10/10 H02S40/22 H02S40/42 H05H1/24 G21G7/00

Family:

Publication number	Pub. date	Application number	App. date
AU2015266760 AA	20151203	AU20150266760	20150529
AU2016260177 AA	20161117	AU20160260177	20160108
BR112016027844 A2	20170822	BR20161127844	20150529
BR112017024055 A2	20180724	BR20171124055	20160108
CA2948640 AA	20161109	CA20152948640	20150529
CA2985328 AA	20171107	CA20162985328	20160108
CN107077893 A	20170818	CN201580040818	20150529
CN107710331 A	20180216	CN201680037525	20160108

EA201692463 A1	20171031	EA20160092463	20150529
EA201792477 A1	20180629	EA20170092477	20160108
EP3149745 A1	20170405	EP20150731756	20150529
EP3295460 A1	20180321	EP20160793102	20160108
HK1242041 A1	20180615	HK20180101182	20180125
ID201800544 A	20180119	ID2016P0008044	20150529
ID201806392 A	20180629	ID2017PID08669	20160108
IL249224 A0	20170228	IL20150249224	20150529
IL255495 A0	20180131	IL20160255495	20160108
IN201617040352 A	20170331	IN201617040352	20161125
IN201717042676 A	20180316	IN201717042676	20171128
JP2017527091 T2	20170914	JP20170515023T	20150529
JP2018524557 T2	20180830	JP20170558527T	20160108
KR20170013357 A	20170206	KR20167037020	20150529
KR20180016397 A	20180214	KR20177035406	20160108
MX2016015386 A1	20180126	MX20160015386	20150529
MX2017014305 A1	20180815	MX20170014305	20160108
SG11201609924R A1	20161229	SG20161109924	20150529
TW201601444 A	20160101	TW20150117578	20150529
TW201712691 A	20170401	TW20160100629	20160108
US2017104426 AA	20170413	US20150314196	20150529
US2018159459 AA	20180607	US20160572898	20160108
WO15184252 A1	20151203	WO2015US33165	20150529
WO15184252 A9	20160324	WO2015US33165	20150529
WO16182600 A1	20161117	WO2015US65826	20151215
WO16182605 A1	20161117	WO2016US12620	20160108

Priority: US20030469913 20030905; US20040494571 20040506; US20140004883P 20140529; US20140012193P 20140613; US20140016540P 20140624; US20140021699P 20140707; US20140023586P 20140711; US20140026698P 20140720; US20140037152P 20140814; US20140041026P 20140822; US20140058844P 20141002; US20140068592P 20141024; US20140083029P 20141121; US20140083029P 20141124; US20140087234P 20141204; US20140092230P 20141215; US20150113211P 20150206; US20150141079P 20150331; US20150149501P 20150417; US20150159230P 20150509; US20150165340P 20150522; WO2015US33165 20150529; US20150314196 20150529; US20150172169P 20150607; US20150173911P 20150610; US20150182421P 20150619; US20150191204P 20150710; US20150196751P 20150724; US20150200672P 20150804; US20150208205P 20150821; US20150217411P 20150911; US20150220582P 20150918; US20150237375P 20151005; US20150254104P 20151111; US20150257617P 20151119; US20150263395P 20151204; US20150268963P 20151217; WO2016US12620 20160108; US20160572898 20160108;

Cited documents: WO15075566 A1, WO14025443 A2, WO12138576 A1, WO11116236 A2, US6271461 BA, US5556418 A, US4182650 A, US3820767 A, US2011026657 AA, US2009196801 AA, US2009098421 AA, US2008283776 AA, US2004237499 AA, JP4062396 A2, CN103460469 A, CN102906925 B,

Assignee(s): (std): BLACKLIGHT POWER INC ; BRILLIANT LIGHT POWER INC ; MILLS RANDELL LEE

Assignee(s): MILLS RANDELL L

Inventor(s): (std): MILLS RANDELL L ; MILLS RANDELL LEE ; RANDELL L MILLS ; RANDELL LEE MILLS

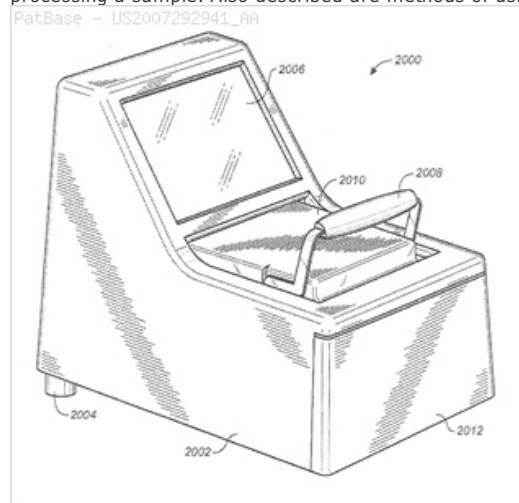
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

5) Family number: 38528936 (US2007292941A)

Title: INTEGRATED SYSTEM FOR PROCESSING MICROFLUIDIC SAMPLES, AND METHOD OF USING THE SAME

Abstract:

Source: US2007292941A This patent application describes an integrated apparatus for processing polynucleotide-containing samples, and for providing a diagnostic result thereon. The apparatus is configured to receive a microfluidic cartridge that contains reagents and a network for processing a sample. Also described are methods of using the apparatus.



International class (IPC 8-9): B01D1/06 B01D11/00 B01J19/00 B01L3/00 B01L3/02 B01L3/14 B01L7/00 B01L9/00 B01L9/06 B01L99/00 B03C1/00 B03C1/06 B03C1/30 B05D5/00 B05D7/22 B81B1/00 B81B7/02 C07H1/00 C07H1/08 C07H21/00 C12M1/00 C12M1/02 C12M1/24 C12M1/26 C12M1/34 C12M1/36 C12M1/38 C12M1/40 C12M1/42 C12M3/00 C12N15/00 C12N15/09 C12N15/10 C12P19/34 C12Q1/68 C12Q1/6806 C12Q1/6813 C12Q1/6844 C12Q1/686 F16K99/00 G01N1/00 G01N1/40 G01N21/00 G01N21/62 G01N21/64 G01N21/78 G01N33/48 G01N33/544 G01N35/00 G01N35/02 G01N35/04 G01N35/08 G01N35/10 G01N37/00 G01T1/16 H05B3/00 H05B3/02 (Advanced/Invention); B01L3/00 B01L7/00 B03C1/06 B03C1/12 B03C1/28 B81B3/00 B81B5/00 C12Q1/68 G01N21/64 G01N35/00 G01N35/04 G01N35/10 (Advanced/Non-invention); B01D1/00 B01J19/00 B01L3/00 B01L3/02 B01L3/14 B01L7/00 B01L9/00 B03C1/02 B05D5/00 B05D7/22 C07H1/00 C12M1/00 C12M1/34 C12M1/40 C12M3/00 C12N15/10 C12P19/00 C12Q1/68 F16K99/00 G01N21/00 G01N33/48 G01N33/544 G01N35/08 G01N37/00 G01T1/00 (Core/Invention)

International class (IPC 1-7): C12M1/00

CPC: B01L3/5082 B01L2200/026 B01L2300/0851 B01L2400/0406 C12N15/1013 C07H1/08 Y10S435/808 C12Q2565/629 B01L2200/025 B01L2300/022 B01L2300/046 B01L2300/0861 B01L2300/1838 G01N21/6428 G01N2021/6419 B01L2300/14 B01L2400/0694 C12Q1/6806 B01L3/5085 G01N2035/103 B01L9/06 G01N2035/00772 G01N2035/00801 G01N2035/0493 B01L2300/045 G01N35/026 G01N2035/0425 C12Q1/6813 B01L2300/1805 B01L3/502707 B01L3/50273 B01L2300/18 B01L2300/06 B01L3/021 B01L2200/143 G01N2035/0436 H05B3/0014 H05B3/22 B01L3/502723 B01L3/502738 B01L2200/027 B01L2200/0684 B01L2200/10 B01L2300/0681 B01L2300/0803 B01L2300/0816 B01L2300/0867 B01L2300/087 B01L2300/0887 B01L2400/0442 B01L2400/0481 B01L2400/0487 B01L2400/0611 B01L2400/0677 B01L2400/0683 F16K99/0019 B01L3/502761 B01L3/52 B01L3/0275 B01L2300/0832 B01L2300/165 B01L2200/12 B01L2300/0627 B01L2200/14 B01L2300/0636 B01L2300/0809 B01L2300/1894 B01L3/502715 C12N15/1003 G01N35/0099 G01N35/1002 B01L3/5027 B01L7/52 B01L9/527 B01L2200/147 B01L2200/148 B01L2200/16 B01L2300/021 B01L2300/1822 B01L2300/1827 B01L2300/1861 B03C1/06 B03C1/12 F16K99/003 F16K99/0032 F16K99/0044 F16K99/0061 F16K2099/0084 G01N35/0098 G01N2035/00881 G01N35/00584 G01N35/1065 F16K99/0001 C12Q1/686 G01N2021/6421 G01N2021/6441 B01L3/5025 B01L2200/142 B01L2300/1844 F16K2099/008 Y10T436/113332 B03C1/288 B03C2201/18 B03C2201/26

European class: B01L3/00C6D B01L3/00C6M B01L3/00C6M10 B01L3/00C6M2 B01L3/00C6M6 B01L3/00C6M8 B01L3/02C B01L3/14 B01L3/5025

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Cited documents: WOWO1999033559, WOWO1999029703, WOWO1999017093, WOWO1999012016, WOWO1999009042, WOWO1999001688, WOWO1998053311, WOWO1998049548, WOWO1998022625, WOWO1998000231, WOWO1997021090, WOWO1997005492, WOWO1996018731, WOWO1996004547, WOWO1994011103, WOWO1992005443, WOWO1988006633, WO9933559 A1, WO9929703 A2, WO9917093 A1, WO9912016 A1, WO9909042 A2, WO9901688 A1, WO9853311 A2, WO9849548 A1, WO9835013 A1, WO9822625 A1, WO9800231 A1, WO9721090 A1, WO9705492 A1, WO9618731 A2, WO9604547 A1, WO9411103 A1, WO94205443 A1, WO9012350 A1, WO8806633 A1, WO200666001, WO200643642, WO200635800, WO200530984, WO200508255, WO200448545, WO19933559, WO19912016, WO19909042, WO19901688, WO19853311, WO19849548, WO19835013, WO19822625, WO19806633, WO19800231, WO19721090, WO19705492, WO19604547, WO19411103, WO19205443, WO19029703, WO19018731, WO19017093, WO19012350, WO11101467 A1, WO10140680 A1, WO10130310 A1, WO10118541 A1, WO09054870 A2, WO09012185 A1, WO08061165 A2, WO08060604 A2, WO08030914 A2, WO0800318160 20140627, WO07112114 A2, WO07091530 A1, WO07091530, WO07075919 A2, WO07064117 A1, WO07050327 A2, WO07044917 A2, WO06513022, WO06119280 A2, WO06119280, WO06113198 A2, WO06113198, WO06081995 A1, WO06079082 A2, WO06079082, WO06066001 A2, WO06066001, WO06043642 A1, WO06043642, WO06035800 A1, WO06032044 A2, WO06010584 A1, WO05500836, WO05120710 A2, WO05118867 A2, WO05118772 A1, WO05116202 A1, WO05116202, WO05108620 A2, WO05108620, WO05108571 A1, WO05108571, WO05107947 A1, WO05072353 A2, WO05030984 A2, WO05030984, WO05011867 A2, WO05008255 A1, WO04094986 A2, WO04074848 A1, WO04056485 A1, WO04055522 A1, WO04048545 A2, WO04048545, WO04007081 A1, WO03087410 A1, WO03076661 A1, WO03055605 A1, WO03048295 A1, WO03012406 A1, WO03012325 A1, WO03007677 A2, WO0248164 A2, WO0224322 A2, WO02086454 A1, WO02078845 A1, WO02072264 A1, WO0189681 A2, WO0154813 A2, WO0141931 A2, WO0130995 A1, WO0128684 A2, WO0127614 A1, WO0114931 A1, WO0105510 A1, USD787087 S1, USD787008 S1, USD742027 S1, USD729404 S1, USD710024 S1, USD702854 S1, USD692162 S1, USD687567 S1, USD686749 S1, USD669597 S1, USD637737 S1, USD632799 S1, USD628305 S1, USD621060 S1, USD618820 S1, USD599234 S1, USD598566 S1, USD596312 S1, USD595423 S1, USD569526 S1, USD566291 S1, USD559995 S1, USD556914 S1, USD554070 S1, USD554069 S1, USD549827 S1, USD548841 S1, USD538436 S1, USD537951 S1, USD535403 S1, USD534280 S1, USD531321 S1, USD528215 S1, USD523153 S1, USD517554 S1, USD516221 S1, USD515707 S1, USD512155 S1, USD508999 S1, USD500363 S1, USD500142 S1, USD499813 S1, USD495805 S1, USD491276 S1, USD491273 S1, USD491272 S1, USD484989 S1, USD482796 S1, USD480814 S1, USD474280 S1, USD474279 S1, USD472324 S1, USD470595 S1, USD468437 S1, USD467349 S1, USD467348 S1, USD466219 S1, USD463031 S1, USD461906 S1, USD446306 S1, USD439673 S1, USD438633 S1, USD438632 S1, USD438311 S1, USD433759 S1, USD428497 S1, USD421653 S1, USD421130 S1, USD420747 S1, USD417009 S1, USD414271 S1, USD413677 S1, USD413391 S1, USD399959 S1, USD382647 S1, USD382346 S1, USD378782 S1, USD366116 S1, USD356232 S1, USD351913 S1, USD351475 S1, USD347478 S1, USD338275 S1, USD333522 S1, USD328794 S1, USD328135 S1, USD325638 S1, USD324426 S1, USD312692 S1, USD310413 S1, USD302294 S1, USD292735 S1, USD288478 S1, USD282208 S1, USD279817 S1, USD261173 S1, USD261033 S1, USD254687 S1, USD252341 S1, USD252157 S1, USD249706 S1, USD249706 S1, USD189404 S1, US9815057 BB, US9802199 BB, US9765389 BB, US9745623 BB, US9701957 BB, US9677121 BB,

PatBase PDF Export - Page: 13 28/11/2018

US2002094303 AA, US2002090320 AA, US2002068821 AA, US2002068357 AA, US2002068357 AA, US2002060156 AA, US2002058332 AA, US2002055167 AA, US2002054835 AA, US2002053399 AA, US2002039783 AA, US2002037499 AA, US2002022261 AA, US2002021983 AA, US2002015667 AA, US2002014443 AA, US2002009015 AA, US2002008053 AA, US2002001848 AA, US2002001846 AA, US2001055765 AA, US2001048899 AA, US2001046702 AA, US2001045358 AA, US2001038450 AA, US2001023848 AA, US2001021355 AA, US2001016358 AA, US2001012492 AA, US2001005489 AA, US1733401 A, US1616419 A, US1434314 A, US05849208, RU2418633 C2,

JPWO2005116202 A1

JP9325151 A2, JP8285859 A2, JP8211071 A2, JP8173194 A2, JP8122336 A2, JP7290706 A2, JP7020010 A2, JP62119460 A2, JP62119460, JP6064156 U1, JP6064156 U, JP58212921 A2, JP527220, JP515216, JP50100881 A2, JP50100881, JP500674, JP4053555 U1, JP4053555 U, JP3191150 B2, JP3181853 A2, JP3054470 A2, JP204661, JP2014097080 A2, JP201255321, JP2012055321 A2, JP2012055321, JP2010533493 T2, JP2010533490 T2, JP2010533490, JP2009542207 T2, JP2009542207, JP2009531064 T2, JP2009531064, JP2009521682 T2, JP2009515140 T2, JP2009511059 T2, JP200797477, JP200774960, JP2007535933 T2, JP2007535933, JP2007514405 T2, JP2007514405, JP2007514405, JP2007510518 T2, JP2007510518, JP2007510518, JP2007500510 T2, JP2007178328 A2, JP2007178328, JP2007101364 A2, JP2007101364, JP2007097477 A2, JP2007097477, JP2007074960 A2, JP2007074960, JP200694866, JP2006513022 T2, JP2006284409 A2, JP200621156, JP2006167569 A2, JP2006167569, JP2006145458 A2, JP2006145458, JP2006094866 A2, JP2006021156 A2, JP2005535904 T2, JP2005533652 T2, JP2005532043 T2, JP2005532043, JP2005525816 T2, JP2005525816, JP2005525816, JP2005518825 T2, JP2005518825, JP2005518825, JP2005514718 T2, JP2005514718, JP2005514718, JP2005511264 T2, JP2005511264, JP2005509872 T2, JP2005509872, JP2005505754 T2, JP2005505754, JP2005500836 T2, JP2005323519 A2, JP2005323519, JP2005291954 A2, JP2005291954, JP2005253466 A2, JP2005253466, JP2005224110 A2, JP2005224110, JP2005204661 A2, JP2005192554 A2, JP2005192554, JP2005192439 A2, JP2005176613 A2, JP2005176613, JP2005116202 A2, JP2005116202 A1, JP200510179, JP200509870, JP2005010179 A2, JP2005009870 A2, JP2004536689 T2, JP2004536689, JP2004536291 T2, JP2004536291, JP2004533838 T2, JP2004533838, JP2004533838, JP2004531360 T2, JP2004531360, JP2004531360, JP2004515333 T2, JP2004515333, JP2004506183 T2, JP2004506179 T2, JP2004506179, JP2004506179, JP2004361421 A2, JP2004150797 A2, JP2004150797, JP2004003989 A2, JP2003536058 T2, JP2003536058, JP2003532382 T2, JP2003532382, JP2003532382, JP2003516125 T2, JP2003516125, JP2003500674 T2, JP2003500674, JP200347840, JP200347839, JP2003329696 A2, JP2003329696, JP2003329693 A2, JP2003329693, JP2003299485 A2, JP2003299485, JP2003185584 A2, JP2003185584, JP2003180350 A2, JP2003180350, JP2003164279 A2, JP2003164279, JP2003047840 A2, JP2003047840, JP2003047839 A2, JP200285961, JP2002544476 T2, JP2002544476, JP2002544476, JP2002540382 T2, JP2002540382, JP2002540382, JP2002517735 T2, JP2002517735, JP2002517735, JP2002503331 T2, JP2002503331, JP2002215241 A2, JP2002085961 A2, JP2001527220 T2, JP2001527220, JP2001523813 T2, JP2001523813, JP2001523812 T2, JP2001523812, JP2001523812, JP2001515216 T2, JP2001515216, JP2001509437 T2, JP2001509437, JP2001502790 T2, JP2001502790, JP2001502790, JP2001502319 T2, JP2001502319, JP2001204462 A2, JP2000514928 T2, JP2000514928 T2, JP2000514928, JP2000275255 A2, JP2000266760 A2, JP2000180455 A2, JP1502319 T2, JP1502319, JP11515106 T2, JP11515106, JP11503315 T2, JP11503315, JP11503315, JP11501504 T2, JP11501504, JP11316226 A2, JP11316226, JP11156231, JP11156231, JP11009258 A2, JP0720010, JP0664156 U, JP0453555 U, GB2453432 A1, FR2795426 A1, FR2672301 A1, EP2372367 A1, EP1792656 A1, EP1780290 A2, EP1745153 A2, EP15745862, EP1574586 A2, EP1574586 A2, EP1541237 A2, EP1346772 A2, EP1077086 A2, EP1059458 A2, EP0772494 B1, EP0772494 B1, EP0766256 A1, EP0688602 A2, EP0483620 A2, EP0365828 A2, DE19929734 A1, DE19833293 C1, CN1968754 A, CN103540518 A, CN101522909 A, CN101466848 A, CA2294819 AA, **Assignee(s)**: (std): BOUTT ELIZABETH ; BRAHMASANDRA SUNDARESH N ; CRAIG ELIZABETH ; DUFFY PATRICK ; GANESAN KARTHIK ; HALEY CECELIA ; WILLIAMS JEFF ; PHADKE NIKHIL ; PARUNAK GENE ; HANDIQUE KALYAN ; HANDYLAB INC ; HANDY LAB INC ; SPRINGER THEODORE ; WU BETTY ; WILSON KERRY

Assignee(s): HANDYLAB INC FRANKLIN LAKES ; VENTURE LENDING AND LEASING IV INC ; VENTURE LENDING AND LEASING V INC

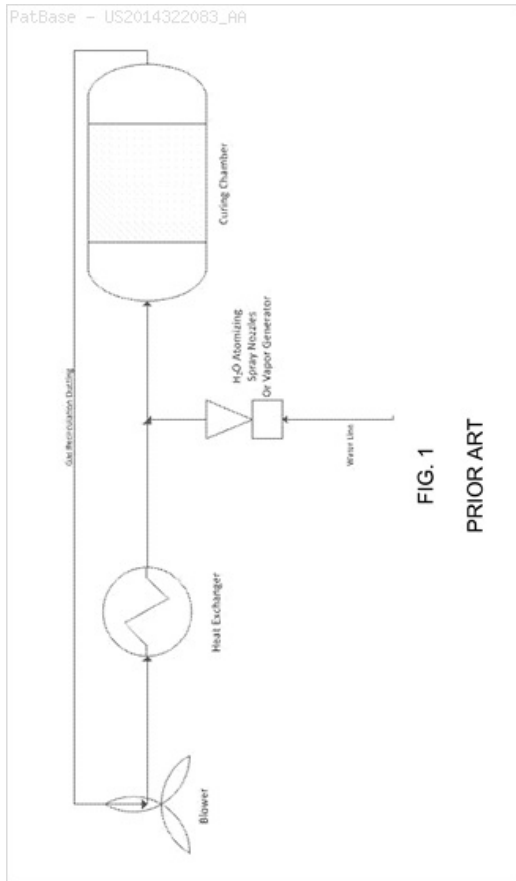
Inventor(s): (std): CALIAN HAN DICK ; CRAIG ELIZABETH ; CRAIG ELIZAETH ; DUFFY PATRICK ; GANESAN KARTHIK ; BOUTT ELIZABETH ; BRAHMASANDRA SUNDARESH N ; HANDIQUE KALYAN ; JEFF WILLIAMS ; KALYAN HANDIQUE ; KELLY WILSON ; KERRY WILSON ; PARUNAK GENE ; PHADKE NIKHIL ; WILLIAMS JEFF ; WILSON KERRY ; SPRINGER THEODORE ; HALEY CECELIA ; WU BETTY

Inventor(s): WU BETTY CANTON ; BRAHMASANDRA SUNDARESH ; SUNDARESH N BRAHMASANDRA ; ELIZABETH BOUTT ; WILLIAMS JEFF CHelsea ; PHADKE NIKHIL ANN ARBOR ; PARUNAK GENE SALINE ; HANDIQUE KALYAN YPSILANTI ; BRAHMASANDRA SUNDARESH N ANN ARBOR ; GANESAN KARTHIK ANN ARBOR

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

6) Family number: 57492483 (US2014322083A)
Title: CURING SYSTEMS FOR MATERIALS THAT CONSUME CARBON DIOXIDE AND METHOD OF USE THEREOF
Abstract:

Source: US2014322083A The invention provides a curing system that is useful for curing materials that consume carbon dioxide as a reagent. The system has a curing chamber that contains the material to be cured and a gas that contains carbon dioxide. The system includes apparatus that can deliver carbon dioxide to displace ambient air upon loading the system, that can provide carbon dioxide as it is needed and as it is consumed, that can control carbon dioxide concentration, temperature and humidity in the curing chamber during the curing cycle and that can record and display to a user the variables that occur during the curing process.



International class (IPC 8-9): B01J10/00 B28B B28B11/24 C04B C04B28/18 C04B40/02 F26B21/08 F27B1/00 F27B5/04 (Advanced/Invention); C04B (Subclass/Invention)

CPC: B01J10/005 B28B11/245 B28B11/247 C04B28/188 C04B40/02 C04B40/0231 F27B1/00 F27B5/04 Y02P40/18

US class: 1/1 422/109

JP class F-Term: 4G055 4G055/AA05 4G055/BA03 4G112 4G112/RA02 4G112/RA03 4G112/RA05 4G112/RC01 4G055/AA01 4G055/AC01 4G055/BA02 4G055/BA09 4G055/BA10

JP class F-Index: B28B11/24 C04B40/02

Family:

Publication number	Pub. date	Application number	App. date
AU2014244068 AA	20141002	AU20140244068	20140313
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BR112015023238 A2	20170718	BR20151123238	20140313
CA2904720 AA	20150914	CA20142904720	20140313
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CN105579209 A	20160511	CN201480027653	20140313
CN105579209 B	20170912	CN201480027653	20140313
EA201591735 A1	20160729	EA20150091735	20140313
EP2969439 A1	20160120	EP20140774291	20140313
EP2969439 A4	20160427	EP20140774291	20140313
ID201605242 A	20160923	ID2015P0006452	20140313
IL241628 A0	20151130	IL20140241628	20140313
IL241628 A1	20170928	IL20140241628	20140313
IN09411DN2015 A	20160219	IN2015DN09411	20151009
JP2016517365 T2	20160616	JP20160502008T	20140313
JP2017196904 A2	20171102	JP20170110655	20170605
KR101695746 B1	20170112	KR20157029506	20140313
KR20160007499 A	20160120	KR20157029506	20140313
MX2015012656 A1	20160217	MX20150012656	20140313
TW201500329 A	20150101	TW20140109126	20140313
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US10016739 BB	20180710	US20150757786	20151228
WO14160168 A1	20141002	WO2014US25958	20140313
ZA201507531 A	20170125	ZA20150007531	20140313

Priority: US20130785226P 20130314; JP20160502008T 20140313; US20140209238 20140313; WO2014US25958 20140313; US20150757786 20151228; JP20170110655 20170605; US20180966794 20180430;

Cited documents: WO14197532 A1, WO14160168 A1, WO14036777 A1, WO12122031 A2, WO12081486 A1, WO09078430 A1, WO07131989 A2, US9598653 BB, US9506695 BB, US9476642 BB, US9221027 BB, US8898927 BB, US8845940 BB, US8499471 BB, US8444903 BB, US8407912 BB, US8096064 BB, US7877895 BB, US7363729 BB, US7272895 BB, US7225561 BB, US6308436 BA, US6065224 A, US5935317 A, US5694701 A, US5660900 A, US5549859 A, US5257464 A, US5089198 A, US4772439 A, US4436498 A, US4436498, US4117059 A, US2014361471 AA, US2014322083 AA, US2014178513 AA, US2005269254 AA, SU88345 A1, SU1717371 A1, SU1717371, JP5270145 B2, JP5093529 A2, JP3161926 U, JP3161926 A2, JP2137782 A2, JP2010521392 T2, JP2009149456 A2, JP2006143531 A2, JP2005097059 A2, JP2004026629 A2, JP2003246688 A2, JP2002012467 A2, JP2001302295 A2, JP2000264756 A2, JP2000264756, GB2396209 A1, EP2092831 A1, DE19646991 A1, CN101139182 A, **Assignee(s):** (std): ATAKAN VAHIT ; HU XUDONG ; JOHN P KUPPLER ; KENNETH SMITH ; SOLIDIA TECHNOLOGIES INC ; SMITH KENNETH ; KUPPLER JOHN P ; SMITH KANNETH ; SOLIDIA TECH INC ; VAHIT ATAKAN ; XUDONG HU

Inventor(s): (std): ATAKAN VAHIT ; HU XUDONG ; KUPPLER JOHN P ; SMITH KENNETH ; XUDONG HU ; VAHIT ATAKAN ; KUPPLER JOHN ; KENNETH SMITH ; JOHN P KUPPLER

Inventor(s): SMITH KANNETH

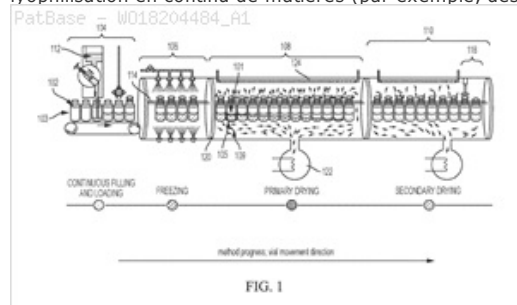
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7) Family number: 71793354 (WO18204484A1)

Title: FREEZE-DRYING METHODS AND RELATED PRODUCTS PROCEDES DE LYOPHILISATION ET PRODUITS ASSOCIES

Abstract:

Source: WO18204484A1 The disclosure in some aspects relates to systems and related methods for the continuous freeze-drying of materials (e.g., pharmaceuticals) with high speed and control. L'invention concerne, selon certains aspects, des systemes et des procedes associes pour la lyophilisation en continu de matieres (par exemple, des produits pharmaceutiques) avec une vitesse et un controle eleves.



International class (IPC 8-9): B65G17/38 B65G43/00 B65G47/00 F26B15/20 F26B15/22 F26B15/24 F26B5/04 F26B5/06 (Advanced/Invention)
Family:

Publication number	Pub. date	Application number	App. date
WO18204484 A1	20181108	WO2018US30629	20180502

Priority: US20170500466P 20170502;

Assignee(s): (std): MASSACHUSETTS INST OF TECH ; TORINO POLITECNICO

Assignee(s): MASSACHUSETTS INST OF TECHNOLOGY ; POLITECNICO DI TORINO

Inventor(s): (std): CAPOZZI LUIGI CARLO ; PISANO ROBERTO ; TROUT BERNHARDT LEVY

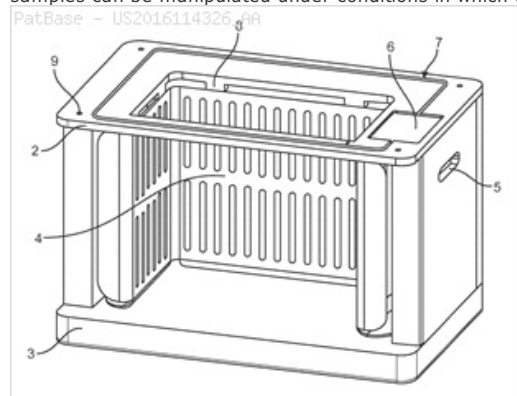
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8) Family number: 57991638 (US2016114326A)

Title: CRYOGENIC SYSTEMS

Abstract:

Source: US2016114326A Cryogenic devices are provided in which solid carbon dioxide (dry ice) is used to maintain a temperature zone in which samples can be manipulated under conditions in which the sample is maintained at a temperature below -50 C.



International class (IPC 8-9): A01N1/00 A01N1/02 B01L7/00 C12M1/04 F17C3/02 F17C7/02 F21V21/096 F25D3/10 F25D3/12

H01S5/022 (Advanced/Invention);

F21Y101/00 F21Y115/30 (Advanced/Non-invention)

CPC: F25D3/10 B01L7/50 F25D3/125 C12M45/22 H01S5/022 F21V21/096 A01N1/0257 F21Y2115/30 B01L7/04 B01L2200/025 B01L2200/143 B01L2300/025 B01L2300/0854 B01L2300/1894 F21Y2115/10

US class: 220/560.04 53/440 62/465

JP class F-Term: 3L044 3L044/AA04 3L044/BA01 3L044/CA17 3L044/DB03 3L044/KA01 3L044/KA02 3L044/KA04

JP class F-Index: F25D3/10/C

Family:

Publication number	Pub. date	Application number	App. date
CN105492819 A	20160413	CN201480038406	20140603
EP3003024 A2	20160413	EP20140807189	20140603
EP3003024 A4	20170426	EP20140807189	20140603
EP3004720 A1	20160413	EP20140807960	20140603
EP3004720 A4	20170118	EP20140807960	20140603
JP2016526146 T2	20160901	JP20160518418T	20140603
US2016114326 AA	20160428	US20140895484	20140603
US2016143270 AA	20160526	US20140895488	20140603
WO14197511 A2	20141211	WO2014US40756	20140603
WO14197511 A3	20150212	WO2014US40756	20140603
WO14197515 A1	20141211	WO2014US40761	20140603

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Cited documents: WO12112035 A1, US6487866 BA, US6295830 BA, US6266306 BA, US6212901 BA, US6122232 A, US6065303 A, US5924302 A, US5709104 A, US5606860 A, US5410910 A, US5048300 A, US4875340 A, US4741167 A, US4494415 A, US3971231 A, US3864936 A, US3257820 A, US3108840 A, US2014047851 AA, US2012279896 AA, US2012255313 AA, US2012140413 AA, US2012102983 AA, US2009230139 AA, US2008302119 AA, US2008292220 AA, US2007151283 AA, US2007084232 AA, US2006283197 AA, US2006218963 AA, US2005188715 AA, US2005178770 AA, US2005039484 AA, US2005016198 AA, US2005006272 AA, JP2001024243 A2, JP1281383 A2,

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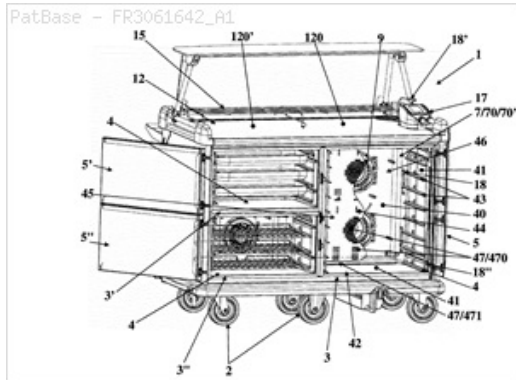
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9) Family number: 70449396 (FR3061642A)

Title: CHARIOT DE MAINTIEN ET DE REMISE EN TEMPERATURE D'ALIMENTS Truck MAINTENANCE AND REPAIR TEMPERATURE OF FOOD (Machine translation)

Abstract:

Source: FR3061642A L'invention concerne un chariot (1) de maintien et de remise en température d'aliments, ce chariot (1) comportant, d'une part, au moins une cuve (4) configurée pour recevoir intérieurement des aliments et, d'autre part, des moyens de refroidissement d'air (7) pour refroidir l'air à l'intérieur de cette ou ces cuves (4), ces moyens de refroidissement d'air (7) comportant au moins un échangeur thermique (70; 70'). Ce chariot (1) est caractérisé en ce que la ou les cuves (4) comportent, intérieurement, d'une part, le ou les échangeurs thermiques (70; 70') et, d'autre part, un ou des moyens de circulation d'air (9) pour assurer une circulation de l'air refroidi à l'intérieur d'une telle cuve (4). The invention relates to a carriage (1) for retaining and re-temperature of food, this truck (1) comprising, on the one hand, at least one tank (4) internally configured to receive food and, on the other hand, means of cooling air (7) to cool the air within this or these tanks (4), these means for cooling air (7) comprising at least one heat exchanger (70, 70'). This carriage (1) is wherein the one or more tanks (4) comprise, internally, on the one hand, the one or more heat exchangers (70, 70') and, on the other hand, one or more air circulation means (9) in order to ensure a flow of the cooled air within such a tank (4).



International class (IPC 8-9): A47B31/02 (Advanced/Invention)

CPC: F25D11/00 F25D2400/12 F25D2400/20 F25D2400/38

Family:

Publication number	Pub. date	Application number	App. date
FR3061642 A1	20180713	FR20170050255	20170112

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Cited documents: US3976122 A, US2002017109 AA, JP2003299524 A2,

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