

PatBase - Search results 07 September 2018

Search query (4): fn=(61184180:135 or 9449820:65 or 66153258:60 or 59142322:60 or 53183046:60 or 43073492:60 or 42861315:60 or 10666140:55 or 9480685:55 or 66396803:50 or 66175709:50 or 66024428:50 or 65963975:50 or 65837027:50 or 65059593:50 or 64616659:50 or 63529082:50 or 63003321:50 or 62183355:50 or 61543851:50 or 61381068:50 or 57614038:50 or 55104560:50 or 53651549:50 or 48766914:50 or 44555420:50 or 34205839:50 or 32713342:50 or 32398842:50 or 32245332:50 or 31944705:50 or 31037907:50 or 30681321:50 or 3702294:50 or 3648586:50 or 45170404:45 or 29786752:45 or 1154073:45 or 1147969:45 or 70934406:40 or 70639152:40 or 70568522:40 or 70382795:40 or 70382417:40 or 70340096:40 or 70300938:40 or 70300816:40 or 70171221:40 or 70078528:40 or 70075784:40 or 69999856:40 or 69567036:40 or 69470117:40 or 69468704:40 or 69421688:40 or 69372085:40 or 69229353:40 or 69220876:40 or 69124433:40 or 69080249:40 or 69046174:40 or 68939546:40 or 68858266:40 or 68599406:40 or 68558045:40 or 68349593:40 or 68239419:40 or 67753742:40 or 67655390:40 or 67650641:40 or 67635501:40 or 67597415:40 or 67376552:40 or 67325812:40 or 67196079:40 or 67171282:40 or 66945497:40 or 66941791:40 or 66860762:40 or 66623661:40 or 66577336:40 or 66549011:40 or 66459059:40 or 66267269:40 or 66208558:40 or 66202765:40 or 66202682:40 or 66178095:40 or 66177866:40 or 66177860:40 or 66177852:40 or 66177752:40 or 66177680:40 or 66175273:40 or 66163221:40 or 66163220:40 or 66163219:40 or 66162685:40 or 66059145:40 or 65977770:40)

Results: 100

Search history

Search PN=(WO2015195559) (Results 1)

1:

Search [SP]: basking heater and methods a basking heater for an animal, such as a reptile, includes a housing, a heating element within the housing, and an opening in a bottom of the housing, so that the heating element may radiate heat through the opening, and an attachment arrangement. the attachment arrangement can be used to selectively attach the heater to a terrarium. the housing can be made of thermal plastic resin and can include vents for cooling the housing. the housing can have low profile shape. the heater may have multiple power settings. (Results 0)

Search [SP]: 1. a basking heater comprising: (a) a housing defining a bottom and defining an interior the bottom having an opening in communication with the interior the housing including a top opposite of the bottom (b) a heating element within the housing interior the heating element being connected to a power source and oriented to radiate heat through the opening in the bottom (c) an attachment arrangement adapted to selectively attach the heater to a terrarium and wherein a height of the housing from the bottom to the top is not greater than 3 inches. 2. the basking heater of claim 1 further comprising: (a) a porous grill in the housing interior covering the opening in the bottom the grill being between the heating element and the bottom. 3. the basking heater of claim 1 wherein: (a) the housing bottom is substantially planar. 4. the basking heater of claim 2 wherein: (a) the grill is entirely within the housing interior. 5. the basking heater of claim 1 wherein: (a) the housing includes a first shell and a second shell that fit together to define the interior the second shell having the bottom. 6. the basking heater of claim 5 wherein: (a) the housing defining a vent arrangement. 7. the basking heater of claim 1 further comprising: (a) an insulating arrangement adjacent to the heating element, the heating element being between the insulating arrangement and the housing bottom. 8. the basking heater of claim 7 wherein: (a) the insulating arrangement comprises a ceramic cloth. 9. the basking heater of claim 1 further comprising: (a) a temperature probe between the heating element and the housing bottom and (b) a circuit board with control logic to disconnect power from the heating element when the temperature probe exceeds a predetermined value. 10. the basking heater of claim 1 further comprising: (a) a power switch controlling an amount of power to the heating element the power switch having at least 3 settings including no power, low power, and high power. 11. the basking heater claim 1 wherein: (a) the attachment arrangement includes at least one fastener selectively securable to the housing bottom, adapted to permit selective attachment to a screen cover on a terrarium. 12. the basking heater of claim 1 wherein: (a) the attachment arrangement comprises a mounting bracket adapted to permit selective attachment to a top rim of a terrarium. 13. the basking heater of claim 1 wherein: (a) a height of the housing from the bottom to an opposite top is not greater than 1.75 inches. 14. the basking heater of claim 1 wherein: (a) the housing is made of thermoplastic resin. 15. a basking heater comprising: (a) a housing defining a bottom and defining an interior the bottom having an opening in communication with the interior (b) a heating element within the housing interior the heating element being connected to a power source and oriented to radiate heat through the opening in the bottom and (c) an attachment arrangement usable to selectively attach the heater to a terrarium the attachment arrangement including both, (i) a fastener to permit selective attachment to a screen cover on a terrarium and (ii) a mounting bracket adapted to permit selective attachment to a top rim of a terrarium. 16. the basking heater of claim 15 wherein: (a) the fastener includes a thumbscrew threadably securable into the housing bottom. 17. the basking heater of claim 15 wherein: (a) the mounting bracket includes a depressable tab to release the mounting bracket from the housing. 18. a basking heater comprising: (a) a housing defining a bottom and defining an interior the bottom having an opening in communication with the interior (b) a heating element within the housing interior the heating element being connected to a power source and oriented to radiate heat through the opening in the bottom and (c) a power switch controlling an amount of power to the heating element the power switch having at least 3 settings including no power, low power, and high power. 19. the basking heater of claim 18 further comprising: (a) a temperature probe between the heating element and the housing bottom and (b) a circuit board with control logic to disconnect power from the heating element when the temperature probe exceeds a predetermined value. 20. the basking heater of claim 18 wherein: (a) the low power comprises about 27 w and the high power comprises about 41 w. (Results 0)

Search fn=(61184180:135 or 9449820:65 or 66153258:60 or 59142322:60 or 53183046:60 or 43073492:60 or 42861315:60 or 10666140:55 or 9480685:55 or 66396803:50 or 66175709:50 or 66024428:50 or 65963975:50 or 65837027:50 or 65059593:50 or 64616659:50 or 63529082:50 or 63003321:50 or 62183355:50 or 61543851:50 or 61381068:50 or 57614038:50 or 55104560:50 or 53651549:50 or 48766914:50 or 44555420:50 or 34205839:50 or 32713342:50 or 32398842:50 or 32245332:50 or 31944705:50 or 31037907:50 or 30681321:50 or 3702294:50 or 3648586:50 or 45170404:45 or 29786752:45 or 1154073:45 or 1147969:45 or 70934406:40 or 70639152:40 or 70568522:40 or 70382795:40 or 70382417:40 or 70340096:40 or 70300938:40 or 70300816:40 or 70171221:40 or 70078528:40 or 70075784:40 or 69999856:40 or 69567036:40 or 69470117:40 or 69468704:40 or 69421688:40 or 69372085:40 or 69229353:40 or 69220876:40 or 69124433:40 or 69080249:40 or 69046174:40 or 68939546:40 or 68858266:40 or 68599406:40 or 68558045:40 or 68349593:40 or 68239419:40 or 67753742:40 or 67655390:40 or 67650641:40 or 67635501:40 or 67597415:40 or 67376552:40 or 67325812:40 or 67196079:40 or 67171282:40 or 66945497:40 or 66941791:40 or 66860762:40 or 66623661:40 or 66577336:40 or 66549011:40 or 66459059:40 or 66267269:40 or 66208558:40 or 66202765:40 or 66202682:40 or 66178095:40 or 66177866:40 or 66177860:40 or 66177852:40 or 66177752:40 or 66177680:40 or 66175273:40 or 66163221:40 or 66163220:40 or 66163219:40 or 66162685:40 or 66059145:40 or 65977770:40) (Results 100)

Title: Aquarium-tank heating control
Priority: US19730356224 19730501 US19740507075 19740918
Family:

Publication number	Publication date	Application number	Application date
US3890486 A	19750617	US19740507075	19740918

Probable Assignee: EQUIPMENT DEV CORP
Assignee(s):(std): EQUIPMENT DEV CORP
Assignee(s): EQUIPMENT DEVELOPMENT CORP
Inventor(s):(std): FITZGERALD ROBERT C
International class (IPC 8-9): A01K63/06 H01H61/02 H05B3/00 H05B3/80 (Advanced/Invention)
International class (IPC 1-7): H05B1/02 H05B3/06 H05B3/80
CPC: A01K63/065 H01H61/02 H05B3/00 H05B3/80
European class: A01K63/06A H01H61/02 H05B3/00 H05B3/80
US class: 119/245 219/442 219/511 219/523 392/451 392/503

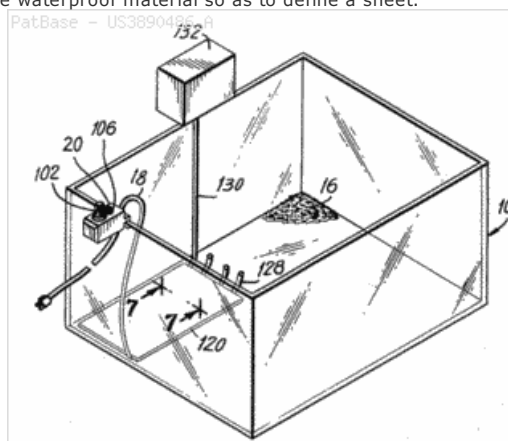
[Classification Explorer](#)

Cited documents: US3803386 A, US3737621 A, US3418454 A, US3326183 A, US3167643 A, US2971074 A, US2926233 A, US2789201 A, US2611855 A, US2561932 A, US2427146 A, US2379398 A, US2319477 A, US1293964 A,

Forward Citations: WO9319563, WO03094609, WO03094609, USRE42386, US7338431, US7049554, US7024814, US6962019, US6902521, US6140615, US5954977, US5834741, US5408577, US5332883, US5168546, US5113057, US4889973, US4839498, US4354096, US4096376, US3973102, US2016242396, US2016195300, US2010218728, US2007179533, US2005173409, US2005171397, US2004102673, FR2474802, FR2423946, EP1509079, EP0379313, EP0033278, EP0033278,

Abstract:

Heating devices are provided having a resistive heating element for heating a first region and a temperature control electrically coupled to the resistive heating element and positioned in a second region spaced from the first region. The temperature control is adapted to respond to the ambient temperature at the second region and the amount of current applied to the resistive heating element to maintain the temperature at the first region. The resistive heating element may consist of a length of resistive electrical conductor distributed over an area and encapsulated in a flexible waterproof material so as to define a sheet.



Title: Thermostatically controlled safety heater for aquariums
Priority: US19740433291 19740114 US19740479252 19740613
Family:

Publication number	Publication date	Application number	Application date
AU197577092 A1	19760708	AU19750077092	19750103
DE2501211 A1	19750724	DE19752501211	19750114
DK5975 A	19750915	DK19750000059	19750113
FR2258074 A1	19750808	FR19750000896	19750113
IT1028296 A	19790130	IT19750019176	19750110
US3895217 A	19750715	US19740433291	19740114
US4021643 A	19770503	US19740479252	19740613

Probable Assignee: ODELL MFG INC
Assignee(s):(std): ODELL MANUFACTURING INC ; ODELL MFG INC
Assignee(s): ODELL MANUFACTURING INC US ; O DELL MANUFACTURING INC ; O DELL MFG INC
Inventor(s):(std): MOORE RONALD D ; HALL FRANK KENNETH ; MOORE R D ; HALL F K
Inventor(s): RONALD D MOORE ; FRANK KENNETH HALL ; KENNETH HALL FRANK ; D MOORE RONALD
International class
(IPC 8-9): A01K63/06 H01H37/02 H01H37/36 H05B3/16 H05B3/80 (Advanced/Invention);
A01K63/06 H01H37/00 H05B3/16 H05B3/78 (Core/Invention)
International class
(IPC 1-7): A01K64/00 A01K64/02 H01H37/36 H01H37/44 H05B1/00 H05B1/02 H05B3/78 H05B3/80
CPC: A01K63/065 H01H37/02 H01H37/36 H05B3/16 H05B3/80
European class: A01K63/06A H01H37/02 H01H37/36 H05B3/16 H05B3/80
US class: 200/83N 219/513 219/523 337/117 337/120 337/315 337/320 392/498 392/501

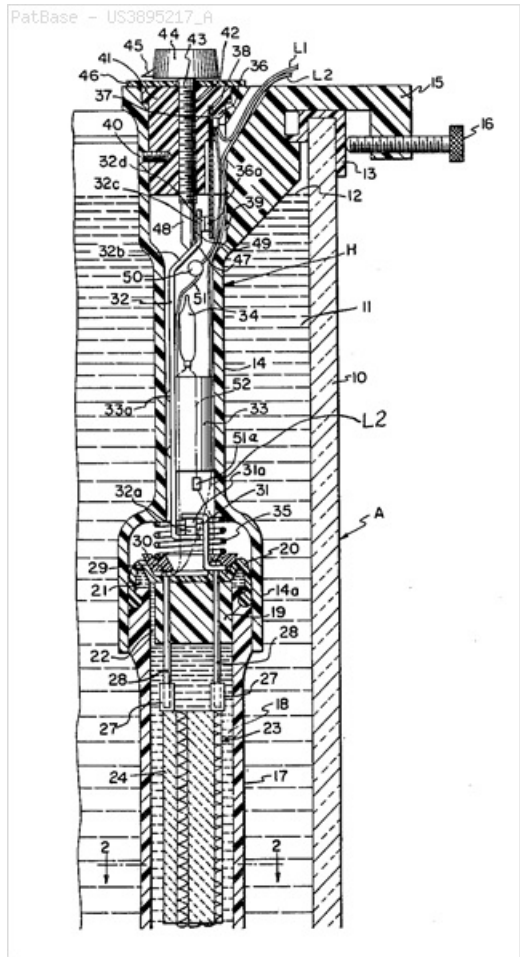
[Classification Explorer](#)

Cited documents: US3895217 A, US3833792 A, US3764780 A, US3731058 A, US3619565 A, US3564589 A, US3536893 A, US3511970 A, US3444356 A, US3250521 A, US3166893 A, US3107290 A, US3073940 A, US2987602 A, US2902581 A, US2888547 A, US2822530 A, US2811629 A, US2780703 A, US2699488 A, US2697766 A, US2666838 A, US2524886 A, US2217595 A, US1820842 A, US1718866 A, US1718865 A, US1691749 A, US1690986 A, US1178777 A,

Forward Citations: WO9206571, USD826485, US8173940, US8041200, US5905849, US5866882, US5834742, US5392380, US5332883, US5113057, US5044314, US4956046, US4938815, US4379220, US4378488, US4301767, US4276466, US4272672, US4163145, US4156128, US4149067, US4124793, US4107514, US4072847, US4029941, US4021643, US2013313137, US2010140256, US2009080873, JP55053092, EP0267451, EP0267451, EP0247676, EP0247676,

Abstract:

A thermostatically controlled safety heater for immersion in aquarium tanks comprising: a housing having an axially extending heat transmitting tube forming a chamber with linearly heat expansible, heat conducting fluid therein, and an electrically operated heating cartridge immersed in the fluid. An actuating element is provided in the tube in operative contact with the fluid and is movable axially to varying positions dependent on the temperature of the fluid and responsive to its condition of expansion, the element being connected to move linearly and enable and disable contacts which control the temperature of the fluid via enablement and disablement of the heating element to tend to maintain a constant fluid temperature.



Title: Electrical heater

Priority: US19840580472 19840215 US19840646688 19840831 US19840654772 19840926
CA19850474264 19850214 WO1985US00239 19850215 WO1985US01661 19850829
CA19850491525 19850925 WO1985US01872 19850926 US19860865744 19860430
US19860945841 19861223

Family:	Publication number	Publication date	Application number	Application date
	AU198538513 A1	19850822	AU19850038513	19850207
	AU198548038 A1	19860324	AU19850048038	19850829
	AU584318 B2	19890525	AU19850038513	19850207
	AU594647 B2	19900315	AU19850048038	19850829
	CA1232934 A1	19880216	CA19850474264	19850214
	CA1250616 A1	19890228	CA19850489786	19850830
	CA1254935 A1	19890530	CA19850491525	19850925
	CH677828 A	19910628	CH19850000687	19850213
	DE3505296 A1	19850822	DE19853505296	19850215
	DE3590408 T	19861120	DE19853590408T	19850829
	DE3590408 T1	19861120	DE19853590408T	19850829
	DE3590491 T	19861120	DE19853590491T	19850215
	DE3590491 T1	19861120	DE19853590491T	19850215
	EP0194312 A1	19860917	EP19850905033	19850926
	GB2157137 A1	19851016	GB19850003899	19850215
	GB2157137 B2	19871118	GB19850003899	19850215
	GB8503066 A0	19850313	GB19850003066	19850207
	GB8503899 A0	19850320	GB19850003899	19850215
	JP1767114 C3	19930611	JP19850028143	19850215
	JP4045952 B4	19920728	JP19850028143	19850215
	JP60193285 A2	19851001	JP19850028143	19850215
	JP62500132 T2	19870116	JP19850503993	19850829
	JP62500336 T2	19870205	JP19850504457T	19850926
	JP7056830 B4	19950614	JP19850504457	19850926
	KR920005457 B1	19920704	KR19850070250	19851012
	KR920005457 B1	19920704	KR19850700250	19850215
	SE8500700 A	19850816	SE19850000700D	19850214
	SE8500700 A0	19850214	SE19850000700	19850214
	SE8500700 L	19850816	SE19850000700	19850214
	US4542285 A	19850917	US19840646688	19840831
	US4626664 A	19861202	US19840654772	19840926
	US4633068 A	19861230	US19840580472	19840215
	US4749844 A	19880607	US19860865744	19860430
	US4752672 A	19880621	US19860945841	19861223
	WO8503832 A1	19850829	WO1985US00239	19850215
	WO8601672 A1	19860313	WO1985US01661	19850829
	WO8602228 A1	19860410	WO1985US01872	19850926

Probable Assignee: CALORIQUE LTD**Assignee(s):(std):** FLEXWATT CORP ; FURETSUKUSUWATSUTO CORP ; GRISE FREDERICK GERARD J**Assignee(s):** GRISE FREDERICK GJ ; GRISE FREDERICK G J ; CALORIQUE INC ; CALORIQUE INC LTD ; CALORIQUE LTD ; COMPUTER SYSTEMS OF AMERICA INC**Inventor(s):(std):** GRISE FREDERICK G J ; GRISE FREDERICK GERARD JOSEPH ; GRISE F G J ; FUREDERITSUKU JII JIEI GURIIZU**Inventor(s):** G J GRISE FREDERICK ; F G J GRISE ; GRISE FREDERICK G ; GRISE FREDERICK GJ ; FREDERICK G J GRISE ; FREDERICK GERARD JOSEPH GRISE ; FREDERICK GJ GRISE ; FUREDERITSUKU JII JEI GURIIZU**Agent(s):** DAVIES COLLISON CAVE; DAVIES COLLISON CAVE PTY LTD; SMART AND BIGGAR**Designated states:** AU DE JP KR US

International class (IPC 8-9): F41J2/02 H05B3/00 H05B3/02 H05B3/06 H05B3/14 H05B3/16 H05B3/18 H05B3/20 H05B3/26 H05B3/36 H05B3/56 H05B3/58 H05B7/00 (Advanced/Invention); H05B3/00 H05B3/02 H05B3/16 H05B3/20 (Advanced/Non-invention); F41J2/00 H05B3/00 H05B3/10 H05B3/20 H05B3/22 H05B3/34 (Core/Invention)

International class (IPC 1-7): F41J1/00 F41J2/02 F41J9/13 H01C7/00 H05B1/00 H05B3/00 H05B3/02 H05B3/06 H05B3/08 H05B3/10 H05B3/12 H05B3/16 H05B3/18 H05B3/20 H05B3/26 H05B3/34 H05B3/36 H05B3/54 H05B7/00

CPC: F41J2/02 H05B3/26 H05B2203/005 H05B2203/011 H05B2203/013 H05B2203/017 H05B2203/032 H05B2203/037 H05B3/06 H05B3/145 H05B3/36 H05B2203/016 H05B2203/033 H05B3/56 H05B3/565

European class: F41J2/02 H05B3/06 H05B3/14G H05B3/26 H05B3/36 H05B3/56 H05B3/56A T05B203/005 T05B203/011 T05B203/013 T05B203/016 T05B203/017 T05B203/032 T05B203/033 T05B203/037

US class: 219/345 219/466.1 219/525 219/528 219/541 219/543 219/544 219/548 219/549 219/552 338/211 338/212 338/306 338/308 338/309 338/314 338/320 338/328 338/330 338/333 392/435

[Classification Explorer](#)

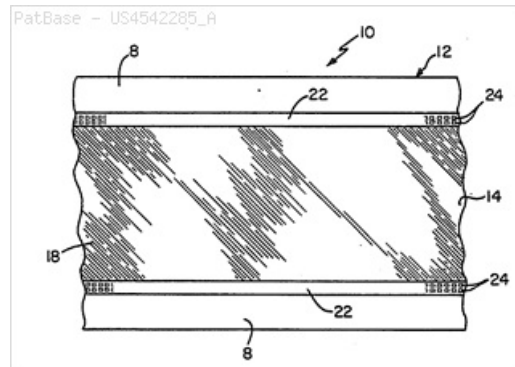
Cited documents: US874528 A, US4542285 A, US4485297 A, US4453669 A, US4450346 A, US4388522 A, US4385226 A, US4348584 A, US4307290 A, US4250398 A, US4031356 A, US4023008 A, US4002883 A, US3852570 A, US3813520 A, US3798419 A, US3757086 A, US3751620 A, US3749886 A, US3558858 A, US3387248 A, US3385959 A, US3313920 A, US2745942 A, US2737562 A, US2596327 A, US2503457 A, US2489643 A, US2473183 A, US2277772 A, US2179819 A, JP59005590 A2, JP55114988 B4, JP54039750 B4, JP52010762 U1, JP51091034 A2, JP51001166 U1, JP50039835 U1, JP48016233 A2, JP46006922 U1, JP39022078 Y1, GB629188 A, GB2114409 A1, GB1446849 A, GB1145367 A, DE839982 A, DE3152305 C2, DE3152305 A1, DE2551376 A1, DE2000655 B2, AU584318 B2, AU555676 B2,

Forward Citations: WO9219081, WO8906480, WO8602228, USD661794, USD661793, US9962122, US9821832, US9750929, US9717115, US9657963, US9578690, US9480833, US9468045, US9420640, US9399125, US9315133, US9298207, US9283369, US9283368, US9283367, US9191997, US9161393, US9039989, US8985585,

US8784388, US8772676, US8770032, US8766142, US8740864, US8702164, US8644749, US8641684, US8624164, US8604391, US8544942, US8507831, US8491546, US8480968, US8283602, US8062343, US8008606, US7851729, US7786408, US7741582, US7714255, US7709770, US7543344, US7329843, US7022950, US6946628, US6891136, US6770848, US6686562, US6416534, US6194692, US5780820, US5432322, US5422622, US5403993, US5391861, US5306898, US5128522, US4987291, US4987289, US4933534, US4774397, US4769527, US4749844, US2012087692, US2011233185, US2011226751, US2011147357, US2010242993, US2010204763, US2010161016, US2009194942, US2009107984, US2009099630, US2008230530, US2008179306, US2008173629, US2008103567, US2008083740, US2008083721, US2008039803, US2008038167, US2007112333, US2007093762, US2007080155, US2007068931, US2007068930, US2007068929, US2007068928, US2007068923, US2007068916, US2007067910, US2006206177, US2006001727, US2005244587, US2005051536, US2005035705, US2005007406, US2004256381, US2003230565, LU92228, JP4502281, GB2244194, GB2244194, FR2805705, FR2716962, FR2613870, EP3010306, EP2064720, EP0746962, EP0250178, EP0250178, EP0250178, DE3610921, DE202017002725, CN102472680, CN102472680, AU594647,

Abstract:

A sheet heater including a substrate, a semi-conductor pattern (typically of colloidal graphite) having a pair of parallel, spaced-apart, longitudinally-extending stripes and a central portion extending between and electrically connected to the stripes, and a pair of parallel, spaced-apart, longitudinally-extending conductors one of which overlies and engages each of the stripes. Each conductor is significantly wider than the underlying stripe of the semi-conductor pattern, and includes a longitudinally extending strip portions along the inner and outer edges of the conductor, and a plurality of longitudinally-spaced openings located therebetween. The strip portion at the inner edge of the conductor overlies and engages a respective stripe; and a sealing layer of insulating material overlies the respective conductor and is sealed to the substrate along the inner and outer edges of the conductor and through the longitudinally spaced openings.



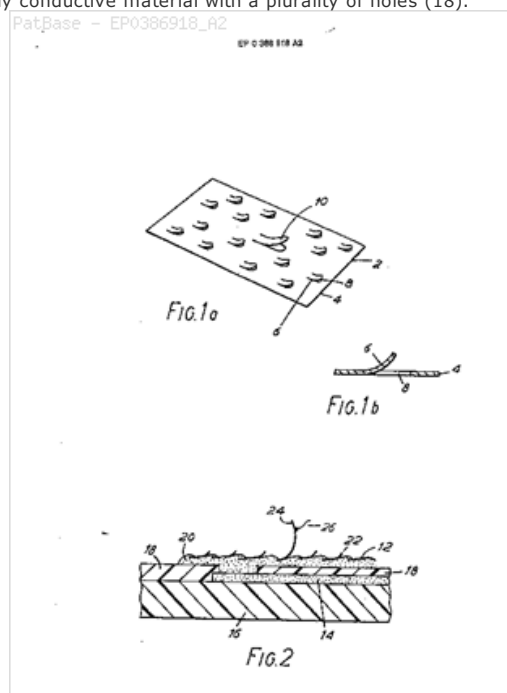
Title: AN ELECTRICAL DEVICE.
Priority: GB19890005014 19890304 CA19902011413 19900302
Family:

Publication number	Publication date	Application number	Application date
CA2011413 AA	19900904	CA19902011413	19900302
EP0386918 A2	19900912	EP19900302034	19900226
EP0386918 A3	19910123	EP19900302034	19900226
GB8905014 A0	19890419	GB19890005014	19890304
JP2272786 A2	19901107	JP19900051943	19900305

Probable Assignee: EMI PLC THORN
Assignee(s):(std): EMI PLC THORN ; ROBINS IAN
Assignee(s): THORN EMI PLC
Inventor(s):(std): IAN ROBINZU ; ROBINS IAN
Agent(s): RIDOUT AND MAYBEE LLP
Designated states: AT BE CH DE DK ES FR GB GR IT LI LU NL SE
International class (IPC 8-9): H01R4/04 H05B3/02 H05B3/06 H05B3/12 H05B3/20 H05K1/02 (Advanced/Invention); H05K1/09 H05K3/40 (Advanced/Non-invention); H01R4/00 H05B3/02 H05B3/06 H05B3/12 H05B3/20 H05K1/02 (Core/Invention); H05K1/09 H05K3/40 (Core/Non-invention)
International class (IPC 1-7): H01R4/00 H01R4/04 H05B3/02 H05B3/06 H05B3/20 H05K1/02
CPC: H01R4/04 H05B3/06 H05B3/12 H05B3/20 H05K1/092 H05K3/4015
European class: H01R4/04 H05B3/06 H05B3/12 H05B3/20 T05K1/09D T05K3/40B1
[Classification Explorer](#)
Cited documents: EP0286215 A1, EP0278611 A1, EP0232525 A1,
Forward Citations: WO9403027, US7675004, US5560098, GB2322272, EP1722599,

Abstract:

In an electrical device, a thick film track (14) is applied to a substrate (16). An electrical connector (2, 12) is adhered to the thick film track (14). The connector (2, 12) comprises a lamina 14 of electrically conductive material with a plurality of holes (18).



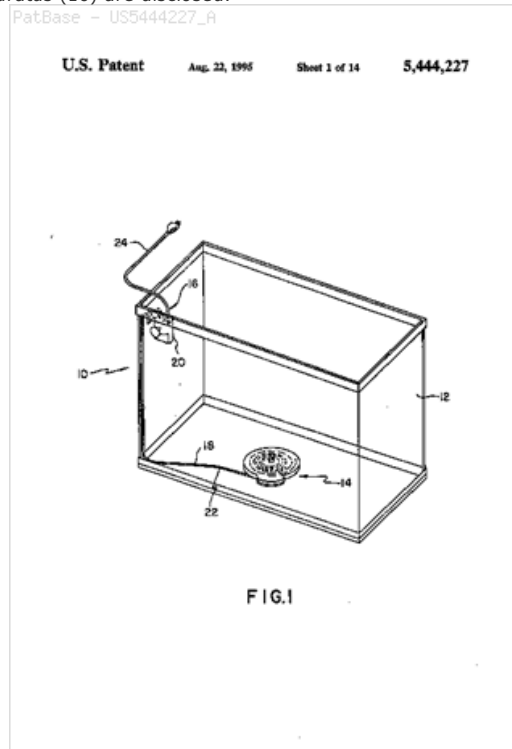
Title: HEATER APPARATUS FOR USE IN A LIQUID ENVIRONMENT
Priority: US19920893095 19920602 JP19930129657 19930531
Family:

Publication number	Publication date	Application number	Application date
EP0574065 A2	19931215	EP19930201525	19930527
EP0574065 A3	19941214	EP19930201525	19930527
JP2003036959 A2	20030207	JP20020143206	20020517
JP3353049 B2	20021203	JP19930129657	19930531
JP3523240 B2	20040426	JP20020143206	20020517
JP7287539 A2	19951031	JP19930129657	19930531
US5444227 A	19950822	US19920893095	19920602

Probable Assignee: TETRA HOLDING US INC
Assignee(s):(std): WARNER LAMBERT CO ; CHESNUT M GAINES ; CHESTNUT GAINES M ; CHESTNUT M GAINES
Assignee(s): EMU GEINZU CHIESUNATSUTO ; M GAINES CHESNUT ; ROYAL BANK OF SCOTLAND PLC FRANKFURT BRANCH ADMINISTRATIVE AGENT AS ; ROYAL BANK OF SCOTLAND PLC FRANKFURT BRANCH AS ADM ; TETRA HOLDING INC ; WARNER LAMBERT COMPANY ; WARNER LAMBERT COMPANYLLC ; TETRA HOLDING (US) INC ; TETRA HOLDING US INC
Inventor(s):(std): EMU GEINZU CHIESUNATSUTO ; CHESTNUT M GAINES
Designated states: BE CH DE DK ES FR GB IT LI NL SE
International class (IPC 8-9): A01K63/06 G05D23/24 G09F13/00 H05B3/00 H05B3/04 H05B3/06 H05B3/78 H05B3/80 (Advanced/Invention); A01K63/06 G05D23/20 G09F13/00 H05B3/00 H05B3/02 H05B3/06 H05B3/78 (Core/Invention)
International class (IPC 1-7): A01K63/06 G09F13/00 H05B1/02 H05B3/00 H05B3/06 H05B3/78 H05B3/80
CPC: G05D23/1909 G05D23/24 H05B3/80 A01K63/065 H05B3/04
European class: A01K63/06A G05D23/24C2C H05B3/04 H05B3/80
US class: 116/256 116/286 219/497 219/502 219/506 219/523 219/528
[Classification Explorer](#)
Cited documents: US4983813 A, US4326121 A, US4007371 A, US3916317 A, US3868923 A, US3803386 A, US3677619 A, US3576426 A, US2554745 A, EP0379313 A1, EP0253542 A1, DE1911091 A1, AT87311 B,
Forward Citations: US8033716, US7085482, US7024814, US6962019, US6097008, US5834741, US2013087549, US2009308325, US2006151473, US2006083498, KR100722165,

Abstract:

An improved heater and control apparatus (10) suitable for maintaining a proper temperature in a liquid environment such as an aquarium (12) is provided. The apparatus (10) includes a heater element (26) housed within a protective casing (28) to reduce the likelihood of heater element (26) breakage. A number of openings (30) are provided in casing (28) to permit direct contact between the heater element (26) and water in the aquarium (12). The control assembly (16) includes a novel active light display (99). Additional novel features and corresponding advantages of the apparatus (10) are disclosed.



Title: Heater for aquarium fish tank

Priority: JP19950045045 19950210 JP19950045046 19950210 JP19950276186 19951002
CA19962169204 19960209 JP19980126724 19980420

Family:

Publication number	Publication date	Application number	Application date
CA2169204 AA	19960811	CA19962169204	19960209
EP0726693 A1	19960814	EP19960300770	19960205
JP10243758 A2	19980914	JP19980126724	19980420
JP2782421 B2	19980730	JP19950045046	19950210
JP2822343 B2	19981111	JP19950276186	19951002
JP3267930 B2	20020325	JP19980126724	19980420
JP8214729 A2	19960827	JP19950045046	19950210
JP8275695 A2	19961022	JP19950276186	19951002
US5834742 A	19981110	US19960595270	19960201

Probable Assignee: NIHON DOUBUTSU YAKUHIIN KABUSHIKIGAISSYA

Assignee(s):(std): NIHON DOUBUTSU YAKAHIN KABUSHI ; NIHON DOUBUTSU YAKUHIIN KABUSHI ; NIPPON DOUBUTSU YAKUHIIN KK

Assignee(s): YOSHIDA NOBUYUKI ; NIHON DOUBUTSU YAKUHIIN KABUSHIKIGAISSYA ; NIHON DOUBUTSU YAKAHIN KABUSHIKIGAISSYA

Inventor(s):(std): NOBUYUKI YOSHIDA ; YOSHIDA NOBUYUKI

Agent(s): SHAPIRO COHEN; AVENTUM IP LAW LLP

Designated states: DE FR GB

International class (IPC 8-9): A01K63/06 H05B3/00 H05B3/82 (Advanced/Invention);
A01K63/06 H05B3/78 (Core/Invention)

International class (IPC 1-7): A01K63/06 H05B3/00 H05B3/06 H05B3/80

CPC: A01K63/065 H05B3/82

European class: A01K63/06A H05B3/82

US class: 219/523 219/546 219/552 392/497 392/498 392/503

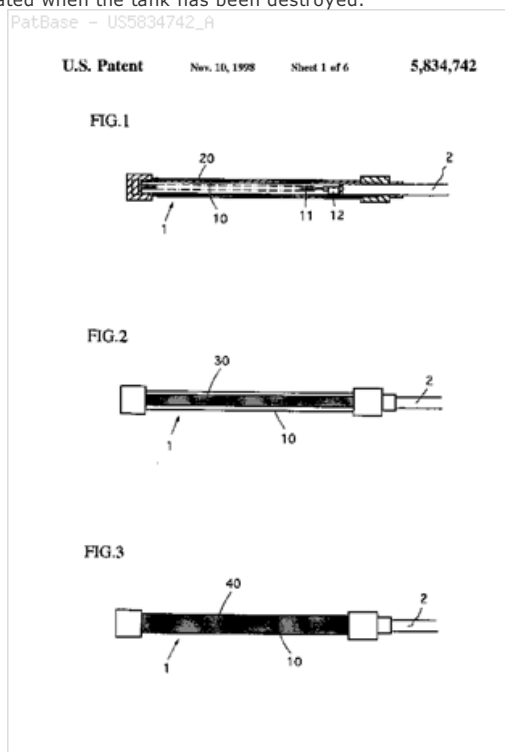
[Classification Explorer](#)

Cited documents: US4503320 A, US4315143 A, US4152263 A, US4068116 A, US3895217 A, JP53029998 U1, JP50039844 U1, EP0543655 A1, DE2706291 A1,

Forward Citations: WO14175875, US8952302, US7046923, US6217631, US6069910, US5963580, US2016076424, US2011278283, US2008050343, US2005242080, JP3843220, JP2812929, JP2005317268, JP2002352937, JP10162936, DE19723994, DE19723994,

Abstract:

In a heater unit comprising a case 10 which accommodates therewithin an electrical heating element 11 and a temperature sensor 12 for detecting the temperature of the case 10 heated by the electrical heating element 11 to stop the power supply to the electrical heating element 11 when the temperature reaches a predetermined value, there is provided a heat conductive path 20 made of a material having a higher heat conductivity than that of the material making up the case 10 and extending from a region corresponding to the space in which the electrical heating element 11 or heater is placed to a region corresponding to the space in which the temperature sensor 12 or temperature detecting and power supply control member is placed. Thus, the heater unit for an aquarium fish tank is prevented from being extraordinarily heated when the tank has been destroyed.



Title:

Underwater heater for aquarium

Priority:

JP19960332937 19961127

Family:

	Publication number	Publication date	Application number	Application date
	JP10162936 A2	19980619	JP19960332937	19961127
	JP2812929 B2	19981022	JP19960332937	19961127
	US5905849 A	19990518	US19970972169	19971117

Probable Assignee:

SANRITSU ELECTRIC CO LTD

Assignee(s):(std):

SANRITSU ELECTRIC ; SANRITSU ELECTRIC CO LTD

Assignee(s):

SANRITSU DENKI KK

Inventor(s):(std):

ITO MASAHIKO

International class (IPC 8-9):

A01K63/06 H05B1/02 H05B3/00 H05B3/80 H05B3/82 (Advanced/Invention);
A01K63/06 H05B1/02 H05B3/00 H05B3/78 (Core/Invention)

International class (IPC 1-7):

A01K63/06 H05B1/02 H05B3/00 H05B3/82

CPC:

A01K63/065 H05B1/0283 H05B3/80

European class:

A01K63/06A H05B1/02 H05B1/02B2D3 H05B3/80

US class:

219/523 392/498

Classification Explorer

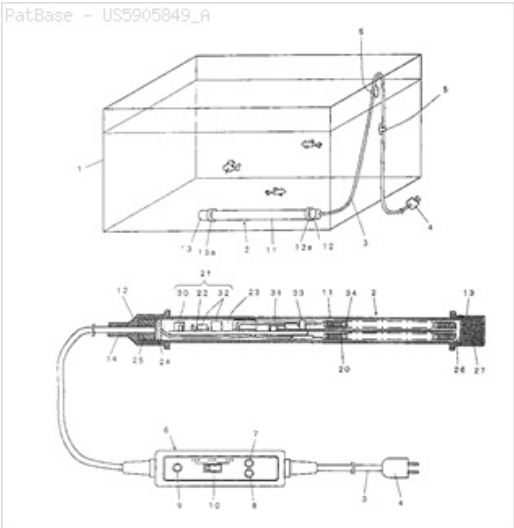
Cited documents:

US5600528 A, US5597335 A, US5550526 A, US5506391 A, US5465014 A, US5442157 A, US5392380 A, US5113057 A, US5092519 A, US5079409 A, US5054136 A, US4379220 A, US4327281 A, US4072847 A, US4037080 A, US4021643 A, US3895217 A, US3803386 A, US3796858 A, US3746836 A, US3107290 A, US3107289 A, US2839660 A, US1992635 A, US1981251 A, JP8275696, JP8275695, JP8275380, JP6413964 U, JP60115492 A2, JP59117682 A2, JP3029721 U,

Forward Citations:

WO07046813, US9671132, US7046923, US6866007, US6707370, US6396033, US6317559, US6061500, US2016345546, US2014153912, US2009308325, US2006151473, US2005242080, KR20170001758, KR200485309, JP4990131, JP4103572, JP2008501085, JP2004190926, JP2002343538, CN104571196, AU2005337472,

Abstract:
An underwater heater for warming water in an aquarium comprises a thermal sensor for sensing temperature of a main heater body and a control unit for controlling operation of the main heater body via reception of a detect signal output from the thermal sensor. In addition to a switch device for opening and closing a power-supply circuit for supplying power to the main heater body, the control unit further comprises a drive circuit, an abnormality-detection circuit, and a memory circuit. Whenever the abnormality-detection circuit detects that the thermal sensor has detected an abnormal temperature, the drive circuit activates the switch device to open itself to cause power supply to the main heater body to be shut off and to simultaneously cause the memory circuit to store the abnormality-detected condition therein. The memory storing condition is reset via a resetting operation effected by pulling a power-supply plug out from a power-outlet socket to enable to main heater body to effect the resetting operation.



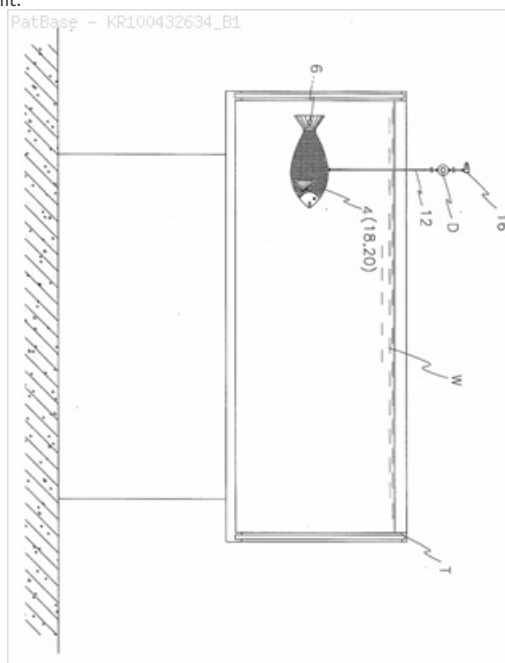
Priority: KR20020030595 20020531

Family:	Publication number	Publication date	Application number	Application date
	 KR100432634 B1	20040528	KR20020030595	20020531
	 KR200288008 Y1	20020905	KR20020016747U	20020531
	 KR20030092776 A	20031206	KR20020030595	20020531

Probable Assignee: HYUN DAI TITANIUM CO LTD**Assignee(s):(std):** HYUN DAI TITANIUM CO LTD**Assignee(s):** MODERN TITANIUM CO LTD ; HYUN DAI TITANIUM CO**Inventor(s):(std):** LEE JONG HYEONG**International class (IPC 8-9):** A01K63/06 (Advanced/Invention);
A01K63/06 (Advanced/Non-invention);
A01K63/06 (Core/Invention)**International class (IPC 1-7):** A01K63/06**CPC:** A01K63/065 A01K63/003 H05B1/0213 H05B3/20[Classification Explorer](#)**Forward Citations:** GB2482155,**Abstract:**

PURPOSE: A heater device for a water vessel is provided to maintain water or solution received in the vessel in an optimum temperature range, and to prevent damage or fire thereof by essentially preventing excessive supply of electric current.

CONSTITUTION: A heater device for a water vessel(T) comprises a heating unit, a housing coupled to cover the overall region of the heating unit and adapted to transfer heat generated from the heating unit to the outside, a water temperature sensor(6) installed inside the housing and adapted to be automatically switched according to detected water temperatures in order to supply or intercept electric power to the heating unit, and a heating unit sensor for selectively intercepting the supply of the electric power to the heating unit for preventing the overheating of the heating unit.



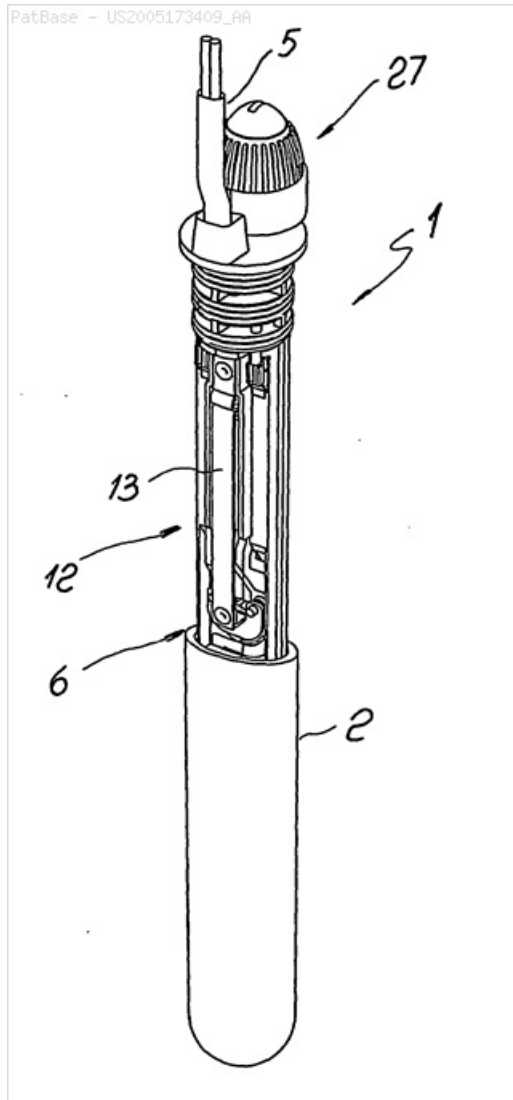
Title: ADJUSTABLE HEATER FOR AQUARIA
Priority: IT2002VI00086 20020507 WO2003IB01788 20030507
Family:

Publication number	Publication date	Application number	Application date
AU2003236249 AA	20031124	AU20030236249	20030507
AU2003236249 AH	20031111	AU20030236249	20030507
CN100477907 C	20090415	CN20038010201	20030507
CN1652684 A	20050810	CN20038010201	20030507
DE60327201 D1	20090528	DE20036027201	20030507
EP1509079 A2	20050302	EP20030722902	20030507
EP1509079 B1	20090415	EP20030722902	20030507
ITVI20020086 A1	20031107	IT2002VI00086	20020507
US2005173409 AA	20050811	US20030510496	20030507
US7049554 BB	20060523	US20030510496	20030507
WO03094609 A2	20031120	WO2003IB01788	20030507
WO03094609 A3	20040108	WO2003IB01788	20030507

Probable Assignee: EDEN SRL
Assignee(s):(std): EDEN SRL ; LOLATO SAMUELE
Assignee(s): EDEN SRL VIA DELLE INDUSTRIE CARTIGLIANO
Inventor(s):(std): LOLATO SAMUELE ; SAMUELE LOLATO
Agent(s): OBYRNE DANIEL JOSEPH ET AL; DYKEMA GOSSETT PLLC
Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE ES FI FR GA GB GD GE GH GM GN GQ GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NE NI NL NO NZ OM PH PL PT RO RU SC SD SE SG SI SK SL SN SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW
International class A01K63/06 H05B3/06 (Advanced/Invention);
(IPC 8-9): A01K63/06 H05B3/06 (Core/Invention)
International class A01K63/0 A01K63/00 A01K63/06 H05B3/06
(IPC 1-7):
CPC: G05D23/2754 A01K63/065
European class: A01K63/06A
US class: 219/489 219/523 392/498
[Classification Explorer](#)
Cited documents: US6584280 BA, US5408579 A, US5392380 A, US5184269 A, US4975562 A, US4876527 A, US4812626 A, US4327281, US4315143 A, US4276466 A, US4124793 A, US3890486 A, US3746836 A, US3107289 A, US2839660 A, EP757507,
Forward Citations: WO12171441, WO08132108, WO08132108, US7293914, US2007098043,

Abstract:

An adjustable heater for aquaria, comprising a substantially tubular container (2) within which are housed an electrical heating element (3), a switch (6) comprising s fixed contacts (7, 8) and moving contacts (9, 10) and capable of electrically connecting the heating element (3) with an external source (R) of electrical power, a temperature sensor (12) with a bi-metal strip (13) capable of detecting the temperature of the liquid and interacting with the switch (6) to move it from a closed position to an open position when a predetermined temperature (T) is to reached. The moving contacts (9, 10) of the switch (6) are secured to a free end (13 ") of the bi-metal strip (13) while the other end (13 ") of the bi-metal strip (13) is electrically insulated. This yields the advantage that electrical current does not pass through the bi-metal strip (13) and therefore does not create a Joule effect within it which affects the sensitivity and proper behaviour of the temperature Is sensor (12).



Title: Electric heaters
Priority: GB20030002537 20030204
Family:

	Publication number	Publication date	Application number	Application date
	CN1571590 A	20050126	CN200410004058	20040204
	CN2704175 Y	20050608	CN20032038887U	20030318
	EP1445985 A2	20040811	EP20040250592	20040204
	EP1445985 A3	20071031	EP20040250592	20040204
	GB200302537 A0	20030312	GB20030002537	20030204
	GB200402488 A0	20040310	GB20040002488	20040204
	GB2400005 A1	20040929	GB20040002488	20040204
	GB2400005 B2	20060816	GB20040002488	20040204
	ZA200400927 A	20041026	ZA20040000927	20040204

Probable Assignee: STRIX LTD
Assignee(s):(std): STRIX LTD
Assignee(s): STRIX LIMITED
Inventor(s):(std): ANTHONY ASHTON STEVEN ; ASHTON S A ; OWEN PARKES DAVID JOHN ; PARKES D J O ; SCOTT M J ; STEVEN ANTHONY ASHTON ; JAMES SCOTT MICHAEL ; MICHAEL JAMES SCOTT ; DAVID JOHN OWEN PARKES ; SCOTT MICHAEL JAMES ; PARKES DAVID JOHN OWEN ; ASHTON STEVEN ANTHONY
Inventor(s): D J O PARKES ; M J SCOTT ; MJ SCOTT ; S A ASHTON ; ASHTON SA ; DJO PARKES
Designated states: AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LT LU LV MC MK NL PT RO SE SI SK TR
International class (IPC 8-9): A47J27/21 A47J31/30 H05B1/02 H05B3/06 H05B3/20 H05B3/82 (Advanced/Invention); A47J27/21 A47J31/30 (Advanced/Non-invention); H05B3/06 H05B3/78 (Core/Invention); A47J27/21 A47J31/24 (Core/Non-invention)
International class (IPC 1-7): A47J27/21 H02K1/20 H05B H05B1/02 H05B3/00 H05B3/02 H05B3/06 H05B3/68 H05B3/82
CPC: H05B3/06 A47J27/21041 A47J27/2105 A47J31/306 H05B3/82 A47J27/21066 A47J27/21125 A47J27/21133 H05B1/0202 H05B3/20
European class: A47J27/21B4A A47J27/21B4E2 A47J27/21B4F H05B1/02A H05B1/02D H05B3/06 H05B3/20 H05B3/82 K47J27/21B2 K47J27/21B3 K47J31/30B2

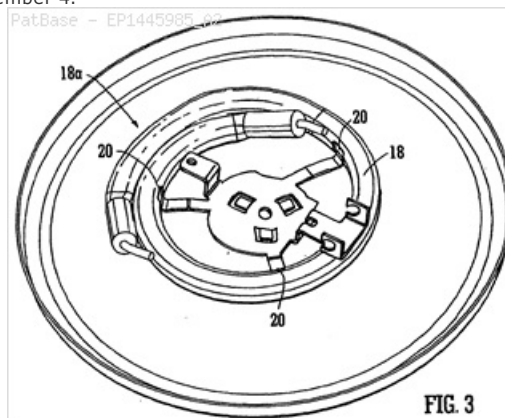
[Classification Explorer](#)

Cited documents: GB2385510 A1, GB2312142 A1, GB2204450 A1, GB2181598 A1, EP1232709 A2, EP1215939 A2, DE4403638 A1, DE20208346 U1, DE10139939 A1,

Forward Citations: US2014326668, EP1537809, DE102009042481,

Abstract:

An electric heater comprises a heater plate 2, a sheathed heating element 18 attached to the plate and a locating member 4 also attached to said heater plate 2, wherein co-operating locating features 8a,20 are provided on said locating member 4 and said element 18 to provide alignment between the element 18 and locating member 4.



Title: TWO-WIRE LAYERED HEATER SYSTEM**Priority:** US20030719327 20031121 EP20040812091 20041119 WO2004US39500 20041119
US20060517434 20060907 US20070705884 20070213 US20120540094 20120702

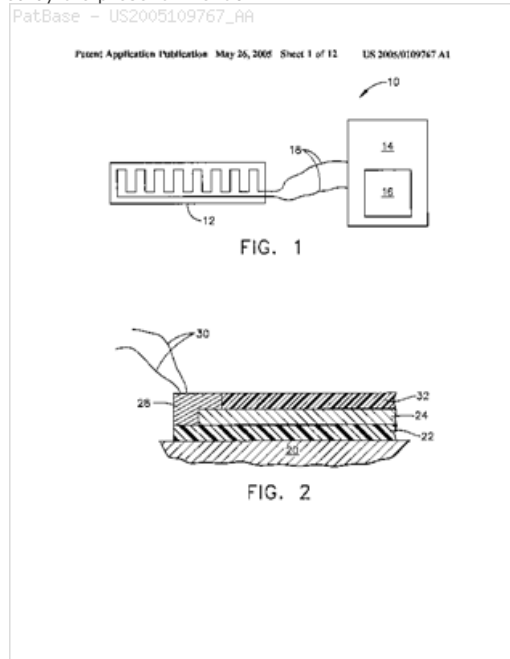
Family:	Publication number	Publication date	Application number	Application date
	AT433275 E	20090615	AT20040812091T	20041119
	CA2546826 AA	20060519	CA20042546826	20041119
	CA2546826 C	20110215	CA20042546826	20041119
	CN100556217 C	20091028	CN200480038564	20041119
	CN101077035 A	20071121	CN200480038564	20041119
	DE602004021420 D1	20090716	DE200460021420T	20041119
	EP1692920 A2	20060823	EP20040812091	20041119
	EP1692920 A4	20080116	EP20040812091	20041119
	EP1692920 B1	20090603	EP20040812091	20041119
	EP1692920 B2	20171122	EP20040812091	20041119
	ES2327934 T3	20091105	ES20040812091T	20041119
	ES2327934 T5	20180227	ES20040812091T	20041119
	MXPA06005752 A1	20060823	MX2006PA05752	20041119
	PT1692920 T	20090903	PT20040812091T	20041119
	TW200529690 A	20050901	TW20040135714	20041119
	TWI290004 B	20071111	TW20040135714	20041119
	US2005109767 AA	20050526	US20030719327	20031121
	US2007000914 AA	20070104	US20060517434	20060907
	US2007138166 AA	20070621	US20070705884	20070213
	US2012292308 AA	20121122	US20120540094	20120702
	US7196295 BB	20070327	US20030719327	20031121
	US7601935 BB	20091013	US20060517434	20060907
	WO05053360 A2	20050609	WO2004US39500	20041119
	WO05053360 A3	20070419	WO2004US39500	20041119

Probable Assignee: WATLOW ELECTRIC MFG CO**Assignee(s):(std):** FENNEWALD KENNETH F ; MCDOWELL III WILLIAM A ; MCDOWELL WILLIAM A III ; PTASIENSKI KEVIN ; STEINHAUSER LOUIS P ; WATLOW ELECTRIC MFG COMPANY ; WATLOW ELECTRIC MFG CO ; WATLOW ELECTRIC MFG**Assignee(s):** WATLOW ELECTRIC MANUFACTURING CO ; WATLOW ELECTRIC MANUFACTURING COMPANY ; MCDOWELL WILLIAM AIII ; MCDOWELL WILLIAM A**Inventor(s):(std):** FENNEWALD KENNETH ; FENNEWALD KENNETH F ; FENNEWALD KENNETH F MCDOWELL W ; KEVIN PTASIENSKI ; MCDOWELL WILLIAM ; MCDOWELL WILLIAM A ; MCDOWELL WILLIAM A III ; MCDOWELL III WILLIAM A ; PTASIENSKI KEVIN ; STEINHAUSER LOUIS ; STEINHAUSER LOUIS P**Inventor(s):** WILLIAM A III MCDOWELL ; MCDOWELL WILLIAM AIII ; LOUIS P STEINHAUSER ; MCDOWELL ; III WILLIAM A ; KENNETH F FENNEWALD**Agent(s):** GOWLING LAFLEUR HENDERSON LLP; KNAPP THOMAS; DREISS PATENTANWALTE PARTG MBB; CARPINTERO MARIO; HARNESS DICKEY AND PIERCE PLC; BRINKS HOFER GILSON AND LIONE**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 KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE NI NL NO NZ OM PG PH PL PT RO RU SC SD SE SG SI SK SL SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW**International class (IPC 8-9):** B29C45/27 G05D23/24 H05B1/00 H05B1/02 H05B3/00 H05B3/02 H05B3/06 H05B3/10 H05B3/16 H05B3/20 H05B3/26 H05B3/28 H05B3/42 H05B3/46 (Advanced/Invention); H05B3/20 (Advanced/Non-invention); B29C45/27 H05B1/02 H05B3/06 H05B3/16 H05B3/22 H05B3/42 (Core/Invention); H05B (Subclass/Invention)**International class (IPC 1-7):** H05B0/00 H05B1/00 H05B3/16**CPC:** H05B1/023 B29C45/2737 B29C2045/274 B29C2045/2745 H05B3/26 H05B3/28 H05B3/42 H05B3/46 H05B2203/002 H05B2203/011 H05B2203/013 H05B2203/017 H05B2203/035**European class:** B29C45/27E H05B1/02 H05B1/02B1 H05B3/26 H05B3/28 H05B3/42 H05B3/46 L29C45/27E3 L29C45/27E4B T05B203/002 T05B203/011 T05B203/013 T05B203/017 T05B203/035**US class:** 118/621 118/724 118/725 219/212 219/241 219/422 219/424 219/426 219/443.1 219/461.1 219/483 219/494 219/494S 219/534 219/538 219/542 219/543 219/544 219/546 219/548 219/552 219/553 392/434 392/438 392/473 425/143 425/547 425/549 425/570 425/572[Classification Explorer](#)**Cited documents:** WO9721326 A1, WO9010999 A1, US929473 A, US7601935 BB, US7518090 BB, US7496473 BB, US7342206 BB, US7304276 BB, US7280750 BB, US7257464 BB, US7196295 BB, US7132628 BB, US6974934 BB, US6951419 BB, US6828032 BB, US6797925 BA, US6770848 BB, US6766220 BB, US6762396 BB, US6752491 BB, US6628498 BB, US6610964 BB, US6580050 BA, US6575729 BB, US6548788 BB, US6489742 BB, US6448538 BA, US6410894, US6341954 BA, US6337470 BA, US6305923 BA, US6300607 BA, US6225608 BA, US6222166 BA, US6043467 A, US6037574, US6011939 A, US5994675 A, US5973296 A, US5965049 A, US5951902 A, US5945020 A, US5889261 A, US5888429 A, US5743251 A, US5714738, US5665262 A, US5577156 A, US5521850 A, US5504307 A, US5495093 A, US5385785 A, US5280422 A, US5118983 A, US5114439 A, US5105067 A, US5081471 A, US5072098 A, US5036181 A, US4860030 A, US4859859 A, US4859858 A, US4853294 A, US4843084 A, US4829447 A, US4736091 A, US4713525 A, US4688547 A, US4638147 A, US4623969 A, US4549073 A, US4546238 A, US4523084 A, US4352006 A, US4298786 A, US4259564 A, US4241103 A, US4204107 A, US4099046 A, US4072516 A, US3999040 A, US3869596 A, US3789190 A, US3758844 A, US3609294 A, US3544767 A, US3515850 A, US2072887 A, US2013154143 AA, US2007278213 AB, US2007138166 AA, US2006124613 AA, US2006065653 AA, US2004074898 AA, US2004035840 AA, US2003183620 AA, US2003121906 AA, US2003102296 AA, US2003033055 AA, US2002182285 AA, US2002155303 AA, US2002079308 AA, US2002027133 AA, US2002027132 AA, US2002011477 AA, US2001014373 AA, JP4206602 A2, JP04206602, GB2124410 A1, GB2072887 A1, EP1341215 A1, EP0963829 A1, EP0745919 A1, DEEP745919, DE8901603 U1, DE8901603 U, DE745919, DE19745966 C1,**Forward Citations:** WO18076002, WO18009768, WO17218791, WO17151975, WO17151960, WO17151959, WO17151772,

WO17074838, WO17069977, WO16069808, WO14008241, WO13152976, WO13152976, WO13049466, WO13033402, WO13033394, WO13033381, WO13033350, WO13033348, WO13033340, WO13033336, WO13033332, WO12012519, WO09052918, WO09003266, US9987782, US9888526, US9824873, US9812342, US9716022, US9553006, US9498277, US9492220, US9486988, US9345067, US9344086, US9196513, US9177840, US9123756, US9123755, US9062354, US8840609, US8716634, US8692605, US8557082, US8536496, US8175446, US8137097, US8089337, US8070899, US8061402, US7950918, US7802983, US7800021, US7280750, US2017236732, US2017167790, US2017140957, US2017034874, US2016113063, US2016086784, US2016035602, US2015071626, US2014217087, US2014034628, US2013220575, US2013105465, US2013105463, US2013105462, US2013098895, US2012326753, US2012292308, US2012217235, US2011192832, US2011008480, US2010319186, US2010310706, US2010310694, US2010025391, US2009272732, US2009250173, US2009236327, US2009117219, US2009021342, US2009020905, US2009001066, US2008290542, US2008188845, US2008188844, US2008187989, US2008138053, US2007138166, US2007119849, US2007086759, US2006289469, US2006098056, US2006054616, TWI601964, TWI509240, TWI384498, JP2010533982, ITPN20080089, ITPN20080088, EP3328158, EP3327758, EP3272259, EP2963995, EP2908036, EP2163129, EP1905270, CN105448640, CN105448640, CN104221469, CN104221469, CN103907395, CN103907395, CN102361520,

Abstract:

A heater system is provided that comprises a layered heater in communication with a two-wire controller, wherein a resistive layer of the layered heater is both a heater element and a temperature sensor. The two-wire controller thus determines temperature of the layered heater using the resistance of the resistive layer and controls heater temperature through a power source. Furthermore, a heater system using a layered heater in communication with a two-wire controller for a specific application of a hot runner nozzle in an injection molding system is provided by the present invention.



Title:	VARIABLE WATT DENSITY LAYERED HEATER																																																																												
Priority:	US20040797259 20040310 US20060529644 20060928		WO2005US07628 20050309 US20120674828 20121112		US20060396424 20060331																																																																								
Family:	<table><tr><th>Publication number</th><th>Publication date</th><th>Application number</th><th>Application date</th></tr><tr><td>CA2559289 AA</td><td>20060911</td><td>CA20052559289</td><td>20050309</td></tr><tr><td>CA2559289 C</td><td>20101207</td><td>CA20052559289</td><td>20050309</td></tr><tr><td>CN1947462 A</td><td>20070411</td><td>CN200580012927</td><td>20050309</td></tr><tr><td>CN1947462 B</td><td>20100707</td><td>CN200580012927</td><td>20050309</td></tr><tr><td>EP1736034 A1</td><td>20061227</td><td>EP20050725029</td><td>20050309</td></tr><tr><td>IN05639DN2006 A</td><td>20070831</td><td>IN2006DN05639</td><td>20060927</td></tr><tr><td>IN251183 B</td><td>20120302</td><td>IN2006DN05639</td><td>20060927</td></tr><tr><td>TW200537967 A</td><td>20051116</td><td>TW20050107363</td><td>20050310</td></tr><tr><td>TWI315645 B</td><td>20091001</td><td>TW20050107363</td><td>20050310</td></tr><tr><td>US2005199610 AA</td><td>20050915</td><td>US20040797259</td><td>20040310</td></tr><tr><td>US2006175321 AA</td><td>20060810</td><td>US20060396424</td><td>20060331</td></tr><tr><td>US2007023419 AA</td><td>20070201</td><td>US20060529644</td><td>20060928</td></tr><tr><td>US2013068754 AA</td><td>20130321</td><td>US20120674828</td><td>20121112</td></tr><tr><td>US7132628 BB</td><td>20061107</td><td>US20040797259</td><td>20040310</td></tr><tr><td>US8008607 BB</td><td>20110830</td><td>US20060396424</td><td>20060331</td></tr><tr><td>US8901464 BB</td><td>20141202</td><td>US20120674828</td><td>20121112</td></tr><tr><td>WO05089023 A1</td><td>20050922</td><td>WO2005US07628</td><td>20050309</td></tr></table>					Publication number	Publication date	Application number	Application date	CA2559289 AA	20060911	CA20052559289	20050309	CA2559289 C	20101207	CA20052559289	20050309	CN1947462 A	20070411	CN200580012927	20050309	CN1947462 B	20100707	CN200580012927	20050309	EP1736034 A1	20061227	EP20050725029	20050309	IN05639DN2006 A	20070831	IN2006DN05639	20060927	IN251183 B	20120302	IN2006DN05639	20060927	TW200537967 A	20051116	TW20050107363	20050310	TWI315645 B	20091001	TW20050107363	20050310	US2005199610 AA	20050915	US20040797259	20040310	US2006175321 AA	20060810	US20060396424	20060331	US2007023419 AA	20070201	US20060529644	20060928	US2013068754 AA	20130321	US20120674828	20121112	US7132628 BB	20061107	US20040797259	20040310	US8008607 BB	20110830	US20060396424	20060331	US8901464 BB	20141202	US20120674828	20121112	WO05089023 A1	20050922	WO2005US07628	20050309
Publication number	Publication date	Application number	Application date																																																																										
CA2559289 AA	20060911	CA20052559289	20050309																																																																										
CA2559289 C	20101207	CA20052559289	20050309																																																																										
CN1947462 A	20070411	CN200580012927	20050309																																																																										
CN1947462 B	20100707	CN200580012927	20050309																																																																										
EP1736034 A1	20061227	EP20050725029	20050309																																																																										
IN05639DN2006 A	20070831	IN2006DN05639	20060927																																																																										
IN251183 B	20120302	IN2006DN05639	20060927																																																																										
TW200537967 A	20051116	TW20050107363	20050310																																																																										
TWI315645 B	20091001	TW20050107363	20050310																																																																										
US2005199610 AA	20050915	US20040797259	20040310																																																																										
US2006175321 AA	20060810	US20060396424	20060331																																																																										
US2007023419 AA	20070201	US20060529644	20060928																																																																										
US2013068754 AA	20130321	US20120674828	20121112																																																																										
US7132628 BB	20061107	US20040797259	20040310																																																																										
US8008607 BB	20110830	US20060396424	20060331																																																																										
US8901464 BB	20141202	US20120674828	20121112																																																																										
WO05089023 A1	20050922	WO2005US07628	20050309																																																																										
Probable Assignee:	WATLOW ELECTRIC MFG CO																																																																												
Assignee(s):(std):	JULIANO ROLANDO O ; MCMILLIN JAMES ; NAGL THOMAS T ; PTASIENSKI KEVIN ; WATLOW ELECTRIC MFG COMPANY ; WATLOW ELECTRIC MFG																																																																												
Assignee(s):	AIR FORCE UNITED STATES ; WATLOW ELECTRIC MANUFACTURING COMPANYUS ; WATLOW ELECTRIC MFG CO ; WATLOW ELECTRIC MANUFACTURING COMPANY																																																																												
Inventor(s):(std):	JAMES MCMILLIN ; JULIANO ROLANDO O ; KEVIN PTASIENSKI ; MCMILLIN JAMES ; NAGL THOMAS T ; PTASIENSKI KEVIN ; PTASIENSKI KEVIN MCMILLIN JAME																																																																												
Inventor(s):	PTASIENSKI KEVIN MCMILLIN JAMES NAGL THOMAS T ; PTASIENSKI KEVIN MCMILLIN JAMES NAGL THOMAS T JULI ; NAGL THOMAS ; JULIANO ROLANDO																																																																												
Agent(s):	GOWLING LAFLEUR HENDERSON LLP; HARNESS DICKEY AND PIERCE PLC; HARNESS DICKEY AND PIERCE PLC; BRINKS HOFER GILSON AND LIONE; BRINKS GILSON AND LIONE																																																																												
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 KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX MZ NA NE 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																																																																												
International class (IPC 8-9):	F27B5/14 F27D11/02 H05B3/00 H05B3/16 H05B3/20 H05B3/26 H05B3/28 H05K3/12 (Advanced/Invention); H01C1/06 H05K1/02 H05K1/16 (Advanced/Non-invention); H05B3/16 H05B3/22 H05K3/12 (Core/Invention); H05B3/00 H05K1/02 H05K1/16 (Core/Non-invention)																																																																												
International class (IPC 1-7):	H05B3/00 H05B3/18 H05B3/26 H05B3/28																																																																												
CPC:	H05B3/20 H05B3/26 H05B3/28 H05B2203/003 H05B2203/013 H05B2203/017 H05B2203/037 H05K1/0263 H05K1/0265 H05K1/167 H05K3/1241 H05K2201/09736 H05K2203/0126 Y10T29/49099																																																																												
European class:	H05B3/26 H05B3/28 H05K3/12C T05B203/003 T05B203/013 T05B203/017 T05B203/037 T05K1/02C8 T05K1/02C8B T05K1/16R T05K201/09C5I T05K203/01A5																																																																												
US class:	118/728 219/212 219/219 219/424 219/441.1 219/444.1 219/538 219/539 219/541 219/543 219/549 219/552 219/553 29/620 338/314 338/99 385/147 427/58 428/433																																																																												
Classification Explorer																																																																													
Cited documents:	US8008607 BB, US7132628 BB, US7126094 BB, US6994444 BB, US6701835 BB, US6686562 BA, US6646235 BB, US6617553 BB, US6602345 BA, US6575729 BB, US6575729 BA, US6423949 BA, US6392203 BA, US6111233 A, US6073554 A, US6010771 A, US5973296 A, US5882466 A, US5866194 A, US5808178 A, US5742223 A, US5716663 A, US5665262 A, US5504307 A, US5444228 A, US5424767 A, US5390595 A, US5388509 A, US5087804 A, US5068517 A, US5032705 A, US4882466 A, US4764665 A, US4734563 A, US4485387 A, US4392013 A, US4388509 A, US4196411 A, US4196338 A, US3852564 A, US3851581 A, US3851150 A, US3010850 A, US2629166 A, US2013106147 AA, US2011265315 AA, US2009218333 AA, US2005145616 AA, US2005141845 AA, US2005029244 AA, US2005016986 AA, US2004155029 AA, US2003231415 AA, US2003111453 AA, US2003029336 AA, JP8213202 A2, JP2003287632 A2, EP1021064 A2, DE3334744 A1, CN86100500 A,																																																																												
Forward Citations:	WO17194769, WO14202768, WO10097163, WO08011507, WO06039535, USD687535, USD670372, US9849991, US9393176, US9296154, US9061656, US8931293, US8901464, US8841589, US8728986, US8536496, US8306408, US8175446, US7629560, US7280750, US2016286639, US2015344138, US2015250026, US2015189699, US2015060527, US2014263267, US2014215708, US2014138490, US2014138370, US2013207422, US2013071716, US2013068754, US2013048627, US2012270753, US201188838, US2010176118, US2010108661, US2009297132, US2009272732, US2008138053, US2008078756, US2007138166, US2007086759, US2007023419, US2006138279, US2006081627, US2006065654, US2006054616, KR101005733, FR3033977, EP3261409, EP3182794, CN106241732, CN104470001, CN103477705, CN103477705,																																																																												

Abstract:

A layered heater is provided with a resistive layer having a resistive circuit pattern, the resistive circuit pattern defining a length and a thickness, wherein the thickness varies along the length of the resistive circuit pattern for a variable watt density. The present invention also provides layered heaters having a resistive circuit pattern with a variable thickness along with a variable width and/or spacing of the resistive circuit pattern in order to produce a variable watt density. Methods are also provided wherein the variable thickness is achieved by varying a dispensing rate of a conductive ink used to form the resistive circuit pattern, varying the feed rate of a target surface relative to the dispensing of the ink, and overwriting a volume of conductive ink on top of a previously formed trace of the resistive circuit pattern.



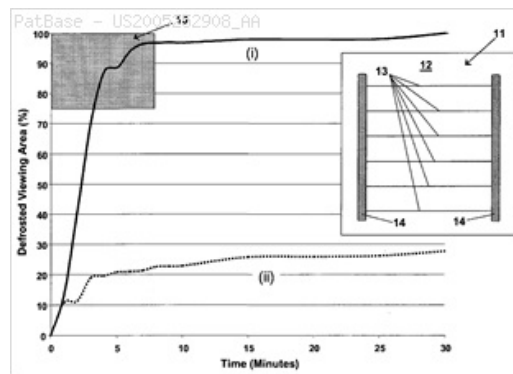
Title:	HIGH PERFORMANCE DEFROSTERS FOR TRANSPARENT PANELS																																																																																									
Priority:	US20040847250 20040517		WO2005US17301 20050517		US20050320099 20051228																																																																																					
	US20060409399 20060421		KR20067026609 20061218		WO2006US48444 20061219																																																																																					
Family:	<table><tr><th>Publication number</th><th>Publication date</th><th>Application number</th><th>Application date</th></tr><tr><td> CN101375637 A</td><td>20090225</td><td>CN200680053000</td><td>20061219</td></tr><tr><td> CN1998267 A</td><td>20070711</td><td>CN200580015966</td><td>20050517</td></tr><tr><td> DE602005005808 D1</td><td>20080515</td><td>DE200560005808T</td><td>20050517</td></tr><tr><td> DE602005005808 T2</td><td>20090416</td><td>DE200560005808T</td><td>20050517</td></tr><tr><td> EP1747700 A1</td><td>20070131</td><td>EP20050750016</td><td>20050517</td></tr><tr><td> EP1747700 B1</td><td>20080402</td><td>EP20050750016</td><td>20050517</td></tr><tr><td> EP1967040 A1</td><td>20080910</td><td>EP20060845821</td><td>20061219</td></tr><tr><td> IN03374CN2008 A</td><td>20090306</td><td>IN2008CN03374</td><td>20080630</td></tr><tr><td> JP2007537927 T2</td><td>20071227</td><td>JP20070527391T</td><td>20050517</td></tr><tr><td> JP2009522158 T2</td><td>20090611</td><td>JP20080548609T</td><td>20061219</td></tr><tr><td> KR20070022332 A</td><td>20070226</td><td>KR20067026609</td><td>20061218</td></tr><tr><td> KR20080093031 A</td><td>20081017</td><td>KR20087018553</td><td>20061219</td></tr><tr><td> US2005252908 AA</td><td>20051117</td><td>US20040847250</td><td>20040517</td></tr><tr><td> US2006096967 AA</td><td>20060511</td><td>US20050320099</td><td>20051228</td></tr><tr><td> US2006196865 AA</td><td>20060907</td><td>US20060409399</td><td>20060421</td></tr><tr><td> US7129444 BB</td><td>20061031</td><td>US20040847250</td><td>20040517</td></tr><tr><td> US7297902 BB</td><td>20071120</td><td>US20060409399</td><td>20060421</td></tr><tr><td> US8653419 BB</td><td>20140218</td><td>US20050320099</td><td>20051228</td></tr><tr><td> WO05117494 A1</td><td>20051208</td><td>WO2005US17301</td><td>20050517</td></tr><tr><td> WO07075692 A1</td><td>20070705</td><td>WO2006US48444</td><td>20061219</td></tr></table>						Publication number	Publication date	Application number	Application date	CN101375637 A	20090225	CN200680053000	20061219	CN1998267 A	20070711	CN200580015966	20050517	DE602005005808 D1	20080515	DE200560005808T	20050517	DE602005005808 T2	20090416	DE200560005808T	20050517	EP1747700 A1	20070131	EP20050750016	20050517	EP1747700 B1	20080402	EP20050750016	20050517	EP1967040 A1	20080910	EP20060845821	20061219	IN03374CN2008 A	20090306	IN2008CN03374	20080630	JP2007537927 T2	20071227	JP20070527391T	20050517	JP2009522158 T2	20090611	JP20080548609T	20061219	KR20070022332 A	20070226	KR20067026609	20061218	KR20080093031 A	20081017	KR20087018553	20061219	US2005252908 AA	20051117	US20040847250	20040517	US2006096967 AA	20060511	US20050320099	20051228	US2006196865 AA	20060907	US20060409399	20060421	US7129444 BB	20061031	US20040847250	20040517	US7297902 BB	20071120	US20060409399	20060421	US8653419 BB	20140218	US20050320099	20051228	WO05117494 A1	20051208	WO2005US17301	20050517	WO07075692 A1	20070705	WO2006US48444	20061219
Publication number	Publication date	Application number	Application date																																																																																							
CN101375637 A	20090225	CN200680053000	20061219																																																																																							
CN1998267 A	20070711	CN200580015966	20050517																																																																																							
DE602005005808 D1	20080515	DE200560005808T	20050517																																																																																							
DE602005005808 T2	20090416	DE200560005808T	20050517																																																																																							
EP1747700 A1	20070131	EP20050750016	20050517																																																																																							
EP1747700 B1	20080402	EP20050750016	20050517																																																																																							
EP1967040 A1	20080910	EP20060845821	20061219																																																																																							
IN03374CN2008 A	20090306	IN2008CN03374	20080630																																																																																							
JP2007537927 T2	20071227	JP20070527391T	20050517																																																																																							
JP2009522158 T2	20090611	JP20080548609T	20061219																																																																																							
KR20070022332 A	20070226	KR20067026609	20061218																																																																																							
KR20080093031 A	20081017	KR20087018553	20061219																																																																																							
US2005252908 AA	20051117	US20040847250	20040517																																																																																							
US2006096967 AA	20060511	US20050320099	20051228																																																																																							
US2006196865 AA	20060907	US20060409399	20060421																																																																																							
US7129444 BB	20061031	US20040847250	20040517																																																																																							
US7297902 BB	20071120	US20060409399	20060421																																																																																							
US8653419 BB	20140218	US20050320099	20051228																																																																																							
WO05117494 A1	20051208	WO2005US17301	20050517																																																																																							
WO07075692 A1	20070705	WO2006US48444	20061219																																																																																							
Probable Assignee:	EXATEC LLC																																																																																									
Assignee(s):(std):	EXATEC L L C ; EXATEC LLC ; WEISS KEITH ; WEISS KEITH D																																																																																									
Assignee(s):	EXATEC LL																																																																																									
Inventor(s):(std):	KEITH WEISS ; WEISS KEITH ; WEISS KEITH D																																																																																									
Agent(s):	SOLF ALEXANDER; BRINKS HOFER GILSON AND LIONE; CANTOR COLBURN LLP																																																																																									
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 GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD MG MK ML MN MR 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 SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW																																																																																									
International class (IPC 8-9):	B05D5/06 B60J1/00 B60L1/02 B60S1/02 B60S1/58 C03C17/34 C03C17/38 C03C17/42 H05B1/00 H05B11/00 H05B3/00 H05B3/02 H05B3/06 H05B3/10 H05B3/16 H05B3/20 H05B3/84 (Advanced/Invention); B60S1/02 B60S1/58 E06B7/00 H05B3/84 (Advanced/Non-invention); B05D5/06 B60J1/00 B60L1/00 C03C17/36 H05B3/10 H05B3/20 H05B3/84 (Core/Invention); B60S1/02 B60S1/56 (Core/Non-invention)																																																																																									
International class (IPC 1-7):	H05B3/84																																																																																									
CPC:	H05B2203/002 H05B2203/013 H05B2214/04 H05B2214/02 H05B3/84																																																																																									
European class:	H05B3/84 T05B203/002 T05B203/013 T05B214/04																																																																																									
US class:	219/202 219/203 219/219 219/476 219/477 219/478 219/522 219/539 219/543 219/544 338/307 338/308 338/309 52/171.2																																																																																									

[Classification Explorer](#)

Cited documents:	WO9405524 A1, US6870134 BB, US6660968 BA, US6255624 BA, US6204480 BA, US6137086 A, US6103988 A, US6103888 A, US6051820 A, US6027075 A, US6024904 A, US6011244 A, US5830397 A, US5766739 A, US5756192 A, US5750267 A, US5525401 A, US5493102 A, US5354966 A, US5270517 A, US5005020 A, US4920254 A, US4910380 A, US4894513 A, US4883940 A, US4755659 A, US4707586 A, US4543466 A, US4196338 A, US4102722 A, US4078107 A, US3982092 A, US3947618 A, US3900634 A, US3789192 A, US3636311 A, US3409759 A, US3287684 A, US3020376 A, US2932710 A, US2761945 A, US2006081581 AA, US2003120465 AA, US2003102465 AA, US2003024726 AA, JP7009666 U1, JP6171358 A2, JP2003128433 A2, JP11020622 A2, GB2042859 A1, EP1577133 A2,
Forward Citations:	WO18110139, WO16146856, WO10003056, WO09050519, WO08085550, WO08085550, WO08077060, WO07076499, USD612517, US9943923, US9889517, US9873330, US9868171, US9796362, US9764406, US9730333, US9624126, US9611171, US9598776, US9573846, US9266307, US9193880, US9132768, US9131610, US9029735, US9018568, US8964279, US8916805, US8647979, US8613161, US8581158, US8534901, US8506849, US8450660, US8432604, US8431869, US8422197, US8404160, US8324532, US8273801, US8263905, US8091543, US8080299, US7955696, US7939161, US7811656, US7781493, US7629560, US7612727, US7537378, US2018090035, US2017006666, US2016221442, US2016165667, US2014265758, US2014260384, US2014158677, US2013292373, US2013153559, US2012292307, US2012261404, US2011226738, US2011174796, US2011108537, US2011017727, US2011017726, US2010316828, US2010252545, US2010237055, US2010220019, US2010200286, US2010126981, US2010059495, US2010043293, US2009262175, US2008213545, US2008143338, US2008029078, US2008028697, US2007181565, US2007151966, US2007137141, US2007003742, US2006287408, US2006065654, US10027015, KR101813157, KR101528377, KR101509550, KR101464017, KR101357430, KR101302257, KR101279854, JP2014094736, JP2013513538, JP2012530646, JP2012151116, JP2012134163, JP2011518407, JP2011515808, JP2009522161, JP2009107333, JP2008523566, GB2449174, FR2976651, EP2610108, EP2112868, CN105637705, CN104210188, CN103262646, CN103262646, CN102815282, CN102687586, CN102084435,

Abstract:

The present invention provides a window assembly having a transparent panel and a conductive heater grid formed integrally with the transparent panel. The conductive heater grid has a first group of grid lines and a second group of grid lines, with opposing ends of each group being connected to first and second busbars. Grid lines of the second group are spaced between adjacent grid lines of the first group, with the width of the grid lines themselves in the second group being less than the width of the grid lines in the first group.

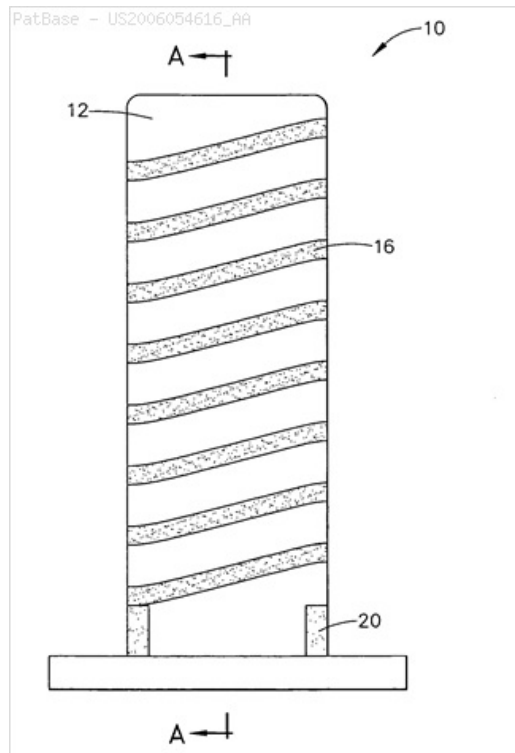


Title: ADAPTABLE LAYERED HEATER SYSTEM**Priority:** US20040941609 20040915 EP20050797632 20050915 WO2005US33364 20050915
US20130965391 20130813

Family:	Publication number	Publication date	Application number	Application date
	CA2580163 AA	20070312	CA20052580163	20050915
	CA2580163 C	20120619	CA20052580163	20050915
	CN101044795 A	20070926	CN200580036036	20050915
	CN101044795 B	20100609	CN200580036036	20050915
	EP1795048 A1	20070613	EP20050797632	20050915
	EP1795048 B1	20171220	EP20050797632	20050915
	ES2659047 T3	20180313	ES20050797632T	20050915
	IN01066CN2007 A	20070817	IN2007CN01066	20070314
	IN241447 B	20100709	IN2007CN01066	20070314
	MX2007003077 A1	20070607	MX20070003077	20050915
	TW200619000 A	20060616	TW20050131831	20050915
	TWI269701 B	20070101	TW20050131831	20050915
	US2006054616 AA	20060316	US20040941609	20040915
	US2013327762 AA	20131212	US20130965391	20130813
	US8536496 BB	20130917	US20040941609	20040915
	US8658949 BB	20140225	US20130965391	20130813
	WO06032050 A1	20060323	WO2005US33364	20050915

Probable Assignee: WATLOW ELECTRIC MFG CO**Assignee(s):(std):** JULIANO ROLANDO O ; LAMMERT GREGORY J ; MCMILLIN JAMES ; PTASIENSKI KEVIN ; WATLOW ELECTRIC MFG ; WATLOW ELECTRIC MFG COMPANY ; WATLOW ELECTRIC MFG CO**Assignee(s):** WATLOW ELECTRIC MANUFACTURING COMPANY**Inventor(s):(std):** JAMES MCMILLIN ; JULIANO ROLANDO O ; KEVIN PTASIENSKI ; PTASIENSKI KEVIN ; PTASIENSKI KEVIN MCMILLIN JAME ; LAMMERT GREGORY J ; MCMILLIN JAMES ; MCMILLAN JAMES**Inventor(s):** GREGORY J LAMMERT ; PTASIENSKI KEVIN MCMILLIN JAMES JULIANO ROLANDO O ; ROLANDO O JULIANO ; LAMMERT GREGORY ; JULIANO ROLANDO**Agent(s):** GOWLING LAFLEUR HENDERSON LLP; DREISS PATENTANWALTE PARTG MBB; CARPINTERO MARIO; HARNES DICKEY AND PIERCE PLC; BRINKS HOFER GILSON AND LIONE; BRINKS GILSON AND LIONE**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 KP KR KZ LC LI LK LR LS 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**International class (IPC 8-9):** H05B3/16 B29C45/30 B29C45/72 B29C51/42 H05B1/02 H05B3/02 H05B3/20
H05B3/46 (Advanced/Invention);
B29C45/30 H05B3/20 H05B3/46 (Advanced/Non-invention);
B29C45/27 H05B3/16 H05B3/20 H05B3/42 (Core/Invention);
B29C45/27 H05B3/20 H05B3/42 (Core/Non-invention)**International class (IPC 1-7):** B29C51/42 H05B3/16 H05B3/20**CPC:** H05B3/02 B29C45/2737 B29C2045/2743 H05B3/20 H05B3/46**European class:** B29C45/27E H05B3/20 H05B3/46 L29C45/27E4**US class:** 219/476 219/477 219/478 219/480 219/505 219/538 219/543 219/544 219/553[Classification Explorer](#)**Cited documents:** US7041944 BB, US6946628 BB, US6911893 BB, US6897418 BA, US6797925 BA, US6762396 BB, US6660977 BB, US6575729 BB, US6341954 BA, US6305923 BA, US6242722 BA, US6215388 BA, US5973298 A, US5973296 A, US5969231 A, US5504304 A, US5197329 A, US5172466 A, US5142266 A, US4818842 A, US4733057 A, US4034207 A, US3680630 A, US3302002 A, US2878357 A, US2473183 A, US2005199610 AA, US2005173414 AA, US2005145617 AA, US2005109767 AA, US2004028396 AA, US2003230566 AA, US2003052121 AA, US2003047548 AA, US2002124847 AA, US2002038800 AA, JP62207619, JP61252124, JP2003243206,**Forward Citations:** WO14146200, WO09024224, WO09012239, WO09012239, US9987782, US9955531, US9486988, US8557082, US8481898, US8278608, US8089337, US8070899, US8061402, US7800021, US2015373782, US2015264747, US2015071626, US2015060527, US2014110388, US2011297665, US2011120986, US2010319186, US2009272732, US2009250173, US2009021342, US2009020905, US2009001066, JP2010533980, CN105209898, CN104620671, CN104620671, CN103522496,**Abstract:**

A layered heater is provided that comprises at least one resistive layer defining a circuit configuration, the circuit configuration comprising at least one resistive trace oriented relative to a heating target and comprising a material having temperature coefficient characteristics such that the resistive trace provides power commensurate with demands of the heating target. In one form, resistive traces of the resistive layer are a PTC material having a relatively high TCR and are oriented approximately perpendicular to a primary heating direction. In another form, resistive traces of the resistive layer are an NTC material having a relatively high BETA coefficient and are oriented approximately parallel to a primary heating direction.



Title: METHOD AND DEVICE FOR SELECTING GROUND CONNECTION FOR ELECTRIC HEAT MAT**Priority:** KR20060012085U 20060504

Family:	Publication number	Publication date	Application number	Application date
	 KR200421673 Y1	20060719	KR20060012085U	20060504

Probable Assignee: YOON BYOUNG KU**Assignee(s):** YOON BYOUNG KU**International class (IPC 8-9):** H05B3/00 H05B3/02 H05B3/20 (Advanced/Invention);
H05B3/00 H05B3/02 H05B3/20 (Advanced/Non-invention);
H05B3/00 H05B3/02 H05B3/20 (Core/Invention)**CPC:** H05B1/02 A47C21/048 H05B3/20 H05K9/0064[Classification Explorer](#)**Abstract:**

Source: KR200421673Y

Machine translation: The idea which it sees electric heat mat use hour the electromagnetic waves interception which occurs is regarding a system and the method which sort a hazard ground connection. The idea which it sees sells the advance guard it will be able to perceive the electric market which occurs from all the member authorization hour electric heat mat one elf for an electric heat mat use, the smallness just circuit composition which includes the transistor back about under using the one side which sorts a ground connection, general all the member and adopts the independent all the member means which uses the dry cell battery back of separate way with, to be a possibility of removing the danger of the ground connection sorting hour user electric shock back basically, also the above it is caused by with general all the member use with the electric current occurrence back from same problem entirely, inside being excellent because does not receive an effect it related with the back civil war pressure test it will be able to secure a malleability The safe standard Edo positive it provides the ground connection sorting system and a method of the electric heat mat it will be able to dispose. Electric heat mat, electromagnetic waves and ground connection, electric market, advance guard, transistor and dry cell battery, LED

Title: HEATING ELEMENT
Priority: JP20050230633 20050809 JP20060017306 20060126 KR20060074529 20060808
Family:

Publication number	Publication date	Application number	Application date
DE602006005872 D1	20090507	DE200660005872T	20060807
EP1753014 A1	20070214	EP20060254131	20060807
EP1753014 B1	20090325	EP20060254131	20060807
JP2007073492 A2	20070322	JP20060017306	20060126
JP4435742 B2	20100324	JP20060017306	20060126
KR101202689 B1	20121119	KR20060074529	20060808
KR20070018698 A	20070214	KR20060074529	20060808
TW200725796 A	20070701	TW20060128444	20060803
TWI317156 B	20091111	TW20060128444	20060803
US2007045271 AA	20070301	US20060498714	20060804
US7683295 BB	20100323	US20060498714	20060804

Probable Assignee: SHIN ETSU CHEM CO LTD
Assignee(s):(std): SHINETSU CHEMICAL CO
Assignee(s): SHINETSU CHEMICAL CO LTD ; SHIN ETSU CHEM CO LTD ; SHIN ETSU CHEMICAL CO ; SHIN ETSU CHEMICAL CO LTD ; SHIN ETSU CHEMICAL CO LTD JP
Inventor(s):(std): KIMURA NOBORU ; KUSHIHASHI TAKUMA
Agent(s): MCBRIDE PETER HILL; OLIFF AND BERRIDGE PLC
Designated states: AL BA DE FR GB HR MK YU
International class (IPC 8-9): H05B3/20 H01L21/00 H01L21/02 H01L21/324 H01L21/683 H01L21/687 H05B1/00 H05B11/00 H05B3/00 H05B3/02 H05B3/06 H05B3/08 H05B3/10 H05B3/14 H05B3/16 H05B3/68 H05B3/74 (Advanced/Invention); H01L21/02 H01L21/67 H05B1/00 H05B11/00 H05B3/00 H05B3/02 H05B3/10 H05B3/14 H05B3/20 H05B3/68 (Core/Invention); H01L21/683 H05B3/20 (Core/Non-invention)
CPC: H01L21/67103 H05B3/143 H01L21/324
European class: H01L21/67S2H2 H05B3/14C2
US class: 219/216 219/444.1 219/541 219/543

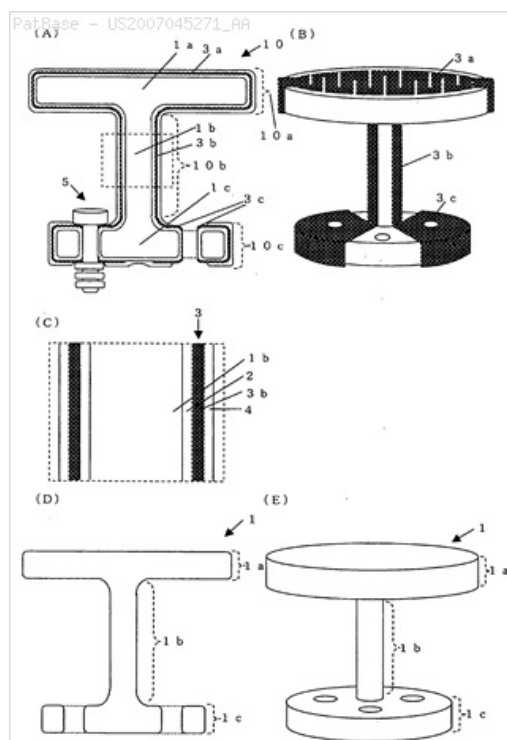
[Classification Explorer](#)

Cited documents: WO9945745 A1, WO9945745 A, WO9408436 A1, WO200217384 A1, WO04068541 A2, WO04068541 A2, WO0217384 A1, US7364624 BB, US6160244 A, US2007131674 AA, JPH08500932, JPEP0746010, JP8500932 T2, JP746010, JP6061335 A2, JP5129210 A2, JP512910, JP5109876 A2, JP4358074 A2, JP2004171834, JP11354260 A2, EP0746010 A2, EP0746010 A2,

Forward Citations: USD637301, US9786522, US9698074, US8115141, US7952054, US2015076135, US2008142755, US2007131674, TWI496500, KR101573638, JP5894401, JP2016536803, JP2013062088, JP2013045511, JP2007287379, JP2007287378, JP2007287377, EP1845754, CN104934307, CN102435428,

Abstract:

There is disclosed a heating element 10 comprising: a single-piece heat-resistant base member 1 with a plate portion 1a in which a heater pattern 3a is formed, a rod portion 1b extending from one surface of the plate portion 1a and in which a current-carrying part 3b is formed, and an end portion 1c at an end of the rod portion 1b on the opposite side of the plate portion 1a and in which a power-supply terminal 3c is formed; a dielectric layer 2 with insulating property on the surface of the heat-resistant base member 1; a conductive layer 3 with conductive property on the dielectric layer 2, in which the conductive layer 3 is formed as the heater pattern 3a in the plate portion 1a, as the current-carrying part 3b in the rod portion 1b, and as the power-supply terminal 3c in the end portion 1c; and a protection layer 4 with insulating property which covers the surface of the heater pattern 3a and the current-carrying part 3b, in which the dielectric layer 2, the conductive layer 3 and the protection layer 4 are formed to unite with the heat-resistant base member 1. There can be provided a heating element resistant to corrosion of a power-supply terminal, with a long-life protection layer, with high durability, compact in size, and capable of being produced at a low cost.



Title: ELECTRIC HEATER

Priority: KR20070073022 20070720 KR20070073024 20070720 WO2008KR04121 20080714

Family:

Publication number	Publication date	Application number	Application date
EP2186380 A1	20100519	EP20080778779	20080714
EP2186380 A4	20120509	EP20080778779	20080714
EP2186380 B1	20160622	EP20080778779	20080714
KR101378881 B1	20140328	KR20070073024	20070720
KR101412578 B1	20140626	KR20070073022	20070720
KR20090009599 A	20090123	KR20070073022	20070720
KR20090009600 A	20090123	KR20070073024	20070720
US2010193502 AA	20100805	US20080669622	20080714
US8269150 BB	20120918	US20080669622	20080714
WO09014333 A1	20090129	WO2008KR04121	20080714

Probable Assignee: LG ELECTRONICS INC

Assignee(s):(std): KIM HYOUNG JUN ; KIM JE HOON ; LG ELECTRONICS INC ; PARK BYEONG WOOK

Inventor(s):(std): KIM HYOUNG JUN ; KIM JE HOON ; PARK BYEONG WOOK

Agent(s): VOSSIUS AND PARTNER; VOSSIUS AND PARTNER PATENTANWAELTE RECHTSANWAELTE MBB; KED AND ASSOCIATES LLP; PARK JANG WON

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 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

International class (IPC 8-9): H05B3/02 H05B3/06 H05B3/16 H05B3/20 H05B3/26 (Advanced/Invention); H05B3/16 H05B3/20 H05B3/26 (Advanced/Non-invention); H05B3/02 H05B3/06 H05B3/16 H05B3/20 H05B3/22 (Core/Invention)

CPC: H05B3/68 H05B3/748 H05B3/76 H05B3/03 H05B3/26 H05B2203/028 H05B3/16 H05B3/20 H05B3/82

European class: H05B3/68 H05B3/74R

US class: 219/443.1 219/482 219/504 219/520 219/520S

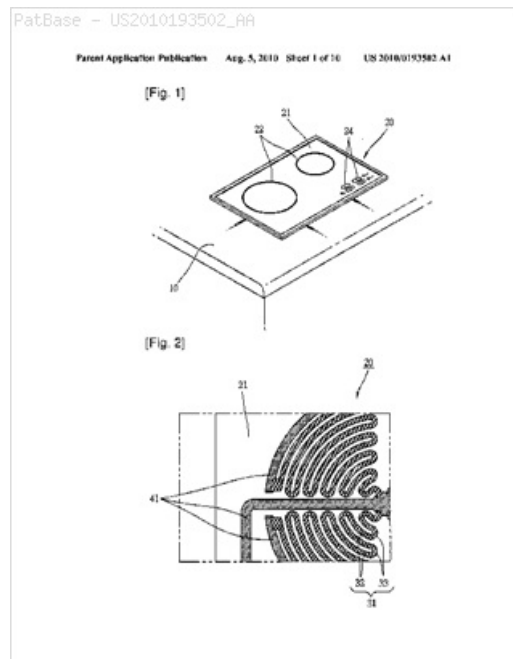
[Classification Explorer](#)

Cited documents: WO9617496 A1, WO07008705 A2, WO07008075 A2, US6875960 BB, US6720533 BB, US6616767 BB, US6392205 BA, US4002883 A, KR200339264 Y1, KR200339264, KR20030080955 A, KR200150201 Y1, KR200150201, KR100193173 B1, KR100193173, JP4337276 A2, JP2006108011 A2, JP10213981 A2, GB860213 A, EP1161120 A2, EP0853444 A2, DE10356790 A1,

Forward Citations: KR101671637, CN104113942,

Abstract:

Disclosed is the electric heater including a base, and a heating unit having a plurality of unit heating elements disposed on a plate surface of the base and at least one of heating connection portions configured to heat and conductively connecting the unit heating elements to each other and non-heating connection portions configured not to heat and conductively connecting the unit heating elements to each other, thereby preventing a thermal stress concentration, thus to prevent damage to the heating unit and to enhance its output.



Title:	SHEET-SHAPED HEAT AND LIGHT SOURCE, METHOD FOR MAKING THE SAME AND METHOD FOR HEATING OBJECT ADOPTING THE SAME			
Priority:	CN200710077394 20070928	CN200710123809 20071010	CN200710123813 20071010	
	US20070006301 20071229	US20070006302 20071229	CN200810068070 20080607	
	CN200810067731 20080613	CN200810067904 20080618	CN200810142617 20080625	
	CN200810038076 20080627	CN200810068069 20080627	CN200810068070 20080627	
	CN200810068076 20080627	CN200810068077 20080627	CN200810068078 20080627	
	CN200910068077 20080627	CN200810068458 20080711	CN200810068461 20080711	
	CN200810068462 20080711	CN200810068459 20080711	CN200810068462 20080722	
	CN200810142615 20080725	CN200810142614 20080725	CN200810142526 20080725	
	CN200810142529 20080725	CN200810142527 20080725	CN200810142522 20080725	
	CN200810142528 20080725	CN200810142610 20080725	CN200810142616 20080725	
	CN200810142617 20080725	CN200810068070 20080727	CN200810068069 20080827	
	CN200810068076 20080827	CN200810068078 20080827	EP20080253151 20080926	
	CN200910106599 20090420	CN200910106600 20090420	CN200910106802 20090420	
	CN200910106803 20090420	CN200910106804 20090420	CN200910106805 20090420	
	CN200910106806 20090420	CN200910106807 20090420	CN200910106808 20090420	
	CN200910106809 20090420	CN200910106810 20090420	CN200910106811 20090420	
	CN200910106812 20090420	CN200910106813 20090420	CN200910106814 20090420	
	CN200910138340 20090424	CN200910138341 20090424	CN200910146049 20090602	
	CN200910149176 20090609	CN200910149177 20090609	US20090456071 20090611	
	EP20090162562 20090612	JP20090154347 20090629	CN200810068461 20090701	
	JP20090164974 20090713	CN200910106807 20090720	US20090460867 20090723	
	US20090460849 20090723	US20090460855 20090723	US20090460858 20090723	
	US20090460859 20090723	US20090460870 20090723	US20090460848 20090723	
	US20090460851 20090723	US20090460853 20090723	US20090460854 20090723	
	US20090460868 20090723	US20090460817 20090723	US20090460869 20090723	
	US20090460850 20090723	US20090460852 20090723	US20090460871 20090723	
	JP20090174785 20090727	US20090462153 20090730	US20090462188 20090730	
	US20090462155 20090730	US20090655507 20091231	US20100658184 20100204	
	US20100658193 20100204	US20100658182 20100204	US20100658198 20100204	
	US20100658237 20100204	US20100660356 20100225	US20100660820 20100304	
	US20100661150 20100311	US20100661165 20100311	US20100661115 20100311	
	US20100661133 20100311	US20100661110 20100311	US20100661926 20100325	
	US20100750186 20100330	JP20100097277 20100420	US20130862670 20130415	
	US20140265464 20140430	US20150791262 20150703		

Family:

Publication number	Publication date	Application number	Application date
■ CN101400198 A	20090401	CN200710077394	20070928
■ CN101400198 B	20100929	CN200710077394	20070928
■ CN101409961 A	20090415	CN200710123813	20071010
■ CN101409961 B	20100616	CN200710123813	20071010
■ CN101409962 A	20090415	CN200710123809	20071010
■ CN101409962 B	20101110	CN200710123809	20071010
■ CN101605409 A	20091216	CN200910146049	20090602
■ CN101605409 B	20121121	CN200910146049	20090602
■ CN101610613 A	20091223	CN200910138341	20090424
■ CN101610613 B	20110928	CN200910138341	20090424
■ CN101616512 A	20091230	CN200810068069	20080627
■ CN101616512 B	20150930	CN200810068069	20080627
■ CN101616513 A	20091230	CN200810068070	20080627
■ CN101616513 B	20110727	CN200810068070	20080627
■ CN101616514 A	20091230	CN200810068076	20080627
■ CN101616514 B	20110727	CN200810068076	20080627
■ CN101616515 A	20091230	CN200810068078	20080627
■ CN101616515 B	20121010	CN200810068078	20080627
■ CN101616516 A	20091230	CN200910138340	20090424
■ CN101616516 B	20130424	CN200910138340	20090424
■ CN101626639 A	20100113	CN200810068459	20080711
■ CN101626639 B	20110727	CN200810068459	20080711
■ CN101626640 A	20100113	CN200810068458	20080711
■ CN101626640 B	20111214	CN200810068458	20080711
■ CN101626641 A	20100113	CN200810068461	20080711
■ CN101626641 B	20150401	CN200810068461	20080711
■ CN101626642 A	20100113	CN200810068462	20080711
■ CN101626642 B	20110622	CN200810068462	20080711
■ CN101636001 A	20100127	CN200910149176	20090609
■ CN101636001 B	20160120	CN200910149176	20090609
■ CN101636002 A	20100127	CN200910149177	20090609
■ CN101636002 B	20120314	CN200910149177	20090609
■ CN101636004 A	20100127	CN200810142526	20080725
■ CN101636004 B	20120613	CN200810142526	20080725
■ CN101636005 A	20100127	CN200810142527	20080725
■ CN101636005 B	20120718	CN200810142527	20080725
■ CN101636006 A	20100127	CN200810142529	20080725
■ CN101636006 B	20120919	CN200810142529	20080725
■ CN101636007 A	20100127	CN200810142614	20080725
■ CN101636007 B	20121121	CN200810142614	20080725
■ CN101636008 A	20100127	CN200810142615	20080725
■ CN101636008 B	20120829	CN200810142615	20080725
■ CN101636009 A	20100127	CN200810142522	20080725
■ CN101636009 B	20120829	CN200810142522	20080725
■ CN101636010 A	20100127	CN200810142528	20080725
■ CN101636011 A	20100127	CN200810142610	20080725

CN101636011 B	20120718	CN200810142610	20080725
CN101868057 A	20101020	CN200910106802	20090420
CN101868057 B	20120829	CN200910106802	20090420
CN101868058 A	20101020	CN200910106809	20090420
CN101868058 B	20131106	CN200910106809	20090420
CN101868059 A	20101020	CN200910106812	20090420
CN101868059 B	20131009	CN200910106812	20090420
CN101868060 A	20101020	CN200910106813	20090420
CN101868060 B	20120829	CN200910106813	20090420
CN101868061 A	20101020	CN200910106814	20090420
CN101868065 A	20101020	CN200910106600	20090420
CN101868065 B	20141210	CN200910106600	20090420
CN101868066 A	20101020	CN200910106803	20090420
CN101868066 B	20130605	CN200910106803	20090420
CN101868067 A	20101020	CN200910106804	20090420
CN101868067 B	20140122	CN200910106804	20090420
CN101868068 A	20101020	CN200910106805	20090420
CN101868068 B	20130828	CN200910106805	20090420
CN101868069 A	20101020	CN200910106806	20090420
CN101868069 B	20130605	CN200910106806	20090420
CN101868070 A	20101020	CN200910106599	20090420
CN101868070 B	20130828	CN200910106599	20090420
CN101868071 A	20101020	CN200910106807	20090420
CN101868072 A	20101020	CN200910106808	20090420
CN101868072 B	20150603	CN200910106808	20090420
CN101868073 A	20101020	CN200910106810	20090420
CN101868073 B	20130410	CN200910106810	20090420
CN101868074 A	20101020	CN200910106811	20090420
CN101868074 B	20130703	CN200910106811	20090420
DE602008016156 D1	20120802	DE200860016156T	20080926
DE602009032631 D1	20150917	DE200960032631T	20090612
EP2043406 A2	20090401	EP20080253151	20080926
EP2043406 A3	20091028	EP20080253151	20080926
EP2043406 B1	20120606	EP20080253151	20080926
EP2136603 A2	20091223	EP20090162562	20090612
EP2136603 A3	20100811	EP20090162562	20090612
EP2136603 B1	20150805	EP20090162562	20090612
EP2157831 A2	20100224	EP20090164766	20090707
EP2157831 A3	20110209	EP20090164766	20090707
ES2386584 T3	20120823	ES20080253151T	20080926
JP2009091239 A2	20090430	JP20080262225	20081008
JP2009094074 A2	20090430	JP20080262227	20081008
JP2009302057 A2	20091224	JP20090142633	20090615
JP2010003693 A2	20100107	JP20090145876	20090618
JP2010006697 A2	20100114	JP20090154347	20090629
JP2010006698 A2	20100114	JP20090154348	20090629
JP2010010133 A2	20100114	JP20090145877	20090618
JP2010010136 A2	20100114	JP20090154345	20090629
JP2010010137 A2	20100114	JP20090154346	20090629
JP2010018515 A2	20100128	JP20090164974	20090713
JP2010021146 A2	20100128	JP20090164973	20090713
JP2010021147 A2	20100128	JP20090165132	20090713
JP2010021148 A2	20100128	JP20090165133	20090713
JP2010034047 A2	20100212	JP20090165131	20090713
JP2010034054 A2	20100212	JP20090173469	20090724
JP2010034055 A2	20100212	JP20090173470	20090724
JP2010034056 A2	20100212	JP20090173471	20090724
JP2010034058 A2	20100212	JP20090174779	20090727
JP2010034059 A2	20100212	JP20090174780	20090727
JP2010034061 A2	20100212	JP20090174783	20090727
JP2010034062 A2	20100212	JP20090174784	20090727
JP2010034063 A2	20100212	JP20090174785	20090727
JP2010034064 A2	20100212	JP20090174786	20090727
JP2010251326 A2	20101104	JP20100097276	20100420
JP2010251327 A2	20101104	JP20100097277	20100420
JP2010254564 A2	20101111	JP20100097286	20100420
JP2010254565 A2	20101111	JP20100097288	20100420
JP2010254566 A2	20101111	JP20100097289	20100420
JP2010257968 A2	20101111	JP20100097278	20100420
JP2010257969 A2	20101111	JP20100097279	20100420
JP2010257970 A2	20101111	JP20100097280	20100420
JP2010257971 A2	20101111	JP20100097281	20100420
JP2010257972 A2	20101111	JP20100097282	20100420
JP2010257973 A2	20101111	JP20100097283	20100420
JP2010257974 A2	20101111	JP20100097284	20100420
JP2010257975 A2	20101111	JP20100097285	20100420
JP2010257976 A2	20101111	JP20100097287	20100420
JP2010257977 A2	20101111	JP20100097290	20100420
JP2013048110 A2	20130307	JP20120238861	20121030
JP2013077586 A2	20130425	JP20130018267	20130201
JP2013077587 A2	20130425	JP20130018268	20130201

JP2013081672 A2	20130599	JP20130018250	20130201
JP4669059 B2	20110413	JP20090165131	20090713
JP4669060 B2	20110413	JP20090174780	20090727
JP4791566 B2	20111012	JP20090145877	20090618
JP5048624 B2	20121017	JP20080262225	20081008
JP5048722 B2	20121017	JP20090165133	20090713
JP5048730 B2	20121017	JP20090174783	20090727
JP5048731 B2	20121017	JP20090174784	20090727
JP5059808 B2	20121031	JP20090165132	20090713
JP5059809 B2	20121031	JP20090174786	20090727
JP5175246 B2	20130403	JP20090154346	20090629
JP5175248 B2	20130403	JP20090173470	20090724
JP5175249 B2	20130403	JP20090174785	20090727
JP5243480 B2	20130724	JP20100097286	20100420
JP5255014 B2	20130807	JP20100097281	20100420
JP5280951 B2	20130904	JP20090154347	20090629
JP5281034 B2	20130904	JP20100097279	20100420
JP5281035 B2	20130904	JP20100097282	20100420
JP5281036 B2	20130904	JP20100097283	20100420
JP5319597 B2	20131016	JP20100097285	20100420
JP5319598 B2	20131016	JP20100097287	20100420
JP5319599 B2	20131016	JP20100097290	20100420
JP5390273 B2	20140115	JP20090145876	20090618
JP5390280 B2	20140115	JP20090154345	20090629
JP5390288 B2	20140115	JP20090173469	20090724
JP5411051 B2	20140212	JP20100097276	20100420
JP5421182 B2	20140219	JP20100097278	20100420
JP5421183 B2	20140219	JP20100097288	20100420
JP5441545 B2	20140312	JP20090173471	20090724
JP5448999 B2	20140319	JP20100097277	20100420
JP5457258 B2	20140402	JP20100097284	20100420
JP5457259 B2	20140402	JP20100097289	20100420
JP5473454 B2	20140416	JP20090174779	20090727
JP5560354 B2	20140723	JP20130018267	20130201
JP5608767 B2	20141015	JP20130018268	20130201
JP5619468 B2	20141105	JP20100097280	20100420
JP5638207 B2	20141210	JP20090154348	20090629
JP5638639 B2	20141210	JP20130018270	20130201
JP5746235 B2	20150708	JP20130018269	20130201
JP5778113 B2	20150916	JP20120238861	20121030
KR101195273 B1	20121026	KR20090063076	20090710
KR20090033138 A	20090401	KR20080094915	20080926
KR20090131652 A	20091229	KR20090053461	20090616
KR20100007799 A	20100122	KR20090063076	20090710
US2009085461 AA	20090402	US20070006314	20071229
US2009096346 AA	20090416	US20070006301	20071229
US2009096348 AA	20090416	US20070006302	20071229
US2009314765 AA	20091224	US20090460867	20090723
US2009321418 AA	20091231	US20090460851	20090723
US2009321419 AA	20091231	US20090460853	20090723
US2009321420 AA	20091231	US20090460854	20090723
US2009321421 AA	20091231	US20090460868	20090723
US2010000669 AA	20100107	US20090462153	20090730
US2010000985 AA	20100107	US20090460848	20090723
US2010000986 AA	20100107	US20090460849	20090723
US2010000987 AA	20100107	US20090460855	20090723
US2010000988 AA	20100107	US20090460858	20090723
US2010000989 AA	20100107	US20090460859	20090723
US2010000990 AA	20100107	US20090460870	20090723
US2010108664 AA	20100506	US20090460817	20090723
US2010122980 AA	20100520	US20090655507	20091231
US2010126985 AA	20100527	US20090456071	20090611
US2010139845 AA	20100610	US20090460869	20090723
US2010139851 AA	20100610	US20090462188	20090730
US2010140257 AA	20100610	US20090460850	20090723
US2010140258 AA	20100610	US20090460852	20090723
US2010140259 AA	20100610	US20090462155	20090730
US2010147827 AA	20100617	US20100658182	20100204
US2010147828 AA	20100617	US20100658184	20100204
US2010147829 AA	20100617	US20100658193	20100204
US2010147830 AA	20100617	US20100658198	20100204
US2010154975 AA	20100624	US20100658237	20100204
US2010163547 AA	20100701	US20100660820	20100304
US2010170890 AA	20100708	US20100661150	20100311
US2010170891 AA	20100708	US20100661165	20100311
US2010180429 AA	20100722	US20100750186	20100330
US2010187221 AA	20100729	US20100661926	20100325
US2010200567 AA	20100812	US20100661115	20100311
US2010200568 AA	20100812	US20100661133	20100311
US2010218367 AA	20100902	US20100661110	20100311
US2010230400 AA	20100916	US20090460871	20090723

■	US2011024410 AA	20110203	US20100660356	20100225
■	US2013220990 AA	20130829	US20130862670	20130415
■	US2014231409 AA	20140821	US20140265464	20140430
■	US2015303020 AA	20151022	US20150791262	20150703
■	US8410676 BB	20130402	US20070006314	20071229
■	US8450930 BB	20130528	US20070006301	20071229
■	US8808049 BB	20140819	US20130862670	20130415
■	US9215759 BB	20151215	US20140265464	20140430

Probable Assignee: HON HAI PRECISION IND CO LTD

Assignee(s):(std): BEIJING FUNATE INNOVATION TECH ; FUNATE INNOVATION TECHNOLOGY CO LTD ; FAN SHOU SHAN ; FENG CHEN ; HON HAI PREC IND CO LTD ; KOFUKIN SEIMITSU KOGYO ; HONGFUJIN PREC IND SHENZHEN ; SHENZHEN FUTENA INNOVATION TECHNOLOGIES CO LTD ; LIU PENG ; JIANG KAI LI ; LIU CHANG HONG ; HONGFUJIN PRECISION IND SHENZHEN CO LTD ; UNIV TSINGHUA ; TSING HUA UNIVERSITY ; UNIV QINGHUA ; TSING UNIV ; TSING UNIVERSITY ; TSINGHUA UNIVERTIRY ; WEI YANG ; UNIV TSING HUA

Assignee(s): TSING HUA UNIV BEIJING CITY ; TSINGHUA UNIVERISITY ; TSING HUA UNIV ; HONGFUJIN PRECISION IND SHENZHEN CO ; HON HAI PRECISION IND CO LTD TU CHENG CITY ; TSINGHUA UNIV ; TSINGHUA UNIVERSITY ; HONGFUJIN PRECISION INDUSTRY SHENZHEN CO LTD ; SHENZHEN FUTENA INNOVATION TECHNOLOGIES CO ; HON HAI PRECISION INDUSTRY CO LTD ; HONGFUJIN PRECISION INDUSTRY SHENZHEN CO ; HON HAI PRECISION IND ; HAN HAI PRECISION IND CO LTD ; HON HAI PRECISION IND CO ; HON HAI PRECISION INDUSTRY CO ; QINGHUA UNIV ; KOFUKIN SEIMITSU KOGYO SHENZHEN YUGENKOSHI ; BEIJING FUNATE INNOVATION TECHNOLOGY CO ; BEIJING FUNATE INNOVATION TECHNOLOGY CO LTD ; D AUSTIN BONDERER ; HON HAI PRECISION IND CO LTD

Inventor(s):(std): DING WANG ; FAN FENG YAN ; FAN SHOU SHAN ; FENG CHEN ; JIANG KAI LI ; KAI LIU ; LIU CHANG HONG ; LIU KAI ; LIU PENG ; RYU CHOKO ; WANG DING ; WANG JIA PING ; WEI YANG ; ZHANGHONG LIU ; LIU ZHANGHONG ; LIU CHANGHONG ; CHANGHONG LIU ; YANG WEI ; WANG JIAPING ; SHOUSHAN FAN ; RYO KAI ; PENG LIU ; KAILI JIANG ; JIAPING WANG ; JIANG KAILI ; FAN SHOUSHAN ; CHEN FENG

Agent(s): MURGITROYD AND CO; OLSWANG GERMANY LLP; STUTTARD GARRY PHILIP; GRAY JOHN JAMES; HUANG CHONGGUANG; PCE IND INC ATT STEVEN REISS; ALTIS LAW GROUP INC ATTN STEVEN REISS; ALTIS LAW GROUP INC; NOVAK DRUCE CONNOLLY BOVE AND QUIGG LLP

Designated states: AL AT BA 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

International class (IPC 8-9): B01J37/02 B29B15/00 B29C43/10 B29C55/00 B29C65/48 B29C65/56 B29C65/70 B29C65/72 B29D31/00 B32B37/00 B32B37/12 B32B38/00 B32B38/12 B32B38/14 B82B1/00 B82B3/00 B82Y15/00 B82Y30/00 C01B31/02 C01B31/04 C23C14/34 C23C14/46 D01F9/12 H01C17/06 H01J1/62 H01J1/90 H01J17/00 H01J29/20 H01J29/30 H01J9/00 H01J9/02 H01J9/04 H01J9/18 H01K1/06 H01K1/14 H01K3/02 H01K3/06 H01R43/20 H05B3/00 H05B3/02 H05B3/03 H05B3/06 H05B3/10 H05B3/14 H05B3/18 H05B3/20 H05B3/26 H05B3/28 H05B3/34 H05B3/36 H05B3/40 H05B3/44 H05B3/46 H05B3/48 H05B3/54 H05B3/56 H05B3/84 H05B33/00 H05B33/10 H05B33/12 H05B33/14 H05B33/26 H05K13/00 (Advanced/Invention); B82Y99/00 C01B31/02 H05B3/14 H05B3/20 (Advanced/Non-invention); B01J37/00 B29B15/00 B29C43/10 B29C55/00 B29C65/48 B29C65/56 B29C65/70 B29C65/72 B32B37/00 B32B37/12 B32B38/00 B32B38/12 B32B38/14 B82B1/00 C01B31/00 C23C14/34 C23C14/46 D01F9/12 H01C17/06 H01J1/00 H01J17/00 H01J9/00 H01J9/02 H01K1/00 H01K3/00 H01R43/20 H05B3/00 H05B3/02 H05B3/06 H05B3/10 H05B3/14 H05B3/20 H05B3/40 H05B3/42 H05B3/54 H05B3/84 H05B33/00 H05B33/10 H05B33/12 H05B33/14 H05B33/26 H05K13/00 (Core/Invention); C01B31/00 (Core/Non-invention)

CPC: B82Y30/00 H05B3/286 H05B2203/021 H05B2203/022 H05B3/54 H05B3/00 H05B3/10 H05B3/009 Y10S977/95 B82Y99/00 H01J1/90 Y10T29/49002 Y10T29/49083 Y10T29/49208 Y10T156/10 Y10T156/1002 H05B3/145 H05B3/265 H05B3/28 H05B3/34 H05B2203/005 H05B2203/007 H05B2203/013 H05B2203/014 H01C17/06 H01C17/28 H05B2203/003 H05B2203/034 H01K1/06 H01K1/14 H05B3/26 H05B2203/011 H05B2203/017 H05B2203/032 H01J9/18 Y10S977/742 H01J29/20 H01J29/30 H05B2214/04 H05B3/56 H05B3/46 H05B3/40 H05B3/20

European class: B82Y30/00 H01C17/06 H01C17/28 H01J29/20 H01J29/30 H01K1/06 H01K1/14 H05B3/14G H05B3/26 H05B3/26C H05B3/28 H05B3/28D H05B3/34 H05B3/40 H05B3/54 H05B33/14 T05B203/003 T05B203/005 T05B203/007 T05B203/011 T05B203/013 T05B203/014 T05B203/017 T05B203/021 T05B203/022 T05B203/032 T05B203/034 T05B214/04

US class: 1/1 156/148 156/150 156/150S 156/151 156/151S 156/184 156/184S 156/185 156/185S 156/192 156/192S 156/196 156/196S 156/242 156/242S 156/245 156/245S 156/277 156/277S 156/280 156/280S 156/296 156/296S 156/60 156/60S 204/192.1 204/192.100S 204/192.11 204/192.110S 219/260 219/473 219/475 219/520 219/538 219/538S 219/541 219/541S 219/546 219/546P 219/546S 219/548 219/552 219/552S 219/553 264/109 264/109S 264/164 264/164S 264/232 264/232S 264/319 264/319S 264/341 264/341S 29/592.1 29/592.100P 29/611 29/611P 29/611S 29/876 29/876S 313/309 313/315 313/325 313/325P 313/494 313/498 313/498P 313/578 313/579 445/35 445/35S 445/46 445/46S 445/50 445/51 977/742 977/742S 977/762 977/762S 977/842 977/842S 977/902 977/902S 977/950

[Classification Explorer](#)

Cited documents: WOW069412, WOW065431, WO9925154, WO08133299 A1, WO08133299, WO07111107 A1, WO07089118 A1, WO07089118, WO07015710 A2, WO06122736 A2, WO06065431, WO06064242 A1, WO06030981 A1, WO05069412, WO04082333 A1, WO04023845 A1, WO0238496, WO0217687 A1, WO02059936, US8808049 BB, US8633912 BB, US8624862 BB, US8492029 BB, US8450930 BB, US8410676 BB, US8216540 BB, US8178028 BB, US8168965 BB, US8076583 BB, US8070548 BB, US8053291 BB, US8048256 BB, US7947977 BB, US7947542 BB, US7947145 BB, US7938996 BB, US7854992 BB, US7850778 BB, US7826199 BB, US7785907 BB, US7780496 BB, US7744793 BB, US7741765 BB, US7704480 BB, US7662467 BB, US7642489 BB, US7641885 BB, US7638933 BB, US7615205 BB, US7596415 BB, US7419651 BB, US7419624 BA, US7365632 BB, US7357691 BB, US7338915 BA, US7321188 BB, US7312155 BB, US7224256 BB, US7205069 BB, US7204970 BB, US7177579 BB, US7147831 BB, US7115013 BB, US7105596 BB, US7097820 BB, US7081030 BB, US7072578 BB, US7060241 BB, US7054064 BB, US7049735 BB, US7045108 BB, US7019391 BB, US7008563 BB, US7003253 BB, US6986876 BB, US6979709 BB, US6969504 BB, US6961516 BB, US6957993 BB, US6949877 BB, US6929874 BB, US6891263 BB, US6872924 BB, US6809298 BB, US6790425 BA, US6761870 BA, US6749827 BB, US6712864 BB, US6683783 BA, US6541744 BB, US6501056 BA, US6495116 BA, US6422450 BA, US6407371 BA, US6384727 BA, US6369361 BB, US6294758 BA, US6283812 BA, US6250984 BA, US6232706 BA, US6188839 BA, US6183714 BA, US6043468 A, US6037574 A, US6031970 A, US5998049 A, US5949180 A, US5765215 A, US5756215 A, US5643483 A, US5371341 A, US4563572 A, US3304459 A, US2013284695 AA, US2010300893 AA, US2010244307 AA, US2010227058 AA, US2010203316 AA, US2010140257 AA, US2010129654 AA, US2010126985 AA, US2010085729 AA, US2010000989 AA, US2009314765 AA, US2009212040 AA, US2009160799 AA, US2009156293 AA, US2009155467 AA, US2009127743 AA, US2009117434 AA, US2009096348 AA, US2009096346 AA, US2009085461 AA, US2009057296 AA, US2009016951 AA, US2009009634 AA, US2008299031 AA, US2008292835 AA, US2008283269 AA, US2008248235 AA, US2008230769 AA, US2008187648 AA, US2008170982 AA, US2008170106 AA,

US2008135410 AA, US2008122335 AA, US2008093226 AA, US2008063860 AA, US2008063585 AA, US2008018012 AA, US2008012047 AA, US2008009434 AA, US2007298253 AA, US2007296322 AA, US2007292614 AA, US2007289872 AA, US2007258880 AA, US2007243124 AA, US2007237959 AA, US2007209943 AA, US2007166223 AA, US2007154807 AA, US2007132043 AA, US2007116858 AA, US2007116631 AA, US2007085155 AA, US2007065651 AA, US2007003718 AA, US2006284218 AA, US2006283262 AA, US2006275956 AA, US2006274049 AA, US2006272061 AA, US2006269669 AA, US2006269668 AA, US2006263524 AA, US2006263274 AA, US2006261419 AA, US2006252251 AA, US2006239898 AA, US2006234056 AA, US2006233575 AA, US2006231970 AA, US2006225163 AA, US2006208354 AA, US2006188721 AA, US2006186502 AA, US2006135677 AA, US2006118768 AA, US2006105227 AA, US2006099135 AA, US2006062986 AA, US2006057383 AA, US2006055074 AA, US2006054788 AA, US2006035084 AA, US2006005381 AA, US2005266766 AA, US2005264155 AA, US2005253137 AA, US2005236951 AA, US2005224764 AA, US2005118494 AA, US2005081983 AA, US2005074392 AA, US2005040371 AA, US2005038225 AA, US2005037204 AA, US2004209385 AA, US2004197599 AA, US2004197546 AA, US2004195957 AA, US2004194944 AA, US2004191158 AA, US2004185320 AA, US2004136893 AA, US2004109815 AA, US2004101468 AA, US2004099657 AA, US2004067530 AA, US2004053780 AA, US2004053053 AA, US2004051432 AA, US2004047038 AA, US2003217933 AA, US2003203225 AA, US2003186625 AA, US2003170166 AA, US2003164477 AA, US2003143398 AA, US2003133865 AA, US2003107927 AA, US2003052585 AA, US2002162835 AA, US2002150524 AA, US2002122765 AA, US2002070426 AA, US2002040900 AA, US1710512 A, US0096348, TWI346711, TW200824903, TW200800793, TW200738553, TW200732250, TW200724486, TW200715334, TW200407259, TW1346711, KR20070079862, KR20050007886, KR20040074712, KR20040010558, KR200370290 Y, KR100797094, KR100749886 B1, JPWO2007015710, JPS6460988, JPS60159591, JPS5772291, JPS5691391, JP9161959 A2, JP9161959, JP7249476 A2, JP7147183, JP7092839 A2, JP7085954 A2, JP7085954, JP64060988 A2, JP60159591 A2, JP57072291 A2, JP56091391 A2, JP56091391, JP5343170 A2, JP5102924 A2, JP3142908 U, JP2300378 A2, JP2012190 U1, JP2012190, JP20100118515 A2, JP2010003693 A2, JP2009525580 T2, JP2009525580, JP2009173466, JP2009142633, JP2009094074 A2, JP2009094074, JP2009091240 A2, JP2009091240, JP2009091239 A2, JP2009091239, JP2009007461 A2, JP2008523254 T2, JP2008523254, JP2008523254, JP2008168631, JP2008164115, JP2007311320 A2, JP2007311320, JP2007272223 A2, JP2007272223, JP2007263193 A2, JP2007173238 A2, JP2007161576 A2, JP2007161563 A2, JP2007161563, JP2007128892 A2, JP2007109640 A2, JP2007109640, JP2007092234 A2, JP2006521212 T2, JP2006294604 A2, JP2006266573 A2, JP2006261131 A2, JP2006228745, JP2006147801 A2, JP2006073217 A2, JP2005336478 A2, JP2005336478, JP2005255985 A2, JP2005102924, JP2005100757 A2, JP2005055317 A2, JP2005008446, JP2005002375 A2, JP2004528677 T2, JP2004528677, JP2004528677, JP2004189155, JP2004186102, JP2004111345 A2, JP2004030926 A2, JP2003257597 A2, JP200275602, JP2002352940 A2, JP2002352940, JP2002075604, JP200077167, JP2000123961 A2, JP2000123961, JP2000077167 A2, JP2000077167, JP2000058228 A2, JP2000058228, JP2000056605 A2, JP1289087 A2, JP1289087, JP11141900, JP10319761, EP2157831 A2, EP2043406 A2, EP2043406, EP1139694, EP02043406,

DE202005014678 U1

DE202005014678,

DE202005013822 U1

DE202005013822,

DE102006014171 A1

DE102005038816 B3

DE102004044352 A1

CN2896773 Y, CN2739909, CN2731895, CN2689638, CN2636571 Y, CN2494094, CN2455033, CN2324745, CN200994196 Y, CN1917135, CN1910771, CN1872673, CN1847144, CN1803594, CN1699452 A, CN1619800, CN1529334, CN1483667 A, CN1309770 C, CN1206699, CN1044023, CN101616514, CN101616513, CN101400198 A, CN101314464 A, CN101284662, CN101239712, CN101192490, CN101138896, CN101121497, CN101102838, CN101092234 A, CN101090586, CN101086939, CN101051207, CN100443404 C, CN100443404,

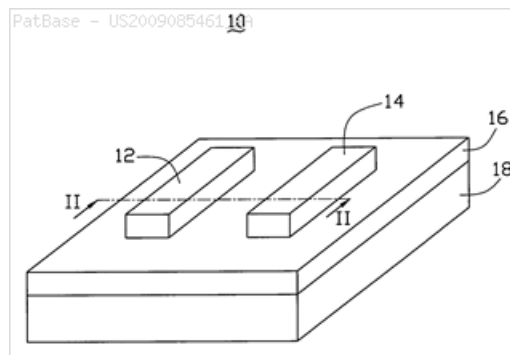
Forward Citations:

WO17187121, WO17178841, WO14084729, WO14032722, WO13190252, WO13132069, WO13080122, WO12170527, WO12170527, WO12092623, WO12092623, WO12084710, WO12068424, WO12068424, WO12062572, WO11135978, WO10128748, US9944529, US9903350, US9877358, US9862170, US9826317, US9810929, US9784249, US9783420, US9776872, US9776871, US9772590, US9695045, US9695042, US9650253, US9643848, US9630849, US9567218, US9481125, US9469541, US9469540, US9469531, US9469530, US9468044, US9468043, US9466762, US9459154, US9440067, US9434815, US9433801, US9419216, US9394176, US9370047, US9348280, US9313840, US9272134, US9265653, US9248281, US9215759, US9173250, US9176627, US9138577, US9102515, US9099644, US9086327, US9084884, US9020609, US9013092, US8980035, US8905320, US8901802, US8895997, US8857304, US8852376, US8841588, US8837753, US8825178, US8822887, US8811633, US8811631, US8803037, US8767981, US8763234, US8742303, US8734996, US8724210, US8704423, US8696091, US8615096, US8614849, US8603585, US8592732, US8584570, US8545745, US8537640, US8532316, US8494187, US8462965, US8461486, US8457331, US8452031, US8450930, US8426776, US8421315, US8410676, US8406450, US8379885, US8378262, US8357881, US8345896, US8334974, US8331587, US8331586, US8325949, US8325948, US8325947, US8323607, US8315415, US8315414, US8311245, US8311244, US8306246, US8305566, US8300856, US8300855, US8300854, US8294098, US8292436, US8289611, US8278604, US8270639, US8259968, US8259967, US8259966, US8253122, US8249280, US8249279, US8238586, US8232097, US8225704, US8225501, US8208675, US8208661, US8203105, US8193475, US8101529, US8053229, US8048256, US7947145, US2018132310, US2017352825, US2017352810, US201679740, US2016009558, US2015368106, US2015318469, US2015303020, US2015203632, US2015114951, US2015076373, US2014314396, US2014284319, US2014231409, US2014186547, US2014110397, US2014070054, US2014034633, US2013299479, US2013284718, US2013284695, US2013284345, US2013233476, US2013140294, US2013110215, US2013110214, US2013110213, US2013109986, US2013109905, US2012326109, US2012251766, US2012250906, US2012250903, US2012250464, US2012172953, US2012143044, US2012103509, US2012103433, US2012043858, US2012028408, US20111317155, US2011234053, US2011220722, US2011204038, US2011194846, US2011194845, US2011174145, US2011155713, US2011149373, US2011149372, US2011149371, US2011114413, US2011113805, US2011110535, US2011110196, US2011108545, US2011094671, US2011062350, US2011056929, US2011056928, US2011049132, US2011024410, US2011024408, US2011001933, US2010320569, US2010311002, US2010296677, US2010296088, US2010260359, US2010260358, US2010260357, US2010243637, US2010230400, US2010218367, US2010200568, US2010200567, US2010195849, US2010189296, US2010188935, US2010188934, US2010188933, US2010187221, US2010181482, US2010180429, US2010175243, US2010172216, US2010172215, US2010172214, US2010172213, US2010170891, US2010170890, US2010166234, US2010166233, US2010166232, US2010166231, US2010163547, US2010154975, US2010147830, US2010147829, US2010147828, US2010147827, US2010140259, US2010140258, US2010140257, US2010139851, US2010139845, US2010122980, US2010110839, US2010108664, US2010086166, US2010086150, US2010054504, US2010054503, US2010046784, US2010046774, US2010044069, US2010012643, US2010000990, US2010000989, US2010000988, US2010000987, US2010000986, US2010000985, US2010000669, US2009321421, US2009321420, US2009321419, US2009321418, US2009314765, US2009296528, US2009268563, US2009181239, US2009159198, US2009155467, US2009096348, US2008299460, US2008248235, US2008190912, US10040687, US10029651, TWI598857, TWI565353,

TWI530687, TWI513357, TWI504059, TWI501687, TWI501686, TWI501685, TWI487427, TWI487426, TWI484060, TWI484059, TWI478617, TWI462734, TWI460127, TWI428547, TWI428546, TWI420954, TWI408989, TWI400985, TWI400984, TWI400983, TWI399120, TWI397342, TWI379897, RU178397, NL2009890, KR101303186, JP6332691, JP6165763, JP6046096, JP5960227, JP5960226, JP5960225, JP5826361, JP5721995, JP5683878, JP5457258, JP5281036, JP5281035, JP5255014, JP4669060, JP2017220454, JP2016025839, JP2016025838, JP2016025837, JP2016025836, JP2015500465, JP2015176768, JP2015133476, JP2015133475, JP2013503437, JP2013203657, JP2013077587, JP2013077586, JP2011211888, JP2011163749, JP2011163748, JP2011128616, JP2011128614, JP2011103293, JP2011101354, JP2011059108, JP2011058794, JP2011056262, JP2011040393, JP2011038238, JP2011013666, JP2010288270, JP2010279698, JP2010273330, JP2010257977, JP2010257976, JP2010257975, JP2010257974, JP2010257973, JP2010257972, JP2010257971, JP2010257970, JP2010257969, JP2010257968, JP2010254570, JP2010254566, JP2010254565, JP2010254564, JP2010251327, JP2010251326, JP2010034064, JP2010034063, JP2010034062, JP2010034061, JP2010034059, JP2010034058, JP2010034056, JP2010034055, JP2010034054, JP2010034047, JP2010021148, JP2010021147, JP2010021146, JP2010010137, JP2010010136, JP2010010133, JP2010003693, JP2009302057, JP2009167092, ITMO20120243, GB2551250, EP3334247, EP3331317, EP3297394, EP3182794, EP3179826, EP3133898, EP3091816, EP2997599, EP2716981, EP2592898, EP2157831, EP2136603, DE102014224842, DE102011105071, CN106671451, CN106219519, CN106183212, CN105744688, CN105428516, CN105428516, CN104995993, CN104833687, CN104833687, CN104791868, CN104791868, CN104718796, CN104159339, CN104159339, CN104113942, CN103959432, CN103959432, CN103896244, CN103896244, CN103832302, CN103781211, CN103781209, CN103728744, CN103728744, CN103567951, CN103379681, CN103379681, CN103379680, CN103379680, CN103369755, CN103367122, CN103367122, CN103167645, CN103167645, CN103157180, CN103157180, CN103083808, CN103055414, CN103055414, CN102907367, CN102610718, CN102610718, CN102593272, CN102593272, CN102465327, CN102215610, CN102103276, CN102092670, CN102038569, CN101917783, CN101881659, CN101868059, CN101616512,

Abstract:

The present invention relates to a sheet-shaped heat and light source. The sheet-shaped heat and light source includes a carbon nanotube layer and at least two electrodes. The at least two electrodes are separately disposed on the carbon nanotube layer and electrically connected thereto. Moreover, a method for making the sheet-shaped heat and light source and a method for heating an object adopting the same are also included.



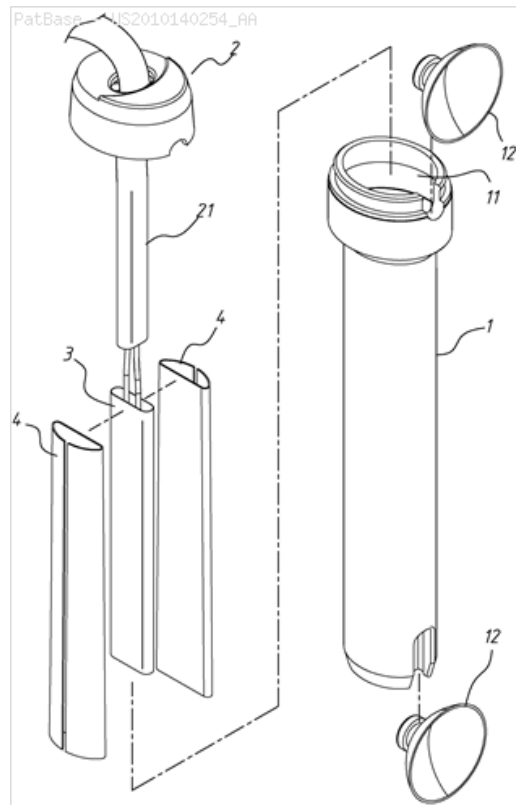
Title: AQUARIUM HEATER
Priority: US20080328019 20081204
Family:

Publication number	Publication date	Application number	Application date
US2010140254 AA	20100610	US20080328019	20081204
US8242419 BB	20120814	US20080328019	20081204

Probable Assignee: EIKO ELECTRIC PRODUCTS CORP
Assignee(s):(std): EIKO ELECTRIC PRODUCTS CORP ; WANG YU CHIN
Inventor(s):(std): WANG YU CHIN
Agent(s): GUICE PATENTS PLLC
International class F24H1/18 H05B3/02 H05B3/06 (Advanced/Invention);
(IPC 8-9): H05B3/06 (Core/Invention)
CPC: H05B3/80 A01K63/065
European class: A01K63/06A H05B3/80
US class: 219/523 392/441
[Classification Explorer](#)
Cited documents: US7293914 BB, US6097007 A, US4378488 A, US4147927 A,

Abstract:

An aquarium heater includes a tubular plastic housing that houses a positive temperature coefficient element and two metal radiation fins and filled up with a thermal conductive filler, and a top cover capped on the tubular plastic housing to hold a power cable for transmitting electricity to the positive temperature coefficient element to generate heat. By means of the functioning of the positive temperature coefficient element, no temperature control loop is necessary for controlling the temperature level and therefore the size and manufacturing cost of the aquarium heater can be greatly reduced. Further, subject to the functioning of the positive temperature coefficient element, the aquarium heater has a self-protection function, achieving excellent foolproof effect.



Title: HEATING PLATE WITH PLANAR HEATING ZONES FOR SEMICONDUCTOR PROCESSING

Priority: US20090582991 20091021 JP20120535190T 20101020 JP20150216245 20101020
WO2010US02794 20101020 US20130056604 20131017 US20130062216 20131024
US20130101782 20131210 US20160183260 20160615 JP20160163179 20160824
US20170497992 20170426

Family:	Publication number	Publication date	Application number	Application date
	CN102668058 A	20120912	CN201080051828	20101020
	CN102668058 B	20150401	CN201080051828	20101020
	JP2013508968 T2	20130307	JP20120535190T	20101020
	JP2016054303 A2	20160414	JP20150216245	20151104
	JP2017037846 A2	20170216	JP20160163179	20160824
	JP5836959 B2	20151224	JP20120535190T	20101020
	JP5996760 B2	20160921	JP20150216245	20151104
	JP6351669 B2	20180704	JP20160163179	20160824
	KR101643800 B1	20160729	KR20127012975	20101020
	KR20120103596 A	20120919	KR20127012975	20101020
	KR20160092035 A	20160803	KR20167020062	20101020
	TW201125067 A	20110716	TW20100135939	20101021
	TW201545272 A	20151201	TW20150128381	20101021
	TW201635425 A	20161001	TW20160119672	20101021
	TWI511229 B	20151201	TW20100135939	20101021
	TWI552263 B	20161001	TW20150128381	20101021
	US2011092072 AA	20110421	US20090582991	20091021
	US2014045337 AA	20140213	US20130056604	20131017
	US2014047705 AA	20140220	US20130062216	20131024
	US2014096909 AA	20140410	US20130101782	20131210
	US2016300741 AA	20161013	US20160183260	20160615
	US2017229327 AA	20170810	US20170497992	20170426
	US8637794 BB	20140128	US20090582991	20091021
	US8884194 BB	20141111	US20130101782	20131210
	US9392643 BB	20160712	US20130062216	20131024
	US9646861 BB	20170509	US20130056604	20131017
	WO11049620 A2	20110428	WO2010US02794	20101020
	WO11049620 A3	20111103	WO2010US02794	20101020

Probable Assignee: LAM RESEARCH CORP

Assignee(s):(std): BENJAMIN NEIL ; COMENDANT KEITH ; GAFF KEITH ; LAM RES CORP ; SINGH HARMEET

Assignee(s): LAM RESEARCH CORPORATION ; LAM RESEARCH CORP

Inventor(s):(std): BENJAMIN NEIL ; COMENDANT KEITH ; HARMEET SINGH ; KEITH COMENDANT ; KEITH GAFF ; NEIL BENJAMIN ; SINGH HARMEET ; GAFF KEITH

Agent(s): TOKKYO GYOMUHOJIN MEISEI INT PATENT FIRM; BUCHANAN INGERSOLL AND ROONEY PC; SKIFF PETER K

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 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 IS IT JP KE KG KM KN KP KR KZ LA LC 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 PE PG PH PL PT RO RS RU 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

International class (IPC 8-9): B05C13/00 C23C14/10 C23C14/34 C23C14/50 C23C14/54 C23C16/40 C23C16/458 C23C16/46 C23C16/509 C23C4/10 C23C4/134 F27B5/14 F27D11/02 H01C17/00 H01C17/06 H01J37/32 H01L21/306 H01L21/3065 H01L21/31 H01L21/67 H01L21/68 H01L21/683 H01L23/28 H01L23/52 H05B1/02 H05B3/00 H05B3/02 H05B3/10 H05B3/20 H05B3/26 H05B3/68 H05B3/74 (Advanced/Invention); C23C14/50 C23C16/46 C23C16/509 H01J37/32 H01L21/02 H01L21/285 H01L21/311 H01L21/3213 H01L21/683 (Advanced/Non-invention); H01L21/683 (Core/Non-invention)

CPC: H05B3/26 H01L21/3065 H05B1/0233 C23C14/541 C23C16/4586 H01L21/67109 H01L21/67248 H01L21/683 H01L21/6833 H05B3/20 Y10T29/49083 Y10T29/49099 H01J37/32724 C23C14/50 C23C16/46 C23C16/509 H01J37/32091 H01J2237/327 H01J2237/332 H01J2237/3321 H01J2237/3323 H01J2237/334 H01J2237/3342 H01J2237/3343 H01L21/02274 H01L21/0262 H01L21/28556 H01L21/31116 H01L21/31138 H01L21/32136 H01L21/67103 H01L21/6831 H05B3/00 H01J37/32082 H01J37/32449 C23C4/10 C23C4/134 C23C14/34 C23C14/10 C23C16/401

European class: C23C14/54B C23C16/458D2F H01L21/67S2H2 H01L21/67S8A T01L21/67S2H4 T01L21/683C

US class: 1/1 118/500 118/500S 156/345.52 156/345.520S 204/192.1 204/192.100S 204/298.09 204/298.090S 219/444.1 219/478 219/480 219/483 219/487 219/492 219/494 219/543 219/548 257/E21.218 257/E21.218S 29/611 29/611S 29/620 29/620S 438/710 438/710P 438/798

[Classification Explorer](#)

Cited documents: WO08112673 A2, WO08112673, WO0124581 A1, WO0111919 A1, US9307578 BB, US8884194 BB, US8809747 BB, US8680441 BB, US8637794 BB, US8546732 BB, US8315510 BB, US8222574 BB, US8057602 BB, US7968825 BB, US7952049 BB, US7940064 BB, US7893387 BB, US7782583 BB, US7718932 BB, US7504006 BB, US7501605 BB, US7480129 BB, US7475551 BB, US7417206 BB, US7415312 BB, US7396431 BB, US7372001 BB, US7311782 BB, US7297894 BA, US7279661 BB, US7275309 BB, US7274004 BB, US7268322 BB, US7250309 BB, US7230204 BB, US7206184 BB, US7175714 BB, US7173222 BB, US7161121 BA, US7143222 BB, US7141763 BB, US7082261 BB, US7075031 BB, US6989210 BB, US6985000 BB, US6979805 BB, US6956186 BA, US6921724 BB, US6888106 BB, US6886347 BB, US6847014 BA, US6825617 BB, US6815365 BB, US6795292 BB, US6746616 BA, US6741446 BB, US6740853 BA, US6739138 BB, US6664515 BB, US6612673 BA, US6566632 BA, US6551445 BA, US6523493 BA, US6512207 BA, US6483690 BA, US6475336 BA, US6469283 BA, US6403403 BA, US6403403, US6365879 BA, US6353209 BA, US6353209 B1, US6311091 BA, US6271459 BA, US6227141 BA, US6222161 BA, US6175175 BA, US6175175 B1, US6175175, US6100506 A, US6100506, US6095084 A, US6091060 A, US6060697 A, US5994675 A, US5886866 A, US5851298 A, US5802856 A, US5740016 A, US5667622 A, US5665166 A, US5635093 A, US5536918 A, US5515683 A, US5504471 A, US5414245 A, US5255520 A, US3440883 A, US2015170977 AA, US2014096909 AA, US2014045337 AA, US2013220989 AA, US2013068750 AA, US2011143462 AA, US2011092072 AA, US2011033175 AA, US2011005682 AA, US2010283565 AA, US2010257871 AA,

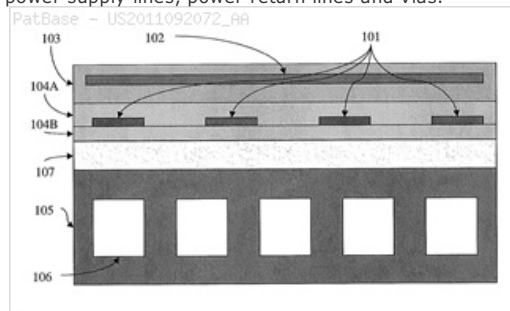
US2010163546 AA, US2010116788 AA, US2010078424 AA, US2010055881 AA, US2010044364 AA, US2009215201 AA, US2009183677 AA, US2009173445 AA, US2009031955 AA, US2009000738 AA, US2008202924 AA, US2008092818 AA, US2008049374 AA, US2008029195 AA, US2007209933 AA, US2007138161 AA, US2007125762 AA, US2007062929 AA, US2007056953 AA, US2006226123 AA, US2006191637 AA, US2006065367 AA, US2005229854 AA, US2005215073 AA, US2005095776 AA, US2005016987 AA, US2005016465 AA, US2005007136 AA, US20050007136, US2004222210 AA, US2004195229 AA, US2003160041 AA, US2003075537 AA, US2002185488 AA, US2002159216 AA, US2002043528 AA, US06100506, US05802856, TW475235 B, TW200822281 A, KR201998028601 U, KR20080058109 A, KR20060067552 A, KR20050121913 A, KR20050053464 A, KR20050040729 A, KR20050040729, KR19980028601 U, JP6326022 A2, JP6298610, JP621176 A2, JP62098610 A2, JP62001176 A2, JP601918 A2, JP6010391 A2, JP60001918 A2, JP2010157559 A2, JP2010157559, JP2010153730 A2, JP2009267256 A2, JP2007242913 A2, JP2007242913, JP2007149598 A2, JP2007149598, JP2007082374 A2, JP2007081160 A2, JP2006526289 T2, JP2006526289, JP2006526289, JP2005294237 A2, JP2005150370 A2, JP2005150370, JP2005123286 A2, JP2005026120 A2, JP2005026120, JP2004303736 A2, JP2004303736, JP2004152913 A2, JP2004101106 A2, JP2004101106, JP2003524885 T2, JP2003524885 T2, JP2003524885, JP2003224056 A2, JP2003224056, JP2002538501 T2, JP2002538501, JP2002059579 A2, JP2002059579, JP2001126743 A2, JP2001102157 A2, JP2001102157, JP2000332089 A2, JP2000332089, JP2000236015 A2, JP2000236015, JP11126743 A2, JP11126743, EP1233651 A1, CN101131955 A,

Forward Citations:

WO17100304, WO17029876, WO17023598, WO15119734, WO15070118, WO15069602, WO14163785, WO13154987, WO13130210, WO13049466, WO13042030, WO13042027, WO13039718, WO13033402, WO13033394, WO13033350, WO13033348, WO13033340, WO13033336, WO13033332, WO13025852, US9984866, US9960009, US9922855, US9872341, US9864361, US9816187, US9812342, US9805965, US9799545, US9779974, US9775194, US9728430, US9716022, US9713200, US9691652, US9681497, US9677177, US9646861, US9622375, US9595464, US9589853, US9553006, US9543183, US9543171, US9536769, US9520315, US9518946, US9472435, US9472410, US9458537, US9435692, US9420639, US9392643, US9330953, US9324589, US9307578, US9269600, US9263305, US9196513, US9177840, US9157730, US9123756, US9123755, US8937800, US8913884, US8884194, US8809747, US8791392, US8680441, US8642480, US8637794, US8624168, US8587113, US8546732, US8520360, US8461674, US2017140957, US2017094719, US2016379853, US2016345384, US2016118277, US2016118276, US2016035544, US2016020134, US2015364388, US2015228513, US2015183040, US2015168962, US2015132863, US2015129134, US2015116889, US2015016010, US2014356985, US2014291311, US2014154819, US2014047705, US2014042716, US2014014642, US2014008880, US2013279066, US2013270250, US2013228548, US2013220989, US2013161305, US2013105463, US2013105462, US2013105457, US2013098895, US2013072025, US2013068750, US2012207456, US2011143462, US10060032, US10056225, US10049948, US10049903, US10043685, US10026631, US10002779, TWI633622, TWI619163, TWI618174, TWI600050, TWI598989, TWI591756, TWI575640, TWI570832, TWI569362, TWI563592, TWI553760, TWI544569, TWI534941, TWI509732, TWI456688, KR20140070615, KR101868130, KR101867726, KR101778718, KR101776562, KR101757522, KR101750406, KR101653470, JP6290275, JP6276800, JP6276005, JP6271427, JP6199865, JP6144263, JP6133871, JP6133335, JP6129451, JP6118322, JP6077258, JP6067705, JP2018037662, JP2017201690, JP2016213447, JP2016165006, JP2016146487, JP2015520504, JP2015517225, JP2015515713, JP2015509280, JP2015509280, JP2014533431, JP2014529847, JP2014528169, JP2014528168, JP2014527310, JP2014527309, JP2014502037, JP2014112672, JP2014075525, EP3187620, CN106057708, CN105515450, CN105474382, CN104952682, CN104934279, CN104752130, CN104716064, CN104205307, CN104067691, CN104025702, CN103999545, CN103959897, CN103947287, CN103947287, CN103946423, CN103931270, CN103931270, CN103918347, CN103907395, CN103907395, CN103854947, CN103854947, CN103828031, CN103681185, CN103633003, CN103578900, CN103503128, CN103503128, CN103491659, AU2015203215, AU2015203215, AU2015203200, AU2015203198, AU2015203195, AU2012301903,

Abstract:

A heating plate for a substrate support assembly in a semiconductor plasma processing apparatus, comprises multiple independently controllable planar heater zones arranged in a scalable multiplexing layout, and electronics to independently control and power the planar heater zones. A substrate support assembly in which the heating plate is incorporated includes an electrostatic clamping electrode and a temperature controlled base plate. Methods for manufacturing the heating plate include bonding together ceramic or polymer sheets having planar heater zones, power supply lines, power return lines and vias.



Title: THERMAL ARRAY SYSTEM

Priority:

US20110528939P	20110830	US20120635310P	20120419	AU20120301869	20120830
AU20120301890	20120830	AU20120301936	20120830	AU20120301944	20120830
AU20120301952	20120830	AU20120301940	20120830	EP20120772154	20120830
JP20140528589T	20120830	JP20140528587T	20120830	JP20140528585T	20120830
JP20140528599T	20120830	CN201280052551	20120830	CA20122847596	20120830
EP20120769785	20120830	EP20120772150	20120830	US20120598977	20120830
US20120598995	20120830	US20120598956	20120830	US20120598985	20120830
US20120598941	20120830	US20120599648	20120830	US20120599692	20120830
US20120599781	20120830	WO2012US53054	20120830	WO2012US53058	20120830
WO2012US53117	20120830	WO2012US53137	20120830	WO2012US53148	20120830
WO2012US53049	20120830	WO2012US53067	20120830	WO2012US53069	20120830
US20140530670	20141031	AU20150203200	20150615	AU20150203212	20150615
AU20150203215	20150615	AU20150203195	20150615	AU20150203198	20150615
AU20150203558	20150626	WO2015US57905	20151028	US20160990118	20160107
US20160990109	20160107	US20160377110	20161213	US20160377088	20161213
JP20170082475	20170419	JP20170082474	20170419	JP20170082476	20170419
JP20170083515	20170420	JP20170091551	20170502	AU20170204547	20170703
AU20170204549	20170703	US20170819325	20171121	CA20182847596	20180118
US20180910687	20180302				

Family:

Publication number	Publication date	Application number	Application date
AU2012301816 AA	20130307	AU20120301816	20120830
AU2012301816 BB	20150709	AU20120301816	20120830
AU2012301869 AA	20130307	AU20120301869	20120830
AU2012301890 AA	20130307	AU20120301890	20120830
AU2012301903 AA	20130307	AU20120301903	20120830
AU2012301903 BB	20150709	AU20120301903	20120830
AU2012301936 AA	20130307	AU20120301936	20120830
AU2012301940 AA	20130307	AU20120301940	20120830
AU2012301944 AA	20130307	AU20120301944	20120830
AU2012301952 AA	20130307	AU20120301952	20120830
AU2015203195 AA	20150709	AU20150203195	20150615
AU2015203195 BB	20170413	AU20150203195	20150615
AU2015203198 AA	20150709	AU20150203198	20150615
AU2015203198 BB	20170309	AU20150203198	20150615
AU2015203200 AA	20150709	AU20150203200	20150615
AU2015203200 BB	20160602	AU20150203200	20150615
AU2015203212 AA	20150709	AU20150203212	20150615
AU2015203212 BB	20170406	AU20150203212	20150615
AU2015203212 CA	20170706	AU20150203212	20150615
AU2015203215 AA	20150709	AU20150203215	20150615
AU2015203215 BB	20160602	AU20150203215	20150615
AU2015203215 CA	20160915	AU20150203215	20150615
AU2015203558 AA	20150723	AU20150203558	20150626
AU2015203558 BB	20170413	AU20150203558	20150626
AU2017204547 AA	20170720	AU20170204547	20170703
AU2017204549 AA	20170720	AU20170204549	20170703
BR112014004901 A2	20170530	BR20141104901	20120830
BR112014004903 A2	20170530	BR20141104903	20120830
BR112014004906 A2	20170530	BR20141104906	20120830
BR112014004907 A2	20170328	BR20141104907	20120830
BR112014004909 A2	20170328	BR20141104909	20120830
BR112014004911 A2	20170530	BR20141104911	20120830
BR112014004912 A2	20170530	BR20141104912	20120830
BR112014004913 A2	20170530	BR20141104913	20120830
CA2847279 AA	20140228	CA20122847279	20120830
CA2847279 C	20170314	CA20122847279	20120830
CA2847284 AA	20140228	CA20122847284	20120830
CA2847284 C	20180731	CA20122847284	20120830
CA2847342 AA	20140228	CA20122847342	20120830
CA2847342 C	20161004	CA20122847342	20120830
CA2847429 AA	20140228	CA20122847429	20120830
CA2847429 C	20180731	CA20122847429	20120830
CA2847435 AA	20140228	CA20122847435	20120830
CA2847435 C	20170221	CA20122847435	20120830
CA2847437 AA	20140228	CA20122847437	20120830
CA2847437 C	20170314	CA20122847437	20120830
CA2847444 AA	20140228	CA20122847444	20120830
CA2847444 C	20161004	CA20122847444	20120830
CA2847596 AA	20140228	CA20122847596	20120830
CA2847596 C	20180213	CA20122847596	20120830
CA2991157 AA	20130307	CA20122991157	20120830
CN103907395 A	20140702	CN201280052730	20120830
CN103907395 B	20161221	CN201280052730	20120830
CN103918347 A	20140709	CN201280052543	20120830
CN103918347 B	20160504	CN201280052543	20120830
CN103931270 A	20140716	CN201280052548	20120830
CN103931270 B	20160511	CN201280052548	20120830
CN103947287 A	20140723	CN201280052498	20120830
CN103947287 B	20160217	CN201280052498	20120830

CN103959897 A	20140730	CN201280052551	20120830
CN103959897 B	20170912	CN201280052551	20120830
CN103999545 A	20140820	CN201280052769	20120830
CN103999545 B	20180206	CN201280052769	20120830
CN104025702 A	20140903	CN201280052496	20120830
CN104025702 B	20180302	CN201280052496	20120830
CN104067691 A	20140924	CN201280052655	20120830
CN104067691 B	20170419	CN201280052655	20120830
CN107078082 A	20170818	CN201580058429	20151028
CN107507791 A	20171222	CN201710705400	20120830
DE602012016344 D1	20160512	DE201260016344T	20120830
DE602012039852 D1	20171221	DE201260039852T	20120830
DE602012039853 D1	20171228	DE201260039853T	20120830
EP2752078 A2	20140709	EP20120769785	20120830
EP2752078 B1	20171115	EP20120769785	20120830
EP2752079 A1	20140709	EP20120772150	20120830
EP2752079 B1	20171115	EP20120772150	20120830
EP2752080 A1	20140709	EP20120772555	20120830
EP2752081 A1	20140709	EP20120772556	20120830
EP2752082 A1	20140709	EP20120773421	20120830
EP2752083 A1	20140709	EP20120773422	20120830
EP2752085 A1	20140709	EP20120772154	20120830
EP2752085 B1	20160330	EP20120772154	20120830
EP2769597 A2	20140827	EP20120769784	20120830
EP3213598 A1	20170906	EP20150795267	20151028
IL231254 A0	20140430	IL20120231254	20120830
IL231254 A1	20170529	IL20120231254	20120830
IL231255 A0	20140430	IL20120231255	20120830
IL231255 A1	20170928	IL20120231255	20120830
IL231256 A0	20140430	IL20120231256	20120830
IL231256 A1	20170629	IL20120231256	20120830
IL231257 A0	20140430	IL20120231257	20120830
IL231258 A0	20140430	IL20120231258	20120830
IL231258 A1	20170831	IL20120231258	20120830
IL231259 A0	20140430	IL20120231259	20120830
IL231260 A0	20140430	IL20120231260	20120830
IL231260 A1	20170529	IL20120231260	20120830
IL231261 A0	20140430	IL20120231261	20120830
IL231261 A1	20170629	IL20120231261	20120830
JP2014525662 T2	20140929	JP20140528585T	20120830
JP2014525663 T2	20140929	JP20140528587T	20120830
JP2014525664 T2	20140929	JP20140528589T	20120830
JP2014527309 T2	20141009	JP20140528599T	20120830
JP2014527310 T2	20141009	JP20140528603T	20120830
JP2014529826 T2	20141113	JP20140528579T	20120830
JP2014529910 T2	20141113	JP20140528598T	20120830
JP2014533431 T2	20141211	JP20140528582T	20120830
JP2017162825 A2	20170914	JP20170082474	20170419
JP2017162826 A2	20170914	JP20170082476	20170419
JP2017162827 A2	20170914	JP20170083515	20170420
JP2017174820 A2	20170928	JP20170082475	20170419
JP2017201690 A2	20171109	JP20170091551	20170502
JP2018502443 T2	20180125	JP20170522916T	20151028
JP5945327 B2	20160705	JP20140528579T	20120830
JP6118322 B2	20170419	JP20140528582T	20120830
JP6133868 B2	20170524	JP20140528585T	20120830
JP6133869 B2	20170524	JP20140528587T	20120830
JP6133870 B2	20170524	JP20140528589T	20120830
JP6133871 B2	20170524	JP20140528603T	20120830
JP6184958 B2	20170823	JP20140528598T	20120830
JP6199865 B2	20170920	JP20140528599T	20120830
KR101731566 B1	20170428	KR20147008066	20120830
KR101750406 B1	20170623	KR20147008413	20120830
KR101778718 B1	20170914	KR20147008411	20120830
KR101785503 B1	20171016	KR20147008065	20120830
KR101813635 B1	20171229	KR20147008383	20120830
KR101831439 B1	20180222	KR20147008410	20120830
KR101868130 B1	20180618	KR20177025252	20120830
KR20140054370 A	20140508	KR20147008065	20120830
KR20140060328 A	20140519	KR20147008410	20120830
KR20140076556 A	20140620	KR20147008066	20120830
KR20140077894 A	20140624	KR20147008383	20120830
KR20140077895 A	20140624	KR20147008411	20120830
KR20140084010 A	20140704	KR20147008412	20120830
KR20140086959 A	20140708	KR20147008413	20120830
KR20140098053 A	20140807	KR20147008067	20120830
KR20170078645 A	20170707	KR20177011493	20151028
KR20170105639 A	20170919	KR20177025252	20120830
KR20170118954 A	20171025	KR20177027998	20120830
MX2014002424 A1	20150112	MX20140002424	20120830
MX2014002425 A1	20150112	MX20140002425	20120830

MX2014002429 A1	20150313	MX20140002429	20120830
MX2014002429 A1	20150313	MX20140002429	20120830
MX2014002431 A1	20150112	MX20140002431	20120830
MX2014002432 A1	20150112	MX20140002432	20120830
MX2014002435 A1	20141114	MX20140002435	20120830
MX337204 B	20160216	MX20140002425	20120830
MX337205 B	20160216	MX20140002432	20120830
MX338005 B	20160330	MX20140002426	20120830
MX338214 B	20160406	MX20140002424	20120830
MX338215 B	20160406	MX20140002431	20120830
MX340786 B	20160726	MX20140002427	20120830
MX344029 B	20161202	MX20140002429	20120830
TW201624588 A	20160701	TW20150135812	20151030
US2013098895 AA	20130425	US20120598977	20120830
US2013105457 AA	20130502	US20120598995	20120830
US2013105462 AA	20130502	US20120598956	20120830
US2013105463 AA	20130502	US20120598985	20120830
US2013105465 AA	20130502	US20120598941	20120830
US2013161305 AA	20130627	US20120599648	20120830
US2013220575 AA	20130829	US20120599692	20120830
US2013228548 AA	20130905	US20120599781	20120830
US2015055940 AA	20150226	US20140530670	20141031
US2016118276 AA	20160428	US20160990109	20160107
US2016118277 AA	20160428	US20160990118	20160107
US2017092514 AA	20170330	US20160377110	20161213
US2017236732 AA	20170817	US20160377088	20161213
US2018088066 AA	20180329	US20170819325	20171121
US2018197757 AA	20180712	US20180910687	20180302
US9123755 BB	20150901	US20120598941	20120830
US9123756 BB	20150901	US20120598956	20120830
US9177840 BB	20151103	US20120598977	20120830
US9196513 BB	20151124	US20120598985	20120830
US9263305 BB	20160216	US20120599648	20120830
US9553006 BB	20170124	US20120599692	20120830
US10002779 BB	20180619	US20120598995	20120830
US10043685 BB	20180807	US20160990109	20160107
US10049903 BB	20180814	US20120599781	20120830
WO13033332 A1	20130307	WO2012US53049	20120830
WO13033332 A9	20131024	WO2012US53049	20120830
WO13033336 A1	20130307	WO2012US53054	20120830
WO13033340 A1	20130307	WO2012US53058	20120830
WO13033340 A8	20131024	WO2012US53058	20120830
WO13033348 A1	20130307	WO2012US53067	20120830
WO13033350 A1	20130307	WO2012US53069	20120830
WO13033381 A2	20130307	WO2012US53117	20120830
WO13033381 A3	20130711	WO2012US53117	20120830
WO13033381 A8	20140626	WO2012US53117	20120830
WO13033394 A2	20130307	WO2012US53137	20120830
WO13033394 A3	20130606	WO2012US53137	20120830
WO13033402 A1	20130307	WO2012US53148	20120830
WO13033402 A8	20140530	WO2012US53148	20120830
WO16069808 A1	20160506	WO2015US57905	20151028

Probable Assignee: WATLOW ELECTRIC MFG CO

Assignee(s):(std): LEMKE JOHN F ; NOSRATI MOHAMMAD ; LINDLEY JACOB ROBERT ; GRIMARD DENNIS STANLEY ; LINDLEY JACOB ; MOHAMMAD NOSRATI ; KEVIN ROBERT SMITH ; WATLOW ELECTRIC MFG CO ; SCHMIDT PHILLIP S ; SWANSON CAL T ; SCHMIDT PHILIP STEVEN ; PTASIENSKI KEVIN ; SMITH KEVIN ROBERT ; SWANSON CAL THOMAS ; SMITH JANET LEA ; STEINHAUSER LOUIS P ; WATLOW ELECTRIC MFG ; BOLDT ALLEN NORMAN ; DERLER RAY ALAN ; WALTOW ELECTRIC MFG CO ; SCHMIDT PHILIP S ; WALTON ELECTRIC MFG CO ; ZHANG SANHONG

Assignee(s): WATLOW ELECTRIC MFG CO12001 LACKLAND ROADST. LOUISMO63146US ; WATLOW ELECTRIC MFG CO ST LOUIS ; WATLOW ELECTRIC MANUFACTURING CO ; STEINHAUSER LOUIS ; GRIMARD DENNIS ; BOLDT ALLEN ; WATLOW ELECTRIC MANUFACTURING COMPANY ; GRIMMARD DENNIS

Inventor(s):(std): BOLDT ALLEN NORMAN ; DERLER RAY ALAN ; GRIMARD DENNIS STANLEY ; LEMKE JOHN F ; LINDLEY JACOB ; LINDLEY JACOB ROBERT ; PHILLIP S SCHMIDT ; PHILLIP SCHMIDT ; PTASIENSKI KEVIN ; NOSRATI MOHAMMAD ; SCHMIDT PHILIP STEVEN ; SCHMIDT PHILLIP S ; SMITH JANET LEA ; SMITH KEVIN ROBERT ; STEINHAUSER LOUIS P ; SWANSON CAL T ; SWANSON CAL THOMAS ; STEINHAUSER LOUIS ; SANHONG ZHANG ; RAY ALAN DERLER ; PTASLENSKI KEVIN ; PHILLIPS SCHMIDT ; PHILIP STEVEN SCHMIDT ; PHILIP S SCHMIDT ; MOHAMMAD NOSRATI ; LOUIS P STEINHAUSER ; KEVIN ROBERT SMITH ; KEVIN PTASIENSKI ; JOHN F LEMKE ; JANET LEA SMITH ; JACOB ROBERT LINDLEY ; GRIMMARD DENNIS ; DENNIS STANLEY GRIMARD ; CAL THOMAS SWANSON ; CAL T SWANSON ; BOLDT ALLEN ; ALLEN NORMAN BOLDT ; SMITH KEVIN R ; SCHMIDT PHILIP S ; LINDLEY JACOB R ; GRIMARD DENNIS S ; ZHANG SANHONG ; DENIS STANLEY GRIMARD ; BOLDT ALLEN N

Inventor(s): ZHANG SANHONG BALLWIN ; ZHANG SANHONGUS ; GRIMARD DENNIS ; JACOB LINDLEY ; SWANSON CAL THOMAS ST LOUIS ; SWANSON CAL THOMASUS ; SWANSON CAL T ST LOUIS ; STEINHAUSER LOUIS P ST LOUIS ; STEINHAUSER LOUISUS ; SMITH KEVIN ROBERT COLUMBIA ; SMITH KEVIN ROBERTUS ; SMITH JANET LEA COLUMBIA ; SCHMIDT PHILLIP S WINONA ; SCHMIDT PHILIP STEVEN WINONA ; SCHMIDT PHILIP STEVENUS ; NOSRATI MOHAMMAD FENTON ; NOSRATI MOHAMMADUS ; PTASIENSKI KEVIN O FALLON ; PTASIENSKI KEVINUS ; LINDLEY JACOB ROBERT ST LOUIS ; LINDLEY JACOBUS ; LEMKE JOHN F HOUSTON ; GRIMARD DENNIS STANLEY ANN ARBOR ; GRIMMARD DENNISUS ; DERLER RAY ALAN BALLWIN ; BOLDT ALLEN NORMAN KIRKWOOD ; BOLDT ALLENUS

Agent(s): FB RICE ; FB RICE PTY LTD ; SIM AND MCBURNEY ; MARKS AND CLERK ; PRINZ AND PARTNER MBB PATENTANWAELE RECHTSANWAELE ; HOFER AND PARTNER PATENTANWAELE MBB ; DELORME NICOLAS ; REINHOLD COHN AND PARTNERS ; S AND S INT PPC ; BRINKS GILSON AND LIONE ; BURRIS LAW PLLC ; FERGAN ROBERT K ; BURRIS KELLY K

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 MZ NA NE NG 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

**International class
(IPC 8-9):**

B44C1/22 C03C15/00 C03C25/68 C23C16/46 F27B5/14 G01N25/00 G01N25/20 G01N27/18 G01N33/50
G01N33/564 G01N33/80 G01S3/80 G05B19/404 G05D23/00 G05D23/24 G10L19/00 H01B13/00
H01L21/02 H01L21/205 H01L21/3065 H01L21/31 H01L21/67 H01L21/683 H04N5/33 H04R1/40 H05B
H05B1/00 H05B1/02 H05B3/00 H05B3/02 H05B3/06 H05B3/12 H05B3/20 H05B3/22 H05B3/26 H05B3/28
H05B3/68 (Advanced/Invention);
G01S5/20 (Advanced/Non-invention);
H01L H05B (Subclass/Invention)

CPC:

H01L21/67103 H05B3/22 H01L21/6831 H01L21/67109 H01L21/67248 H05B1/0227 H05B2213/03
Y10T156/10 H05B1/00 H05B1/0202 H05B1/0233 H05B3/02 H05B3/20 H04N5/33 H05B3/06
H05B2203/005 H05B2203/013 H05B1/02 H01L21/6835 G01N27/18 G01N25/20 H01L21/67098
H01L21/6833

US class:

1/1 156/60 165/61 165/63 216/20 219/201 219/209 219/385 219/444.1 219/446.1 219/482 219/490
219/502 219/508 219/520 219/539 219/540 392/307 62/3.1

[Classification Explorer](#)

Cited documents:

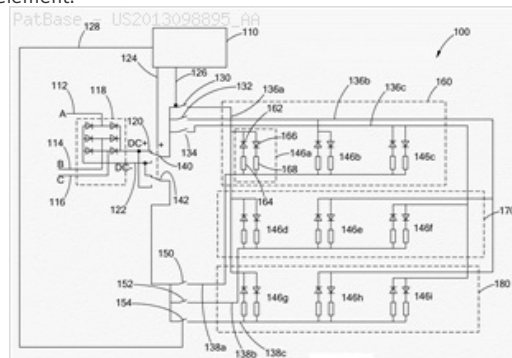
WO13130918 A1, WO10061740 A1, WO10061740, WO07136264 A1, WO03069324 A1, US9123755 BB,
US8963052 BB, US8906161 BB, US8809747 BB, US8791392 BB, US8785821 BB, US8680440 BB,
US8637794 BB, US8536492 BB, US8505928 BB, US8193473 BB, US7480129 BB, US7415835 BB,
US7218503 BB, US7196295 BB, US7189946 BB, US7178353 BB, US7126092 BB, US7053560 BA,
US6907742 BB, US6870138 BB, US6786175 BB, US6512207 BA, US6508062 BB, US6444957 BA,
US6414834 BA, US6392205 BA, US6361645 BA, US6342997 BA, US6307728 BA, US6122439 A,
US6100506 A, US6073577 A, US6023052 A, US6016383 A, US5986242 A, US5880924 A, US5857325 A,
US5808777 A, US5802856 A, US5796074 A, US5684669 A, US5493101 A, US5459632 A, US5331134 A,
US5325261 A, US5280434 A, US5280422 A, US5117121 A, US5105067 A, US5105065 A, US5103367 A,
US5023430 A, US5001594 A, US4807084 A, US47553406, US4748445 A, US4713525 A, US4700051 A,
US4559576 A, US4493979 A, US4346651 A, US4339649 A, US4320285 A, US4316078 A, US4243874 A,
US3953711 A, US3774151 A, US3752956 A, US3752956, US3745308 A, US3659155 A, US3584291 A,
US3566151 A, US2237808 A, US2108964 A, US2015016083 AA, US2014202618 AA, US2014183946 AA,
US2014047705 AA, US2013319762 AA, US2013220989 AA, US2013220575 AA, US2013161305 AA,
US2012247641 AA, US201213598995, US201213598985, US2012115254 AA, US2011232845 AA,
US2011143462 AA, US2011092072 AA, US2011092072, US2011000426 AA, US2010321089 AA,
US2010182386 AA, US2010170884 AA, US2010163546 AA, US2010076611 AA, US2009235866 AA,
US2009218316 AA, US2009159566 AA, US2009059461 AA, US2008541 A, US2008254392 AA,
US2008142501 AA, US2008102412 AA, US2008083736 AA, US2008066676 AA, US2008011737 AA,
US2008011737, US2007055318 AA, US2007000918 AA, US2006289449 AA, US2006289447 AA,
US2006274812 AA, US2006215342 AA, US2006158795 AA, US2006144516 AA, US2006076109 AA,
US2005271149 AA, US2005231859 AA, US2005145617 AA, US2005109767 AA, US2005016986 AA,
US2004232136 AA, US2004232136, US2004223284 AA, US2004195229 AA, US2004104211 AA,
US2004026406 AA, US2003230717 AA, US2003186183 AA, US2003102931 AA, US2003094447 AA,
US2003066826 AA, US2002095782 AA, US2002076851 AA, US2002075624 AA, US2002047826 AA,
US2002036881 AA, US1631484 A, TW201125067 A, JP9326555 A2, JP9270454 A2, JP9270454,
JP7199722 A2, JP7176363 A2, JP7176363, JP61294479 A2, JP61294479, JP6093440 B2, JP58145084 A2,
JP58145084, JP4505169 B2, JP4040814 B2, JP3713220 B2, JP2014139989 A2, JP201065662,
JP2010528488 T2, JP20101053730 A2, JP20101053730, JP2010129766 A2, JP2010129766, JP2010065662
A2, JP2010040644 A2, JP2010040644, JP2009256789 A2, JP2009087928 A2, JP2009087928,
JP2009054932 A2, JP2009054932, JP2008527694 T2, JP2008527694, JP2008527694, JP2008294146 A2,
JP2008153194 A2, JP2008118052 A2, JP2008118052, JP2008085283 A2, JP2007329008 A2,
JP2007329008, JP2007059694 A2, JP2007059694, JP2005347612 A2, JP2004526297 T2, JP2003258065
A2, JP2003258065, JP2003123943 A2, JP2003123943, JP2002538501 T2, JP2002373862 A2,
JP2002373862, JP2001505690 T2, JP2001505690, JP2001126851 A2, JP2001059694, JP2000235886 A2,
JP2000235886, JP11111823, JP11111823, JP10255958, JP10255958, JP10116887, JP10116887,
JP10010072, EP2203028 A1, EP2203028, EP1303168 A1, EP1303168, DE19907497 A1, CN2634776 Y,
CN1918945 A, CN1656193 A, CN101778498 A, CN101662888 A, CN101572850 A, CN101473175 A,
CN101269790 A, CN101267886 A, CN101133367 A, CN101095212 A, CN101077035 A, CN101001975 A,
CN100556217 C,

Forward Citations:

WO18076002, WO18031716, WO18009768, WO17151965, WO17151772, WO17127611, WO17100304,
WO16007462, WO15174287, US9967919, US9812342, US9805965, US9716022, US9681497,
US9623679, US9622375, US9543171, US9536769, US9520315, US9472435, US9472410, US9345068,
US9263305, US8937800, US2017167790, US2017140957, US2017098564, US2017011882,
US2016225645, US2016118277, US2016118276, US2016027678, US2016011060, US2015364388,
US2015132863, US2015016083, US2014154819, US2013279066, US2013161305, US2012154974,
US10049948, US10043685, US10026631, TWI618186, KR101758087, JP6290275, JP6219227,
JP2017530542, JP2016146487, JP2016100473, JP2015216254, ES2673131, ES2673130, CN104466840,

Abstract:

A thermal array system is provided. The thermal array system having each thermal element connected between a first power node and a second power node of the plurality of power nodes and each thermal element being connected in electrical series with an addressable switch configured to activate and deactivate the thermal element.



Title: SAUNA HEATING PANEL POWER DISTRIBUTION SYSTEMS AND METHODS

Priority: US20110628455P 20111031 US20120689210P 20120531 US20120689184P 20120531
CA20122794059 20121031 US20120665040 20121031 EP20120190904 20121031
US20130837087 20130315 CA20132813340 20130418 EP20130169699 20130529
US20140999790P 20140805 US20150230122P 20150527 US20150818804 20150805
US20170728145 20171009

Family:	Publication number	Publication date	Application number	Application date
	CA2794059 AA	20130430	CA20122794059	20121031
	CA2794059 C	20140715	CA20122794059	20121031
	CA2813340 AA	20130709	CA20132813340	20130418
	CA2813340 C	20140715	CA20132813340	20130418
	CA2899422 AA	20160205	CA20152899422	20150805
	DE602013009512 D1	20160901	DE201360009512T	20130529
	EP2587169 A2	20130501	EP20120190904	20121031
	EP2587169 A3	20151125	EP20120190904	20121031
	EP2668938 A1	20131204	EP20130169699	20130529
	EP2668938 B1	20160720	EP20130169699	20130529
	US2013105458 AA	20130502	US20120665040	20121031
	US2013319998 AA	20131205	US20130837087	20130315
	US2015382405 AA	20151231	US20150818804	20150805
	US2018146513 AA	20180524	US20170728145	20171009
	US9788367 BB	20171010	US20120665040	20121031

Probable Assignee: TYLOHELO INC

Assignee(s):(std): BENDA CHAD M ; BENDA CHAD MATTHEW ; BENDA STEVEN J ; BENDA STEVEN JOHN ; KAO HUI CHAO ; FELDER TRACY RAY ; KAO RAGIS H C ; TYLOHELO INC

Assignee(s): KAO RAGIS H C7F OF NO. 52, 8 LANESECTION 3, PA DE ROADSONG SHAN DISTRICTR.O.C.TAIPEITW ; FELDER TRACY RAY639 PHEASANT RUNWINSTEDMNS55395US ; TYLOHELO INC F K A SAUNATEC INC ; TYLOHELO INC F K A SAUNATEC INC575 E. COKATO STREETCOKATOMNS5321US ; TYLOHELO INC COKATO ; BENDA STEVEN J13657 TENTH STREET SWCOKATOMNS5321US ; KAO RAGIS HC

Inventor(s):(std): BENDA CHAD M ; BENDA CHAD MATTHEW ; BENDA STEVEN JOHN ; KAO HUI CHAO ; KAO RAGIS H C ; FELDER TRACY RAY ; BENDA STEVEN J

Inventor(s): FELDER TRACY RAY WINSTED ; FELDER TRACY RAY639 PHEASANT RUNWINSTEDMNS55395US ; KAO RAGIS H C7F OF NO. 52, 8 LANESECTION 3, PA DE ROADSONG SHAN DISTRICTR.O.C.TAIPEITW ; KAO RAGIS HC ; BENDA STEVEN JOHN COKATO ; BENDA STEVEN J13657 TENTH STREET SWCOKATOMNS5321US

Agent(s): BORDEN LADNER GERVAIS LLP; INTEGRAL IP; PERSSON ALBIN; PAULY DEVRIES SMITH AND DEFFNER LLC

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

International class (IPC 8-9): A61H33/06 A61N5/06 F24D13/02 H05B3/06 H05B3/12 H05B3/14 H05B3/16 H05B3/20 H05B3/26 H05B6/00 H05K9/00 (Advanced/Invention); A61N5/06 (Advanced/Non-invention)

CPC: H05B3/06 H05B3/16 F24D13/02 H05B3/20 H05B2203/032 Y10T29/49083 F24C7/04 H05B6/00 A61H33/063 A61H33/066 A61H2033/061 A61H2201/10 A61N2005/0659 F24D13/024 Y02B30/26

US class: 219/213 219/477 219/553 29/611

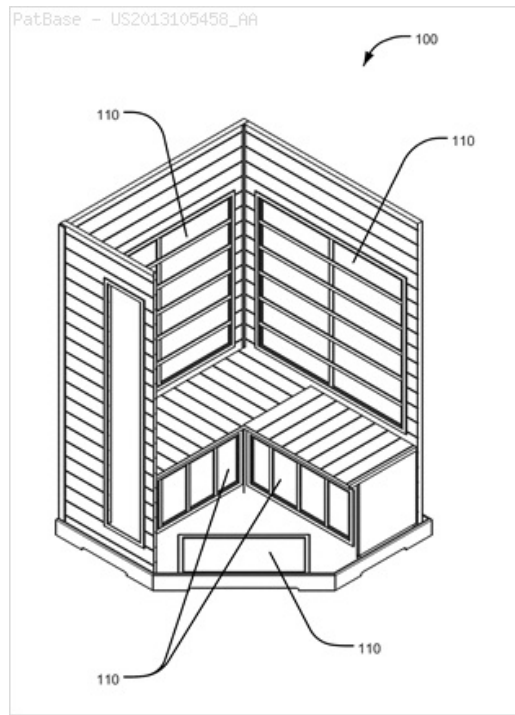
[Classification Explorer](#)

Cited documents: WO11097086 A2, WO10107376 A1, WO09065265 A1, WO08105612 A1, WO06009358 A1, US9788367 BB, US96622110, US8692168 BB, US6944393 BA, US6734404 BB, US5811767 A, US5399996 A, US5218185 A, US5155800 A, US4485297 A, US4468557 A, US2011315672 AA, US2011081135 AA, US2007182498 AA, US2005247700 AA, US2005139370 AA, US2003178415 AA, US2003156831 AA, EP2587169 A2, EP1564341 A2, CA2794059 AA,

Forward Citations: US9788367, US9393176, US2017189266, US2015382405, CN105890021,

Abstract:

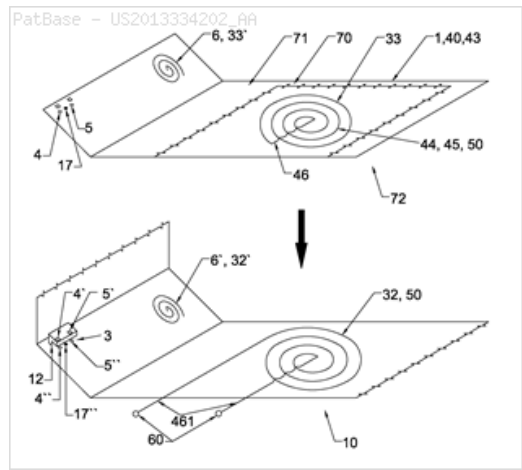
Power feed connections and sauna heating panels include a power feed having a first insulated conductor electrically coupled to a first terminal and a second insulated conductor electrically coupled to a second terminal. The first and second terminals are electrically coupled with at least one heating element. In some cases the power feed includes a supply portion, a connection portion, and an extension portion. The extension portion has one or more conductors in a twisted configuration extending away from the first and second terminals. In some cases the power feed includes an extension conductor portion coupled to a return conductor portion in a twisted configuration. The extension portion extends away from a second terminal past a second connection point and the return portion returns back to and connects to the second connection point at the second terminal. Methods for providing power connections to heating panels are also provided.



Title:	TEXTILE OR NON-TEXTILE SHEET AND/OR FABRIC WITH ELECTRICAL FUNCTION																																																											
Priority:	DE201210011945 20120618 JP20130127562 20130618		DE201310006410 20130415 JP20160040872 20160303		DE201320003491U 20130415																																																							
Family:	<table><thead><tr><th></th><th>Publication number</th><th>Publication date</th><th>Application number</th><th>Application date</th></tr></thead><tbody><tr><td></td><td>CN103517471 A</td><td>20140115</td><td>CN201310384166</td><td>20130618</td></tr><tr><td></td><td>CN103517471 B</td><td>20160316</td><td>CN201310384166</td><td>20130618</td></tr><tr><td></td><td>DE102013006410 A1</td><td>20131219</td><td>DE201310006410</td><td>20130415</td></tr><tr><td></td><td>DE202013003491 U1</td><td>20131114</td><td>DE201320003491U</td><td>20130415</td></tr><tr><td></td><td>JP2014001921 A2</td><td>20140109</td><td>JP20130127562</td><td>20130618</td></tr><tr><td></td><td>JP2016164878 A2</td><td>20160908</td><td>JP20160040872</td><td>20160303</td></tr><tr><td></td><td>KR101526547 B1</td><td>20150605</td><td>KR20130064636</td><td>20130605</td></tr><tr><td></td><td>KR20130142071 A</td><td>20131227</td><td>KR20130064636</td><td>20130605</td></tr><tr><td></td><td>US2013334202 AA</td><td>20131219</td><td>US20130919059</td><td>20130617</td></tr><tr><td></td><td>US9717115 BB</td><td>20170725</td><td>US20130919059</td><td>20130617</td></tr></tbody></table>						Publication number	Publication date	Application number	Application date		CN103517471 A	20140115	CN201310384166	20130618		CN103517471 B	20160316	CN201310384166	20130618		DE102013006410 A1	20131219	DE201310006410	20130415		DE202013003491 U1	20131114	DE201320003491U	20130415		JP2014001921 A2	20140109	JP20130127562	20130618		JP2016164878 A2	20160908	JP20160040872	20160303		KR101526547 B1	20150605	KR20130064636	20130605		KR20130142071 A	20131227	KR20130064636	20130605		US2013334202 AA	20131219	US20130919059	20130617		US9717115 BB	20170725	US20130919059	20130617
	Publication number	Publication date	Application number	Application date																																																								
	CN103517471 A	20140115	CN201310384166	20130618																																																								
	CN103517471 B	20160316	CN201310384166	20130618																																																								
	DE102013006410 A1	20131219	DE201310006410	20130415																																																								
	DE202013003491 U1	20131114	DE201320003491U	20130415																																																								
	JP2014001921 A2	20140109	JP20130127562	20130618																																																								
	JP2016164878 A2	20160908	JP20160040872	20160303																																																								
	KR101526547 B1	20150605	KR20130064636	20130605																																																								
	KR20130142071 A	20131227	KR20130064636	20130605																																																								
	US2013334202 AA	20131219	US20130919059	20130617																																																								
	US9717115 BB	20170725	US20130919059	20130617																																																								
Probable Assignee:	GENTHERM GMBH																																																											
Assignee(s):(std):	GENTHERM GMBH ; JENTHERM GMBH ; WET AUTOMOTIVE SYSTEMS AG ; WET AUTOMOTIVE SYST AG																																																											
Assignee(s):	W E T AUTOMOTIVE SYSTEMS AG ; WETAUTOMOTIVE SYSTEMS AG																																																											
Inventor(s):(std):	CHEN SHERRY ; CHEN SHERRY LI ; HANS GEORG RAUH ; HANS GEORG ROUH ; HUBER STEFAN ; LI WILLIAM WEI ; RAUH HAN GEORG ; RAUH HANS GEORG ; SHERRY LI CHEN ; STEFAN HUBER ; WILLIAM WEI LI																																																											
Agent(s):	EIKOH PATENT FIRM PC ; DOBRUSIN LAW FIRM PC																																																											
International class (IPC 8-9):	A61F7/00 A61F7/08 B60H1/00 B60H1/22 B60N2/00 B60N2/56 B60N3/04 F24D13/02 H02J50/10 H05B1/02 H05B3/00 H05B3/02 H05B3/03 H05B3/20 H05B3/34 (Advanced/Invention)																																																											
CPC:	H05B3/03 A61F7/007 A61F7/0097 A61F2007/0071 A61F2007/0077 A61F2007/0086 B60N2/002 B60N2/5685 B60N3/044 B60N3/046 H05B3/20																																																											
US class:	219/500 219/541																																																											
Classification Explorer																																																												
Cited documents:	WO9409684 A1, WO10065411 A1, WO03101777 A1, WO0206914 A1, USRE38128 E, US8702164 BB, US8456272 BB, US8008606 BB, US7816632 BB, US7741582 BB, US7637569 BB, US7618089 BB, US7587901 BB, US7560670 BB, US7510239 BB, US7506938 BB, US7500536 BB, US7478869 BB, US7475938 BB, US7370911 BB, US7356912 BB, US7338117 BB, US7306283 BB, US7301441 BB, US7285748 BB, US7223948 BB, US7213876 BB, US7205510 BB, US7202444 BB, US7168758 BB, US7147279 BB, US7131689 BB, US7100978 BB, US7083227 BB, US7053344 BA, US7052091 BB, US7040710 BB, US7036283 BB, US6976734 BB, US6906293 BB, US6897417 BA, US6893086 BB, US6892807 BB, US6884965 BB, US6872882 BB, US6869140 BB, US6869139 BB, US6857697 BB, US6840576 BB, US6838647 BB, US6713733 BB, US6710303 BA, US6686562 BA, US6676207 BB, US6664518 BB, US6664512 BB, US6629724 BB, US6619736 BB, US6559422 BB, US6512203 BB, US6501055 BB, US6495809 BB, US6455823 BA, US6452138 BA, US6439658 BA, US6426485 BA, US6415501 BA, US6403935 BB, US6369369 BB, US6307188 BA, US6294758 BA, US6278090 BA, US6233776 BA, US6229123 BA, US6220659 BA, US6215111 BA, US6194692 BA, US6189487 BA, US6172344 BA, US6172344 B1, US6164719 A, US6150642 A, US6147332 A, US6143206 A, US6124577 A, US6111234 A, US6097009 A, US6093910 A, US6084217 A, US6070115 A, US6064037 A, US6057530 A, US6054690 A, US6031214 A, US5961869 A, US5948297 A, US5921314 A, US5904874 A, US5902505 A, US5897162 A, US5861610 A, US5851588 A, US5824996 A, US5824994 A, US5824993 A, US5801914 A, US5800595 A, US5800483 A, US5796044 A, US5725926 A, US5716536 A, US5702565 A, US5679277 A, US5643480 A, US5626021 A, US5543601 A, US5516189 A, US5477033 A, US5451747 A, US5432322 A, US5422462 A, US5418025 A, US5414241 A, US5405178 A, US5354966 A, US5344591 A, US5335381 A, US5206482 A, US5198639 A, US5197595 A, US5187350 A, US5181006 A, US5155334 A, US5132840 A, US5111025 A, US5081339 A, US5057674 A, US5045673 A, US5034594 A, US5025136 A, US5019797 A, US5015824 A, US4964674 A, US4931627 A, US4923248 A, US4912306 A, US4892988 A, US4888089 A, US4868898 A, US4857711 A, US4849255 A, US4845343 A, US4777351 A, US4761541 A, US4752672 A, US4743741 A, US4725717 A, US4719335 A, US4713531 A, US4665304 A, US4661689 A, US4656339 A, US4633068 A, US4628187 A, US4626664 A, US4542285 A, US4539051 A, US4533821 A, US4523085 A, US4436986 A, US4410790 A, US4399347 A, US4335725 A, US4245149 A, US4149066 A, US4044221 A, US4032752 A, US3892946 A, US3877788 A, US3721799 A, US3529310 A, US3448246 A, US3287684 A, US3034140 A, US2978972 A, US2011147357 AA, US2010326976 AA, US2010219664 AA, US2010038357 AA, US2010038356 AA, US2010035356 AA, US2009218855 AA, US2008296942 AA, US2008142494 AA, US2007176471 AA, US2006138810 AA, US2006015801 AA, US2005242081 AA, US2004160110 AA, US2004100131 AA, US2004035853 AA, US2002117495 AA, US1475912 A, JP8183191 A2, JP6333666 A2, JP62109385 A2, JP6132069 A2, JP57134655 A2, JP5038774 U, JP42019359 Y1, JP20111102657 A2, JP2009159685 A2, JP2009052858 A2, JP2008238926 A2, JP2007528579 T2, JP2007227830 A2, JP2007052945 A2, JP2006324182 A2, JP2006054131 A2, JP2004055219 A2, JP2003178859 A2, JP2002270350 A2, JP2001093656 A2, JP2000333781 A2, JP10323363, GB2010650 A1, EP0202896 A2, DE3938951 A1, DE3513909 A1, CN1930919 A,																																																											
Forward Citations:	WO15114022, US9434284, US9025942, US2017072767, US2013126147, US2013068440, DE102014201569,																																																											

Abstract:

The present invention relates to a flat-shaped article with an electrical function for placement in a functional zone. Provision is made that, even after having been placed, the flat-shaped article can again be removed without being destroyed from the functional zone.

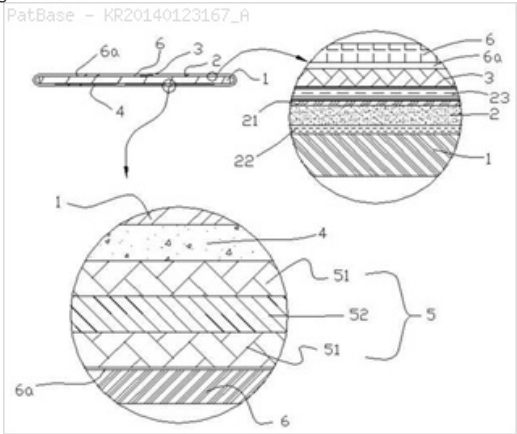


Title: SOLAR CELL MOULDE WITH HEATING FUNCTION
Priority: KR20130039750 20130411
Family:

	Publication number	Publication date	Application number	Application date
	KR101474639 B1	20141231	KR20130039750	20130411
	KR20140123167 A	20141022	KR20130039750	20130411

Probable Assignee: KANG DAE JIN
Assignee(s):(std): KANG DAE JIN
Inventor(s):(std): KANG DAE JIN
International class H05B3/02 H05B3/06 H05B3/14 H05B3/20 (Advanced/Invention)
(IPC 8-9):
CPC: H05B3/0019 H05B3/06 H05B3/145 H05B3/20 H05B2203/013
[Classification Explorer](#)
Cited documents: KR20120012562 A, JP2012151224 A2,

Abstract:
The present invention relates to a solar cell module with a heating function, which receives solar energy, converts the received solar energy into electrical energy, can increase the temperature of an internal space by causing heat resistance by a supply of the electrical energy converted from the solar energy, can be recycled as soldering is not required, and can simply used with an extended area by modularizing a solar cell converting solar energy into electrical energy, into minimum units and connecting a plurality of modularized solar cells to each other according to purposes and conditions. The configuration of the solar cell module is as follows: solar cells of minimum units are mounted on the front surface of a printed circuit board; a coating layer made of a light transmitting material is formed on an upper part of the solar cells; a carbon heating element is formed on the rear surface of the printed circuit board; and the outside of the printed circuit board including the solar cells, the coating layer and the carbon heating element is covered with an outer body made of a light transmitting material.



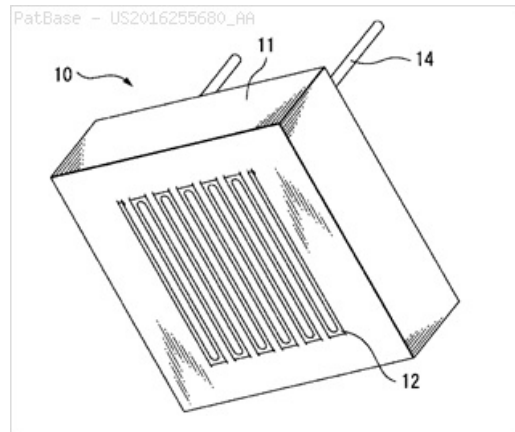
Title: HEATING APPARATUS AND HEATING FURNACE
Priority: JP20130225852 20131030 WO2014JP05515 20141030
Family:

Publication number	Publication date	Application number	Application date
 CN105683693 A	20160615	CN201480059126	20141030
 CN105683693 B	20180327	CN201480059126	20141030
 EP3064033 A1	20160907	EP20140809136	20141030
 JP2015088336 A2	20150507	JP20130225852	20131030
 KR20160078362 A	20160704	KR20167011421	20141030
 US2016255680 AA	20160901	US20140033194	20141030
 US9986599 BB	20180529	US20140033194	20141030
 WO15064111 A1	20150507	WO2014JP05515	20141030

Probable Assignee: SANDVIK KK
Assignee(s):(std): SANDVIK K K ; SANDVIK KK
Inventor(s):(std): GOTO KAZUKI ; GOTOH KAZUTAKA ; OKAMOTO HIROYUKI ; SUGAI SATOSHI ; SUKAI SATOSHI
Agent(s): NORDLINDER SARA; SONODA AND KOBAYASHI INTELLECTUAL PROPERTY LAW; CORINNE R; AOKI ATSUSHI ET AL
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 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 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
International class (IPC 8-9): C21D1/40 C21D9/00 F27B5/08 F27B5/14 F27D1/00 F27D11/00 F27D11/02 F27D99/00 H05B1/02 H05B3/00 H05B3/06 H05B3/10 H05B3/12 H05B3/14 H05B3/16 H05B3/20 H05B3/26 H05B3/28 H05B3/62 H05B3/66 (Advanced/Invention); F27D99/00 (Advanced/Non-invention)
CPC: H05B3/62 H05B3/0014 H05B3/141 H05B3/16 C21D1/40 C21D9/0043 F27D11/02 F27D2099/0008 H05B3/12 H05B3/265 H05B3/283 H05B3/66 H05B2203/003 F27D99/0006 H05B3/06 H05B3/10 H05B3/20 219/531
[Classification Explorer](#)
Cited documents: US8507832 BB, US5714738 A, US4154975 A, US2011068091 AA, JP53124337 A2, JP3221784 A2, JP2005150101 A2, JP2005129273 A2, JP2005121245 A2, JP2004308941 A2, JP2002372381 A2, JP2002372380 A2, JP2000351677 A2, EP0424818 A1, CN203148233 U, CN103369746 A,

Abstract:

A heating apparatus, which can stably fix a heater and be easily produced, includes a heat insulating material and an electric heater embedded in the surface or near the surface of the heat insulating material. At least one hook extends from the electric heater into the heat insulating material. The heat insulating material is formed of ceramic fibers and a binder binding the ceramic fibers, and is integrally molded with the electric heater having the hook.



Title: BASKING HEATER AND METHODS
Priority: US20140014370P 20140619 US20150739155 20150615 WO2015US35843 20150615
Family:

Publication number	Publication date	Application number	Application date
AU2015277398 AA	20151223	AU20150277398	20150615
BR112016029868 A2	20170822	BR20161129868	20150615
CA2952235 AA	20161213	CA20152952235	20150615
CN106455530 A	20170222	CN201580033044	20150615
CO20160005817 A2	20170331	CO20160005817	20161227
EP3158829 A1	20170426	EP20150732497	20150615
JP2017521635 T2	20170803	JP20170519213T	20150615
MX2016017085 A1	20180112	MX20160017085	20150615
US2015373786 AA	20151224	US20150739155	20150615
WO15195559 A1	20151223	WO2015US35843	20150615

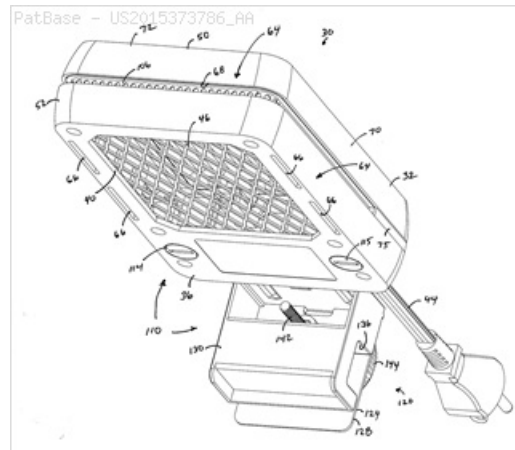
Probable Assignee: SPECTRUM BRANDS INC
Assignee(s):(std): SPECTRUM BRANDS INC ; UNITED PET GROUP INC
Assignee(s): TORRES PEREZ JOSE MANUEL ; CARLEY JOSEPH CHRISTOPHER ; MEYERS DEREK JAMES ; NEWMAN DANIEL A
Inventor(s):(std): DEREK JAMES MEYERS ; JOSE MANUEL TORRES PEREZ ; JOSEPH CHRISTOPHER CARLEY ; MEYERS DEREK JAMES ; NEWMAN DANIEL A ; TORRES PEREZ JOSE MANUEL ; CARLEY JOSEPH CHRISTOPHER ; DANIEL A NEWMAN
Inventor(s): DANIEL NEWMAN A
Agent(s): PHILLIPS ORMONDE FITZPATRICK; GOUDREAU GAGE DUBUC; ANDRES JERONIMO CASTILLO BONILLA; VITILLO GIUSEPPE; AOKI ATSUSHI; SHIMADA TETSURO; KOWALCHYK KATHERINE M
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 MZ NA NE NG 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
International class (IPC 8-9): A01K1/035 A01K63/06 F24C7/04 H05B3/00 H05B3/02 H05B3/06 H05B3/16 H05B3/20 H05B3/82 (Advanced/Invention)
CPC: A01K63/065 H05B3/20
US class: 219/523

[Classification Explorer](#)

Cited documents: US6040564 A, US5437001 A, US5272316 A, US5023433 A, US4124793 A, US3842241 A, US2014299593 AA, US2014001171 AA, US2010218728 AA, US2002148410 AA, JP2012043577 A2,

Abstract:

A basking heater for an animal, such as a reptile, includes a housing, a heating element within the housing, and an opening in a bottom of the housing, so that the heating element may radiate heat through the opening, and an attachment arrangement. The attachment arrangement can be used to selectively attach the heater to a terrarium. The housing can be made of thermal plastic resin and can include vents for cooling the housing. The housing can have low profile shape. The heater may have multiple power settings.

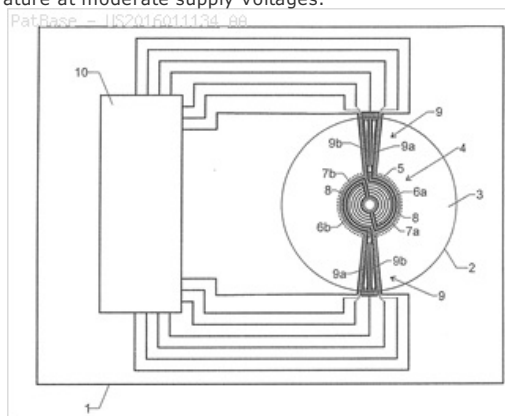


Title: HEATER STRUCTURE FOR A SENSOR DEVICE**Priority:** EP20140002419 20140714**Family:**

Publication number	Publication date	Application number	Application date
■ CN105282879 A	20160127	CN201510408100	20150713
■ EP2975386 A1	20160120	EP20140002419	20140714
■ US2016011134 AA	20160114	US20150797369	20150713
■ US9995700 BB	20180612	US20150797369	20150713

Probable Assignee: SENSIRION AG**Assignee(s):(std):** SENSIRION AG**Inventor(s):(std):** BUERGI LUKAS ; CYRILL KUEMIN ; KUEMIN CYRILL ; LUKAS BURGI ; MOELLER NICOLAS ; NICOLAS MOLLER**Agent(s):** SUTTER KURT; COOPER AND DUNHAM LLP**Designated states:** AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR**International class (IPC 8-9):** G01N27/12 G01N27/14 H05B3/00 H05B3/02 H05B3/06 H05B3/16 H05B3/20 H05B3/22 H05B3/68 (Advanced/Invention)**CPC:** G01N27/123 H05B3/68 H05B3/0014 H05B3/06 H05B3/22 G01N27/14 G01N27/128**US class:** 219/448.11[Classification Explorer](#)**Cited documents:** WO9519563 A1, WO14012948 A1, US7849727 BB, US5644676 A, US5396047 A, US3813520 A, US2014208830 AA, US2004075140 AA, GB2464016 A1, GB2422017 A1, EP2778667 A1, EP2278309 A1, EP2278308 A1, CN102256387 A,**Forward Citations:** EP3196639,**Abstract:**

The sensor device comprises a hotplate on a membrane. The hotplate is heated by a N-fold rotationally symmetric heater structure having $N > 1$ heater elements of identical design. Each heater element comprises an inner section, an intermediate section and an outer section arranged in series, with the inner section having a larger electrical cross section than the outer section. This design allows to heat the hotplate to a homogeneous temperature at moderate supply voltages.



Title:

RADIATION HEATING DEVICE

Priority:

JP20140152199 20140725 JP20140223865 20141103 JP20150041659 20150303
WO2015JP03421 20150707

Family:

Publication number	Publication date	Application number	Application date
CN106576399 A	20170419	CN201580039876	20150707
DE112015003422 T5	20170511	DE201511003422T	20150707
JP2016085958 A2	20160519	JP20150041659	20150303
US2017321902 AA	20171109	US20150316196	20150707
WO16013168 A1	20160128	WO2015JP03421	20150707

Probable Assignee:

DENSO CORP

Assignee(s):(std):

DENSO CORP

Inventor(s):(std):

ISHIKAWA KIMII ; SAAI YASUHIRO ; TSUNODA YOSHINOBU ; SUMIDA YOSHINOBU ; SEKI HIDEKI ; SAGOU YASUHIRO ; OIDE HIROYASU ; KAKO HIDEAKI ; ISHIKAWA KIMITAKE

Agent(s):

KIN JUNHI

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 KE KG KM KN KP KR KZ LA LC 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 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

International class (IPC 8-9):

B60H1/00 B60H1/22 F24C7/04 F24D13/02 G06F3/041 H05B3/00 H05B3/20 (Advanced/Invention)

CPC:

F24D19/1096 B60H1/2215 B60H1/2218 B60H2001/2228 B60H2001/2256 B60H2001/2268 B60H2001/2287 B60H2001/2293 H05B6/34 H05B2203/02 H05B2203/029 H05B2203/032 Y02B30/26 H05B3/20 G06F3/041 F24C7/04 F24D13/02 B60H1/22

[Classification Explorer](#)

Cited documents:

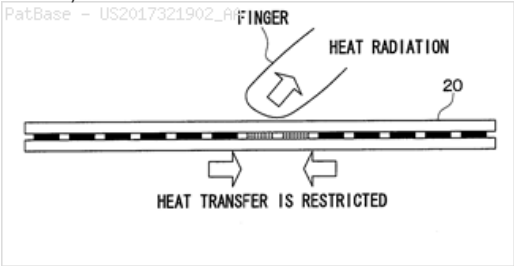
US2013063368 AA, JP60062086 A2, JP2014000944 A2, JP2012056531 A2, JP2010196972 A2, JP11351598 A2,

Forward Citations:

WO18033392, WO17104343,

Abstract:

A radiation heating device includes: a planar heat generation layer; a heat generation portion that is provided in the heat generation layer and that generates heat by energization; a plurality of heat radiation portions that are disposed in the heat generation layer and that radiate heat transferred from the heat generation portion; a low heat conduction portion that is provided around each of the heat radiation portions and that has a lower heat conductivity than the heat radiation portions; and a contact detection unit that detects contact of an object with the heat generation layer. The radiation heating device further includes an energization amount decrease unit that decreases an energization amount of the heat generation portion when the contact detection unit detects the contact of the object with the heat generation layer.



Title: HEATER AND METHOD OF FORMING A HEATER
Priority: JP20140216010 20141023
Family:

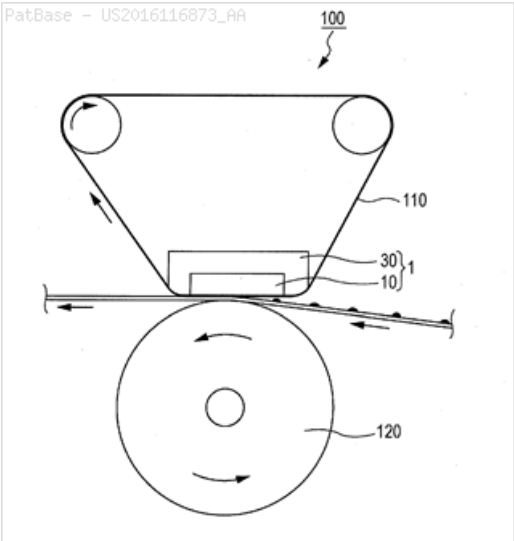
Publication number	Publication date	Application number	Application date
■ CN105549365 A	20160504	CN201510686374	20151021
■ CN105549365 B	20180529	CN201510686374	20151021
■ JP2016085266 A2	20160519	JP20140216010	20141023
■ JP6214051 B2	20171018	JP20140216010	20141023
■ US2016116873 AA	20160428	US20150883247	20151014
■ US9417574 BB	20160816	US20150883247	20151014

Probable Assignee: ALPS ELECTRIC CO LTD
Assignee(s):(std): ALPS ELECTRIC CO LTD
Assignee(s): ALPS ELECTRIC CO
Inventor(s):(std): NAKAI TAKASHI ; TAKASHI NAKAI
Agent(s): BRINKS GILSON AND LIONE
International class (IPC 8-9): G03G15/20 H05B3/00 H05B3/03 H05B3/06 H05B3/20 (Advanced/Invention)
CPC: G03G15/2053 H05B3/0014 H05B3/06 H05B3/03 H05B3/20 H05B3/24
US class: 1/1 219/216 29/592.1 399/330

[Classification Explorer](#)

Cited documents: US9098035 BB, US7235761 BA, US7235761, US5774776 A, US5753889 A, US2014169845 AA, US2014021195 AA, KR20120004776 U, JP9068877 A2, JP9068877, JP5346744 A2, JP5346744, JP2560461 T2, JP2002015839 A2, JP2002015839, JP198868877,

Abstract:
A heater includes a heater unit and a holder. The heater unit includes a flat and smooth substrate, a linear heat generator provided on a first surface of the substrate, a plurality of electrodes that supply power to the heat generator, and a protective layer disposed to cover a part of each of the electrodes and the heat generator. A second surface of the substrate is bonded to the holder. The substrate is formed of a transparent material. A plurality of positioning marks for determining the relative positions of the heater unit and the holder are disposed on the first surface of the substrate. The holder has through-holes formed at positions opposite to the positioning marks.



Title:

Priority:

Family:

HEATER DEVICE

JP20150007925 20150119

WO2016JP50386 20160107

JP2016117376 A1

JP6288310 B1

WO16117376 A1

20170713

20180307

20160728

JP20160570565T

JP20160570565T

WO2016JP50386

20160107

20160107

20160107

Probable Assignee:

Assignee(s):(std):

Inventor(s):(std):

Agent(s):

Designated states:

DENSO CORP

DENSO CORP

ISHIKAWA KIMITAKE ; KAKO HIDEAKI ; OIDE HIROYASU ; SAGOU YASUHIRO ; SEKI HIDEKI

YOU I PATENT FIRM

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 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 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

International class (IPC 8-9):

CPC:

B60H1/22 H05B3/00 H05B3/20 (Advanced/Invention);
B60H1/22 F24C7/04 H05B3/20 (Advanced/Non-invention)

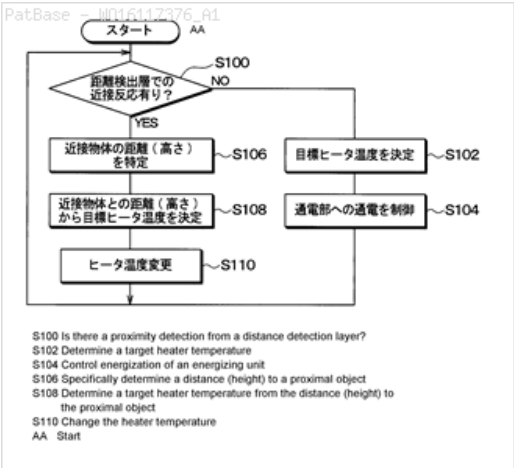
H05B3/00 B60H1/22 F24C7/04 H05B3/20

Classification Explorer

Cited documents:

JP63127032 A2, JP63127032, JP62156703 U1, JP62156703 U, JP2014208515 A2, JP2014208515, JP2014190674 A2, JP2014190674, JP2014189251 A2, JP2014189251, JP2012056531 A2, JP2012056531, JP2004232987 A2, JP2004232987,

Abstract:
A heater device (10) is provided with a heat generation unit (25) for generating heat through energization, and a distance detection unit (51) for detecting the distance between the heat generation unit (25) and an object surrounding the heat generation unit (25). Furthermore, the heater device (10) is provided with energization control units (S110, S210, S310) for controlling energization of the heat generation unit (25) so that the heater temperature correspondingly decreases as the distance to the object detected by the distance detection unit (51) becomes smaller.



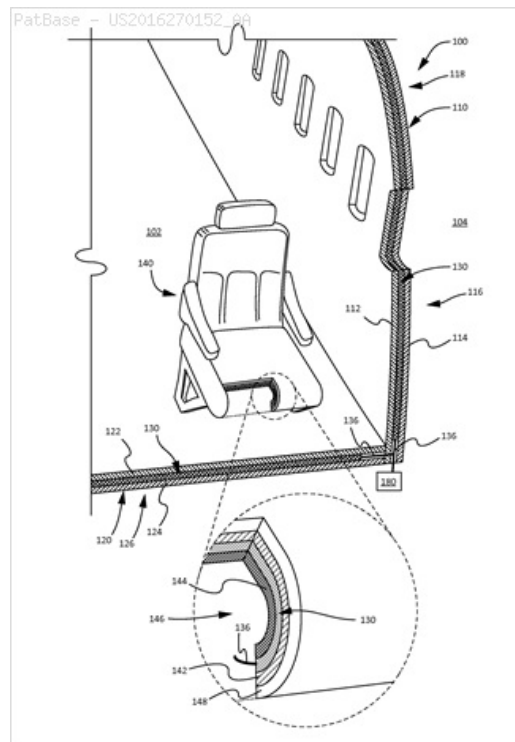
Title: COMPOSITE PANEL WITH INTEGRATED HEATER AND ASSOCIATED METHODS FOR MANUFACTURING
Priority: US20150656220 20150312 US20160069800 20160314 JP20160249122 20161222
Family:

Publication number	Publication date	Application number	Application date
BR102016004479 A2	20160913	BR20161004479	20160229
CA2919308 AA	20160912	CA20162919308	20160127
CN105979618 A	20160928	CN201610086667	20160216
CN107197548 A	20170922	CN201710102112	20170224
EP3067632 A1	20160914	EP20160159893	20160311
EP3220064 A1	20170920	EP20170158714	20170301
JP2017168431 A2	20170921	JP20160249122	20161222
US2016270152 AA	20160915	US20150656220	20150312
US2016270153 AA	20160915	US20160069800	20160314
US9736888 BB	20170815	US20150656220	20150312

Probable Assignee: BOEING CO
Assignee(s):(std): BOEING CO
Assignee(s): DUCE JEFFREY L ; TURNER JASON ; MARSHALL JOSEPH A IV ; HOUSE ASHLEY
Inventor(s):(std): BROWN MYLES E ; DUCE JEFFREY ; DUCE JEFFREY L ; HOUSE ASHLEY ; IV JOSEPH A MARSHALL ; JEFFREY L DUCE ; MARCUS K RICHARDSON ; MARSHALL IV JOSEPH A ; MARSHALL IV JOSEPH A ; MYLES E BROWN ; RICHARDSON MARCUS K ; TURNER JASON ; MARSHALL JOSEPH A IV
Inventor(s): ASHLEY HOUSE ; MARSHALL JOSEPH A ; JOSEPH A MARSHALL IV ; JASON TURNER
Agent(s): SMART AND BIGGAR; DUXBURY STEPHEN; KUNZLER LAW GROUP PC
Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR
International class (IPC 8-9): B32B3/08 B32B37/00 B32B38/14 B41J2/01 B60H1/00 B60H1/22 B60N2/00 B60N2/56 B64C1/00 B64C1/10 B64C1/18 B64D11/00 B64D13/08 F24D13/02 F24D19/10 F24H9/18 H01C17/02 H01C17/075 H05B1/02 H05B3/00 H05B3/06 H05B3/12 H05B3/14 H05B3/18 H05B3/20 H05B3/34 H05B3/36 H05B3/54 H05K3/12 (Advanced/Invention); C09D11/52 (Advanced/Non-invention)
CPC: H05B1/0202 H05B1/0236 H01C17/02 H01C17/075 H05B3/18 H05B2203/016 F24D13/022 F24D2200/08 F24D2220/2081 F24H9/1872 H05B1/0238 H05B3/06 H05B3/34 H05B2203/013 H05B2203/017 H05B2203/02 H05B2203/026 H05B2203/029 H05B2206/023 Y02B30/26 F24D13/02 B60H1/2218 B60N2/002 B60N2/5685 F24D19/1096 H05B3/20 H05B3/36 B64C1/10 B64C1/18 B64D13/08 H05B3/0019
US class: 219/202 219/528
[Classification Explorer](#)
Cited documents: US9161393 BB, US8575523 BB, US5565124 A, US5408069 A, US4284443 A, US2016270153 AA, US2015156819 AA, US2014339211 AA, US2011226751 AA, US2010065542 AA, US2004155020 AA, US2004100131 AA, US2002043525 AA, US2002027133 AA, EP2716981 A1, DE102008058529 A1
Forward Citations: US9736888, DE102017102742,

Abstract:

Described herein is a composite panel that includes a first layer made from an electrically non-conductive material. The composite panel also includes a resistance heater printed onto the first layer. Further, the composite panel includes a second layer adjacent the resistance heater, the resistance heater being positioned between the first layer and the second layer. The second layer is made from an electrically non-conductive material.

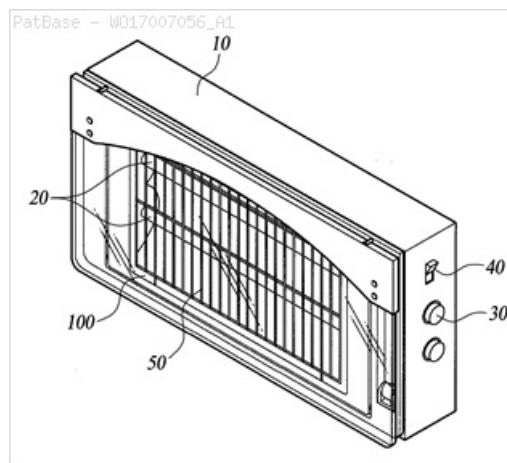


Title: CONVECTION HEATER USING PLANAR HEATING ELEMENT**Priority:** KR20150095039 20150703

Family:	Publication number	Publication date	Application number	Application date
	 KR20170004545 A	20170111	KR20150095039	20150703
	 WO17007056 A1	20170112	WO2015KR07359	20150715

Probable Assignee: KUM YOUNG CO LTD**Assignee(s):(std):** KUM YOUNG CO LTD ; KUMYOUNG CO LTD**Assignee(s):** KUMYOUNG CO ; CO LTD GOLD YOUNG ; KUM YOUNG CO**Inventor(s):(std):** KIM BYUNG KOOK ; OH SUNG HYUK**Agent(s):** KIM SUNG HYUN**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 KZ LA LC 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 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**International class (IPC 8-9):** G05D23/19 H05B1/02 H05B3/02 H05B3/12 H05B3/16 H05B3/20 (Advanced/Invention)**CPC:** H05B3/20 H05B1/02 H05B3/02 H05B3/12 H05B2203/026 H05B2213/07 G05D23/19 H05B3/16[Classification Explorer](#)**Cited documents:** WO12144741 A2, WO12144740 A2, JP9055285 A2, JP6096843 A2, JP2014512509 T2,**Abstract:**

A convection heater using a planar heating element, according to an embodiment of the present invention, comprises: a case (10) having a space therein and forming the exterior of the convection heater, the case being provided with an air circulation part (100) on one side thereof in which heated internal air and external air circulate; a heater unit (20) provided inside the case (10) so as to be spaced apart from the air circulation part (100) by a predetermined distance, supplied with power by an external power supply to radiate heat, and constituted of a self regulation (SR) heating element (200) that performs a temperature self-regulation function; a temperature regulation unit (30) provided on one side of the case (10) and regulating the temperature of the heater (20) depending on a temperature selected by a user; and a power switch (40) performing a function of selectively shutting off power supply from the heater (20).

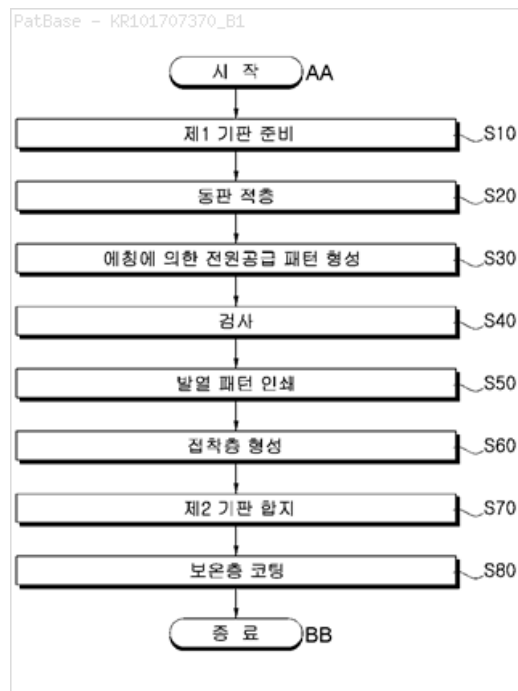


Title: HEATING FILM AND MANUFACTURING METHOD THEREOF**Priority:** KR20160001986 20160107

Family:	Publication number	Publication date	Application number	Application date
	■ KR101707370 B1	20170227	KR20160001986	20160107

Probable Assignee: YUN MYUNG GYUN**Assignee(s):**(std): OH HYEONG DAL ; YOUN MYOUNG KUN**Assignee(s):** YUN MYUNG GYUN ; OH TYPE MONTHS**Inventor(s):**(std): OH HYEONG DAL ; YOUN MYOUNG KUN**International class** H01B13/00 H01B5/14 H01B7/42 H05B1/02 H05B3/00 H05B3/02 H05B3/14 H05B3/20
(IPC 8-9): H05B3/34 (Advanced/Invention)**CPC:** H05B3/20 H01B13/0026 H01B13/0033 H01B5/14 H01B7/428 H05B1/02 H05B3/0014 H05B3/026
H05B3/146 H05B3/34 H05B2203/017[Classification Explorer](#)**Cited documents:** KR20150019467 A, KR20130131922 A, KR20050010948 A,**Abstract:**

The present invention relates to a heating film which heats by being received inside a product like clothes, a cushion, bedding, or the like, and has excellent restoring force even if external force of folding or the like is repeatedly applied. The heating film comprises: a first substrate; a power supply pattern formed in one surface of the first substrate; a heating pattern formed in an upper side of the power supply pattern; and a second substrate stacked in an upper side of the heating pattern, and thermally pressurized with the first substrate.

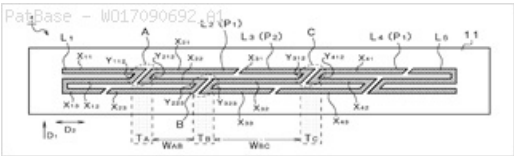


Title: HEATER, FIXING DEVICE, IMAGE-FORMING DEVICE, AND HEATING DEVICE
Priority: JP20150232372 20151127 WO2016JP84850 20161124
Family:

Publication number	Publication date	Application number	Application date
■ CN107535017 A	20180102	CN201680027125	20161124
■ JP2017090692 A1	20171130	JP20170516536T	20161124
■ JP6161859 B1	20170712	JP20170516536T	20161124
■ KR20180087138 A	20180801	KR20177029681	20161124
■ TW201737757 A	20171016	TW20160138896	20161125
■ WO17090692 A1	20170601	WO2016JP84850	20161124

Probable Assignee: MISUZU IND CO LTD
Assignee(s):(std): MISUZU IND CO LTD
Assignee(s): LTD MISUZU IND ; MISUZU IND CO
Inventor(s):(std): KATO SHOHEI ; MATSUDA MIHO ; MORITA TOMOHIRO ; UMEMURA YUJI
Agent(s): KOJIMA SEIJI
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 DJ 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 KW KZ LA LC 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 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
International class (IPC 8-9): G03G15/20 H05B3/00 H05B3/10 H05B3/14 H05B3/16 H05B3/20 H05B3/46 (Advanced/Invention)
CPC: G03G15/20 H05B3/00 H05B3/10 H05B3/14 H05B3/20 G03G15/2003 H05B2203/004
[Classification Explorer](#)
Cited documents: WO15151905 A1, WO15151905, WO14034744 A1, WO14034744, WO13073276 A1, WO13073276, JP11287238, JP11287238,

Abstract:
The purpose of the present invention is to provide a heater that has superior heat uniformity even in a heater that is narrow in a sweep direction, a fixing device, an image-forming device, a heating device, and a method for manufacturing a heater. The present invention is provided with a base 11 and, on the base, a plurality of resistive heating wires that are each supplied with power, the resistive heating wires are each formed by joining, in a zigzag manner, at least three rows of lateral wiring sections X arranged in a sweep direction D1 in the order of a first row, a second row, and a third row and longitudinal wiring sections Y connecting between the lateral wiring sections, and at least one resistive heating wire of the resistive heating wires has either a pattern P1, in which the second row lateral wiring section X2 is shorter than the first row lateral wiring section X1 and the third row lateral wiring section X3, or a pattern P2, in which the second row lateral wiring section X2 is longer than the first row lateral wiring section X1 and the third row lateral wiring section X3.



Title:

TOILET SEAT

Priority:

KR20150167856 20151127

Family:

Publication number	Publication date	Application number	Application date
 KR20170062257 A	20170607	KR20150167856	20151127

Probable Assignee:

COWAY CO LTD

Assignee(s):(std):

COWAY CO LTD

Assignee(s):

COWAY CO

Inventor(s):(std):

AN JOONG KEUN ; JIN SUNG WORL ; KIM KEUN HWAN

International class

A47K13/14 A47K13/30 H05B3/06 H05B3/10 H05B3/14 H05B3/20 H05B3/82 (Advanced/Invention)

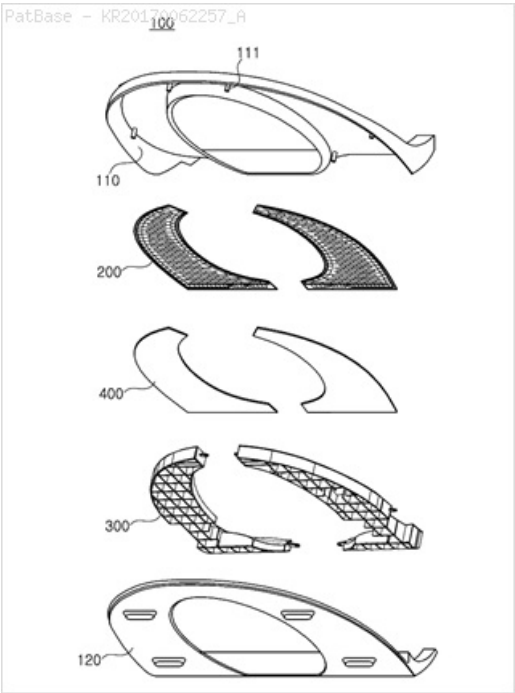
(IPC 8-9):

CPC:

A47K13/305 A47K13/14 H05B3/06 H05B3/10 H05B3/145 H05B3/20 H05B3/82 H05B2203/029

[Classification Explorer](#)

Abstract:
The present invention relates to a toilet seat apparatus having a film heater and a support portion for heating a toilet seat more safely and uniformly. The toilet seat apparatus comprises: a toilet seat having an upper toilet seat portion having a seating surface and a lower toilet seat portion coupled to the upper toilet portion and seated on a toilet; a film heater provided in a shape corresponding to the shape of the upper toilet seat portion and disposed on an inner side surface of the upper toilet seat portion; and a support portion disposed inside the toilet seat and supporting the film heater in close contact with the upper toilet seat portion. With this configuration, the support portion for supporting the film heater in close contact with the toilet seat portion is provided to bring the film heater of a high temperature into close contact with the toilet seat portion without falling off from the same, thereby uniformly heating the entire toilet seat portion.



Title:

PLANAR HEATING ELEMENT FIXING STRUCTURE FOR ELECTRIC RICE COOKER

Priority:

KR20150170529 20151202 KR20150181058 20151217

Family:

Publication number	Publication date	Application number	Application date
KR20170064719 A	20170612	KR20150170529	20151202
KR20170072638 A	20170627	KR20150181058	20151217
WO17094968 A1	20170608	WO2016KR01691	20160222

Probable Assignee:

DAYOU WINIA CO LTD

Assignee(s):(std):

DAYOU WINIA CO LTD

Assignee(s):

DAYOU WINIA CO

Inventor(s):(std):

KIM DONG WON

Agent(s):

DARAE IP FIRM

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 KZ LA LC 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 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

International class (IPC 8-9):

A47J27/08 A47J27/086 H05B3/03 H05B3/06 H05B3/12 H05B3/20 (Advanced/Invention)

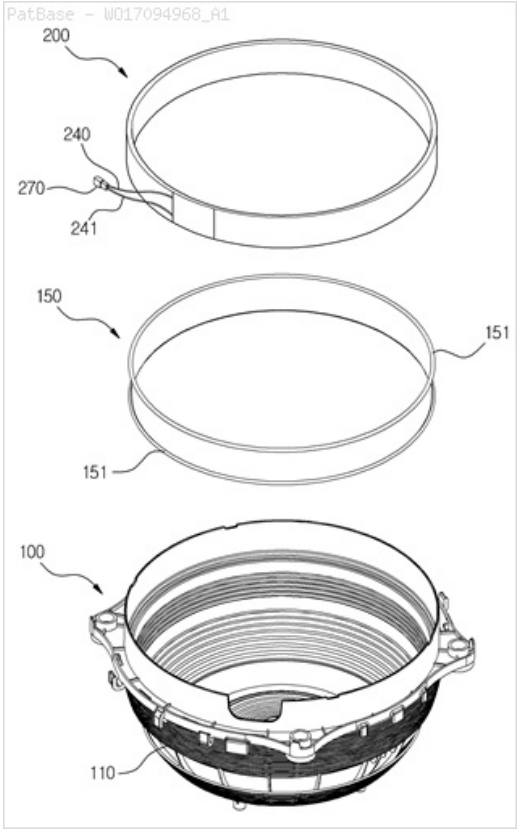
CPC:

A47J27/08 A47J27/086 H05B3/03 H05B3/06 H05B3/12 H05B3/20

[Classification Explorer](#)

Abstract:

The present invention relates to a planar heating element fixing structure for an electric rice cooker, the fixing structure having a planar heating element fixed to the outer surface of a ring-type case provided at the top of the inner side of a base for heating an inner pot.



Title:

Priority:

Family:

Probable Assignee:

Assignee(s):

International class (IPC 8-9):

CPC:

Classification Explorer

Cited documents:

PRE-HEATER DOOR FOR THERMAL EXPANSION USING POP RIVET

KR20150007926U 20151203

Publication number	Publication date	Application number	Application date
 KR200483867 Y1	20170704	KR20150007926U	20151203
 KR20170002075 U	20170613	KR20150007926U	20151203

CO LTD HIGH RAW HODGES

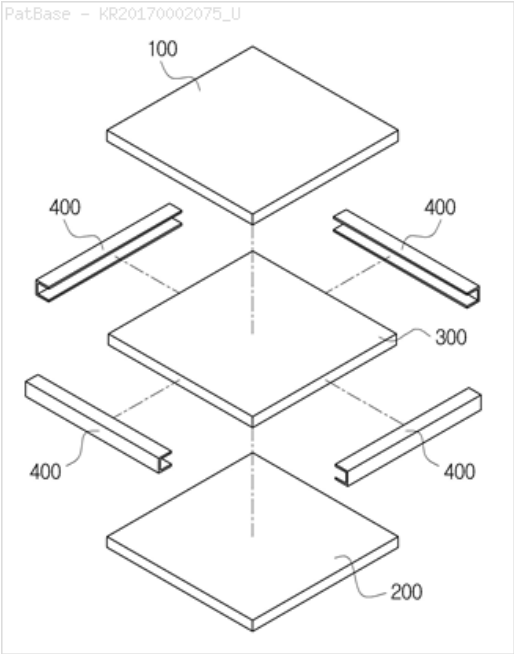
CO LTD HIGH RAW HODGES

H05B3/06 H05B3/20 H05B3/26 H05B3/82 (Advanced/Invention)

H05B3/82 H05B3/06 H05B3/20 H05B3/26

KR20150118588 A, KR20110054490 A, KR20110054490, JP2010077781 A2, JP2010077781, JP2004286088 A2, JP2004286088,

Abstract:
Source: KR200483867Y **Machine translation:** Prior to plating the sink roll 20 and the sink roll 20, is inserted into the inside of the frame 30 is a portion for pre-heating the sink roll 20 in the pre-heater 40, the top is opened and closed by a door (10) for preventing thermal expansion, a metallic material of the pre-heater 100, the top plate 100 of the lower portion of the top plate are spaced apart a predetermined distance of the lower plate 200, the position of the metal material, the upper plate 100 and lower plate 200, the insulating part 300, the insulation between the adjacent to the (300) are arranged in a plurality of pre-determined shape of the upper plate 100 and lower plate 200 connected to the insulating part 300 surrounding the exposed portion 400 and the fixing part 400, the upper fixing plate and the upper plate 100 and lower plate 200 and the fixing part (400) for fixing the pop rivets 500 is characterized in that it comprises a.



Title: HEATING ELEMENT INCLUDING NANO-MATERIAL FILLER

Priority: KR20150175347 20151209 KR20160139285 20161025

Family:

Publication number	Publication date	Application number	Application date
■ CN106961751 A	20170718	CN201611130231	20161209
■ EP3179826 A2	20170614	EP20160202994	20161208
■ EP3179826 A3	20170913	EP20160202994	20161208
■ KR20170068378 A	20170619	KR20160139285	20161025
■ US2017171916 AA	20170615	US20160374273	20161209

Probable Assignee: SAMSUNG ELECTRONICS CO LTD

Assignee(s):(std): SAMSUNG ELECTRONICS CO LTD

Assignee(s): SAMSUNG ELECTRONICS CO

Inventor(s):(std): MIZUSAKI SOICHIRO ; LEE CHANGSOO ; LEE CHANG SOO ; KOH HAENGDEOG ; KOH HAENG DEOG ; KIM SEYUN ; KIM SE YUN ; KIM HAJIN ; KIM HA JIN ; KIM DOYOON ; KIM DO YOON ; HAN INTAEK ; HAN IN TAEK

Agent(s): ZIJLSTRA ROBERT WIEBO JOHAN; MULLEN LEE BRYAN

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

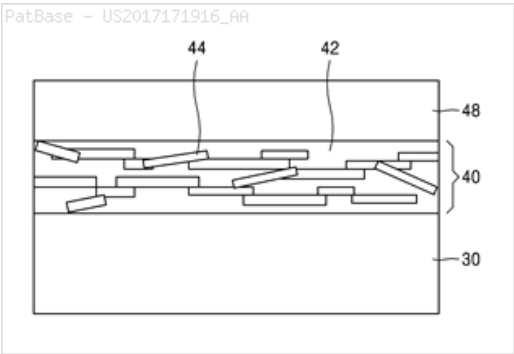
International class (IPC 8-9): C03C8/02 C23D5/02 C23D7/00 F24C7/04 H01B13/00 H01B5/14 H05B3/12 H05B3/14 H05B3/20 H05B3/26 (Advanced/Invention)

CPC: H05B3/12 F24C7/04 H05B3/20 C23D5/02 C23D7/00 H05B2203/013 H05B3/141 C03C8/02 H01B13/0026 H01B5/14 H05B2203/017 H05B3/262 H05B2214/04 H05B2203/032

[Classification Explorer](#)

Cited documents: WO15004852 A1, US4031353 A, US2015312967 AA, US2012132644 AA, US2010122980 AA, US2009272728 AA, US2005011882 AA, KR20090094548 A, EP2048912 A1, CN102761994 A,

Abstract:
A heating element includes a matrix material and a nanomaterial filler, wherein the nanomaterial filler includes at least one of a nano-sheet and a nanorod.



Title: HEATING DEVICE WITH A SUPPORT AND METHOD FOR THE PRODUCTION THEREOF

Priority: DE201510226053 20151218 DE201610209012 20160524 JP20160244979 20161219
JP20170093689 20170510 KR20170064374 20170524

Family:

Publication number	Publication date	Application number	Application date
■ CN107205288 A	20170926	CN201611273137	20161216
■ CN107426835 A	20171201	CN201710373078	20170524
■ DE102016209012 A1	20170622	DE201610209012	20160524
■ EP3182794 A1	20170621	EP20160203541	20161212
■ EP3250003 A1	20171129	EP20170167149	20170419
■ JP2017112114 A2	20170622	JP20160244979	20161219
■ JP2017212206 A2	20171130	JP20170093689	20170510
■ KR20170132695 A	20171204	KR20170064374	20170524
■ US2017181226 AA	20170622	US20160381763	20161216
■ US2017347399 AA	20171130	US20170601285	20170522

Probable Assignee: EGO ELEKTRO GERAETEBAU GMBH

Assignee(s):(std): E G O ELEKTRO GERAETEBAU GMBH ; EGO ELEKTRO GERAETE BLANC AND FISCHER ; EGO ELEKTRO GERAETEBAU GMBH

Inventor(s):(std): BLOCK VOLKER ; EIGL SEBASTIAN ; KOEBRICH HOLGER ; MANDL MATTHIAS ; MUEHLNIKEL ROLAND ; ROBIN BERND ; SCHMIEDER MANUEL ; SUSS ALFRED ; TAFFERNER MICHAEL ; THIMM DR WOLFGANG ; THIMM WOLFGANG ; WOLFGANG THIMM ; VOLKER BLOCK ; SEBASTIAN EIGL ; ROLAND MUEHLNIKEL ; MICHAEL TAFFERNER ; MATTHIAS MANDL ; MANUEL SCHMIEDER ; HOLGER KOEBRICH ; BERND ROBIN ; ALFRED SUSS

Agent(s): PATENTANWALTE RUFF WILHELM BEIER DAUSTER AND PARTNER MBB

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

International class (IPC 8-9): F24H1/50 H05B1/02 H05B3/02 H05B3/04 H05B3/06 H05B3/10 H05B3/12 H05B3/14 H05B3/16 H05B3/20 H05B3/26 H05B3/44 (Advanced/Invention)

CPC: H05B3/20 H05B2203/017 H05B3/26 H05B2203/011 H05B2203/037 H05B2214/04 H05B3/145 H05B2203/013 H05B3/04 H05B3/06 H05B3/12 H05B3/44 H05B2203/007 H05B2203/02 H05B1/0244 H05B1/0291 H05B1/0294 H05B3/02 H05B2203/005 H05B3/14 H05B3/42

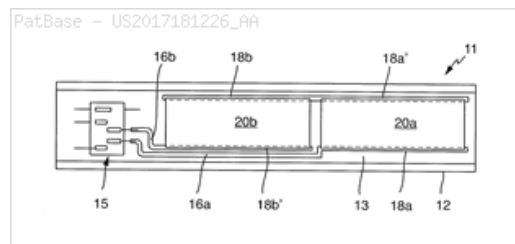
[Classification Explorer](#)

Cited documents: WO15048564 A1, US2016031420 AA, US2014021195 AA, US2011062140 AA, US2010096507 AA, US2009314765 AA, US2005199610 AA, EP2618630 A2, EP2444381 A1, EP1933598 A1,
DE102013200277 A1
DE102012213385 A1
DE102012202065 B3
DE102012200398 A1

Forward Citations: EP3331318, EP3261409, DE102016224069, DE102016211081,

Abstract:

A heating device has a support and a sheet-like electrical conductor, which is arranged on the support and runs between a first terminal and a second terminal, the at least one heating conductor including carbon-based material as heating conductor material. A heating conductor thickness between the electrical terminals may at least partially vary and not be constant for the adaptation of a local heating output. In addition, the heating conductor may be either rectangular and short or in the form of a circular ring.



Title:

Priority:

Family:

Probable Assignee:

Assignee(s):(std):

Inventor(s):(std):

Agent(s):

Designated states:

International class (IPC 8-9):

CPC:

Classification Explorer

Cited documents:

HEATER DEVICE

JP20150246526 20151217WO2016JP84093 20161117

Publication number	Publication date	Application number	Application date
JP2017104343 A1	20180322	JP20170556433T	20161117
WO17104343 A1	20170622	WO2016JP84093	20161117

DENSO CORP

DENSO CORP

ISHIKAWA KIMITAKE ; KAKO HIDEAKI ; OIDE HIROYASU ; SEKI HIDEKI ; TANAKA YUSUKE

YOU I PATENT FIRM

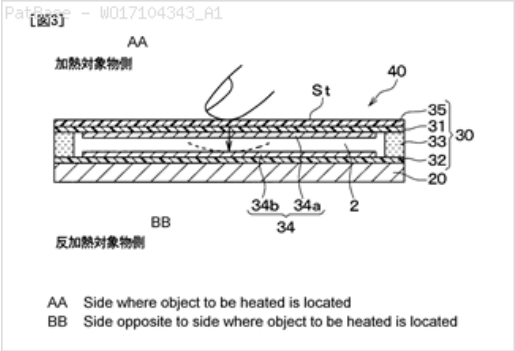
AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DJ DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KW KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM 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

B60H1/22 H05B3/00 H05B3/20 (Advanced/Invention)

B60H1/22 H05B3/00 H05B3/20

WO16117375 A1, WO16013168 A1, WO15186329 A1, JP2015016703 A2, JP2014190674 A2, JP2013178185 A2, JP2004175291 A2, JP2003533311 T2, EP0873903 A2,

Abstract:
A heater device which emits radiant heat is provided with a heat generation section (20) and a contact detection layer (30). The heat generation section is a sheet-like member which, when electricity is conducted therethrough, generates heat and emits the radiant heat. The contact detection layer is a sheet-like layer which has a contact surface (St) coming in contact with an object and which detects the contact of the object with the contact surface. The heat generation section is disposed on the side of the contact detection layer opposite to the contact surface.



Title: ELECTRIC RICE COOKER
Priority: KR20150179985 20151216
Family:

Publication number	Publication date	Application number	Application date
■ KR20170071837 A	20170626	KR20150179985	20151216
■ WO17104892 A1	20170622	WO2016KR01678	20160219

Probable Assignee: DAYOU WINIA CO LTD
Assignee(s):(std): DAYOU WINIA CO LTD
Assignee(s): DAYOU WINIA CO
Inventor(s):(std): KIM DONG WON
Agent(s): DARAE IP FIRM
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 KZ LA LC 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 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

International class (IPC 8-9): A47J27/08 A47J27/086 H05B3/06 H05B3/12 H05B3/20 (Advanced/Invention)

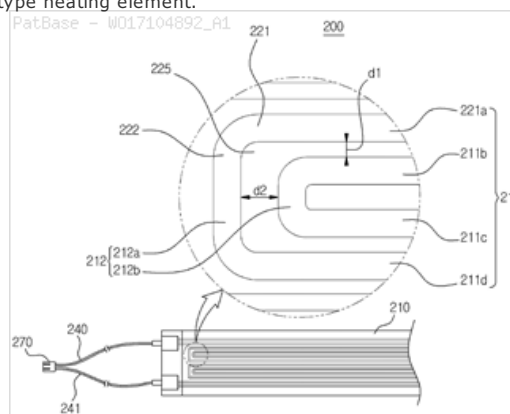
CPC: A47J27/08 A47J27/086 H05B3/06 H05B3/12 H05B3/20

[Classification Explorer](#)

Cited documents: US2005173411 AA, KR20150049329 A, KR20080085744 A, KR20030034484 A, KR20010099212 A,

Abstract:

The present invention relates to an electric rice cooker enabling an enhancement of the durability of a surface-type heating element by means of preventing local heat concentration on the surface-type heating element.



Title: ELECTRIC RICE COOKER
Priority: KR20150181044 20151217
Family:

Publication number	Publication date	Application number	Application date
■ KR20170072632 A	20170627	KR20150181044	20151217
■ WO17104893 A1	20170622	WO2016KR01679	20160219

Probable Assignee: DAYOU WINIA CO LTD
Assignee(s):(std): DAYOU WINIA CO LTD
Assignee(s): DAYOU WINIA CO
Inventor(s):(std): KIM DONG WON
Agent(s): DARAE IP FIRM
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 KZ LA LC 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 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

International class (IPC 8-9): A47J27/08 A47J27/086 H05B3/06 H05B3/20 (Advanced/Invention)

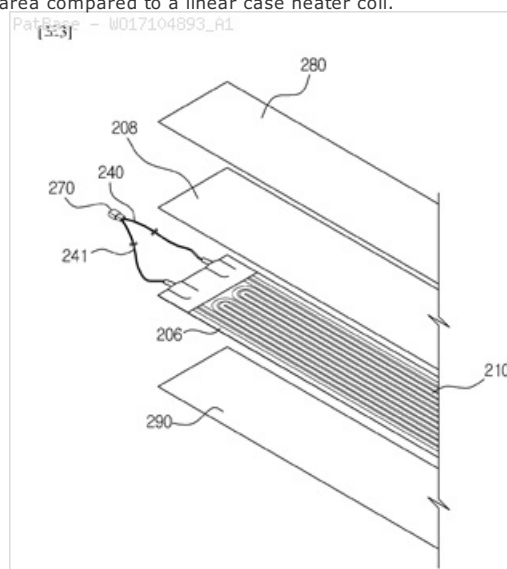
CPC: A47J27/08 A47J27/086 H05B3/06 H05B3/12 H05B3/20

[Classification Explorer](#)

Cited documents: US2005173411 AA, KR20150049329 A, KR20080085744 A, KR20030034484 A, KR20010099212 A,

Abstract:

The present invention relates to an electric rice cooker which is an improvement of an electric rice cooker having adopted a surface-type heating element proposed by the present applicant. The present invention relates to an electric rice cooker having a surface-type heating element of which a heating part has a wide surface area compared to a linear case heater coil.



Title: ELECTRIC RICE COOKER
Priority: KR20150179183 20151215
Family:

Publication number	Publication date	Application number	Application date
■ KR20170071171 A	20170623	KR20150179183	20151215
■ WO17104894 A1	20170622	WO2016KR01702	20160222

Probable Assignee: DAYOU WINIA CO LTD
Assignee(s):(std): DAYOU WINIA CO LTD
Assignee(s): DAYOU WINIA CO
Inventor(s):(std): CHOI GUY JIN ; KIM DONG WON
Agent(s): DARAE IP FIRM
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 KZ LA LC 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 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

International class (IPC 8-9): A47J27/08 A47J27/086 H05B3/06 H05B3/12 H05B3/20 (Advanced/Invention)

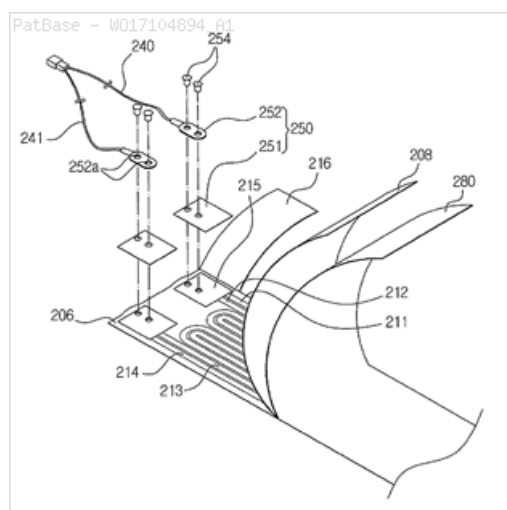
CPC: A47J27/08 A47J27/086 H05B3/06 H05B3/12 H05B3/20

[Classification Explorer](#)

Cited documents: US2005173411 AA, KR20150049329 A, KR20080085744 A, KR20030034484 A, KR20010099212 A,

Abstract:

The present invention relates to an electric rice cooker which can enable rapid heating of a surface-type heating element by means of a change in a conductive pathway.



Title:

AUXILIARY BATTERY POUCH HAVING HAND-HEATER FUNCTION

Priority:

KR20150008177U 20151214

Family:

Publication number	Publication date	Application number	Application date
 KR20170002210 U	20170623	KR20150008177U	20151214

Probable Assignee:

GALERIE

Assignee(s):

GALERIE

International class (IPC 8-9):

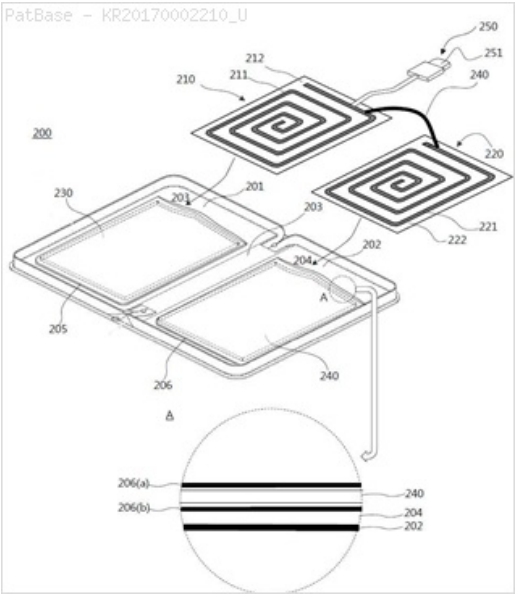
B65D81/18 B65D85/68 H05B3/06 H05B3/16 H05B3/20 H05B3/56 H05B3/80 (Advanced/Invention)

CPC:

B65D85/68 B65D81/18 H05B3/06 H05B3/16 H05B3/20 H05B3/56 H05B3/80 B65D2585/88 H05B2203/03

[Classification Explorer](#)

Abstract:
Source: KR20170002210U **Machine translation:** The present design is a predetermined capacity that can be stored in the power storage unit 120, the portable auxiliary battery is kept in a pouch, the pouch with the first side of the widest area, and a second surface opposite surface has a first surface and a second surface; and wherein the at least one side of the heating element by a current applied from the secondary battery, the heat that is provided with a heating plate, and portable auxiliary battery is between the portable auxiliary battery and at rest and located in the heating plate it can be attached to the insulating substrate; one side of the heating plate can be electrically connected with the secondary battery comprises a connector cable is installed a secondary battery, characterized in that it relates to a pouch.



Title:

ELECTRIC COOKER WITH PLATE HEATER

Priority:

KR20150179291 20151215

Family:

Publication number	Publication date	Application number	Application date
 KR20170071222 A	20170623	KR20150179291	20151215

Probable Assignee:

DAYOU WINIA CO LTD

Assignee(s):(std):

DAYOU WINIA CO LTD

Assignee(s):

LTD DAAYOO WINIAH ; DAYOU WINIA CO

Inventor(s):(std):

CHOI GUY JIN ; KIM DONG WON

International class

A47J27/08 A47J27/086 H05B3/06 H05B3/12 H05B3/20 (Advanced/Invention)

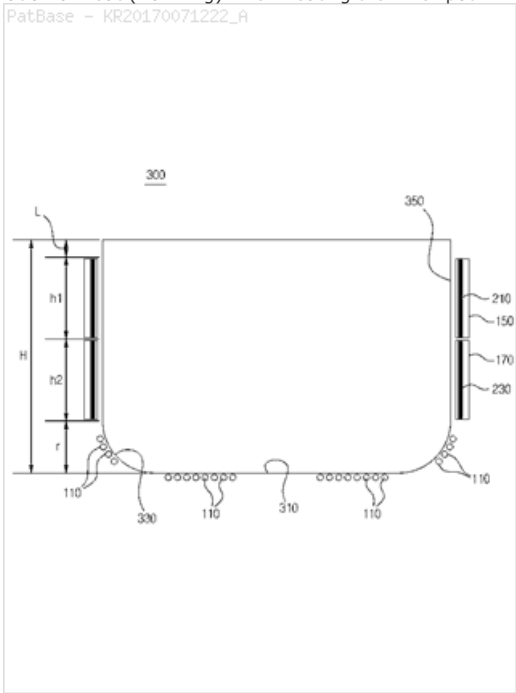
(IPC 8-9):

CPC:

A47J27/08 A47J27/086 H05B3/06 H05B3/12 H05B3/20

[Classification Explorer](#)

Abstract:
The present invention relates to a planar heating object-installed electric cooker. In the planar heating object-installed electric cooker, a planar heating object is provided on a lateral circumference of a base which heats an inner pot in the electric cooker, and is divided into stages along a height direction of the inner pot. According to the present invention, it is possible to uniformly heat the entire inner pot when cooking or warming while minimizing a deviation of heat (warming) when heating the inner pot.



Title:

ELECTRIC RICE COOKER

Priority:

KR20150180121 20151216

Family:

Publication number	Publication date	Application number	Application date
 KR20170071911 A	20170626	KR20150180121	20151216

Probable Assignee:

DAYOU WINIA CO LTD

Assignee(s):(std):

DAYOU WINIA CO LTD

Assignee(s):

LTD DAHYOO WINIAH ; DAYOU WINIA CO

Inventor(s):(std):

KIM DONG WON

International class

A47J27/08 A47J27/086 H05B3/06 H05B3/20 (Advanced/Invention)

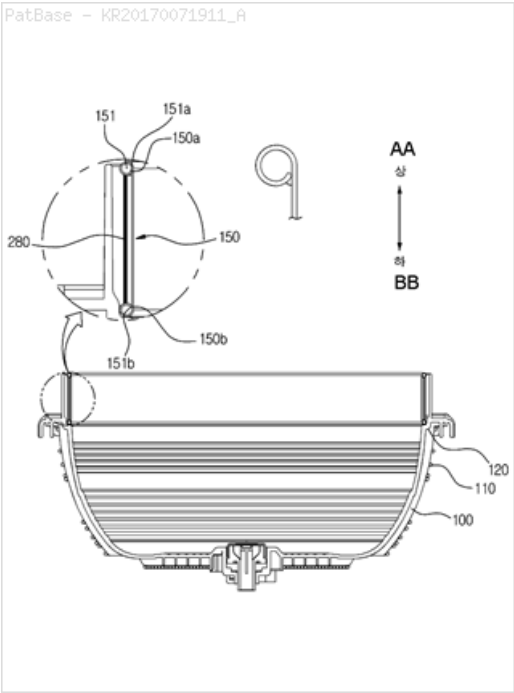
(IPC 8-9):

CPC:

A47J27/08 A47J27/086 H05B3/06 H05B3/20

[Classification Explorer](#)

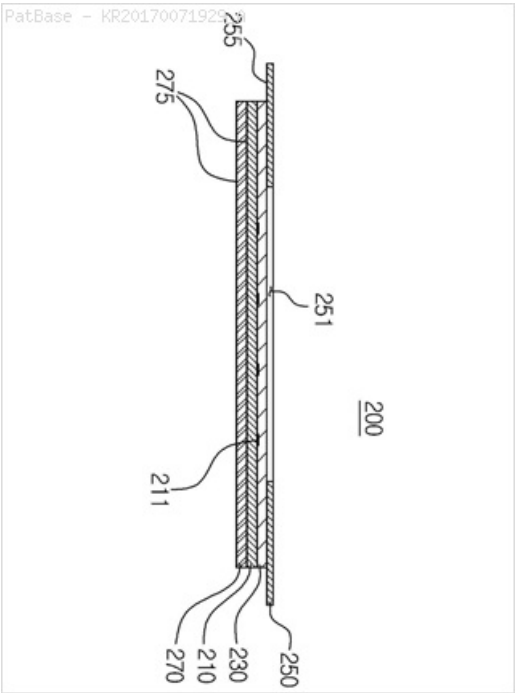
Abstract:
The present invention relates to an electric rice cooker, and specifically, to an electric rice cooker which prevents the overheating of a surface heating element fixed to the outer surface of a ring-shaped case, and allows the surface heating element with a wider width to be disposed on the outer surface of the ring-shaped case. The electric rice cooker of the present invention comprises: a ring-shaped case installed on an inner upper portion of a base for heating an inner pot; and a surface heating element fixed to an outer surface of the ring-shaped case. Circular protrusions are formed on the upper and lower outer peripheries of the ring-shaped case.



Title:	ELECTRIC COOKER WITH PLATE HEATER			
Priority:	KR20150180163 20151216			
Family:	Publication number	Publication date	Application number	Application date
	 KR20170071929 A	20170626	KR20150180163	20151216
Probable Assignee:	DAYOU WINIA CO LTD			
Assignee(s):(std):	DAYOU WINIA CO LTD			
Assignee(s):	LTD DAEYOO WINIAH ; DAYOU WINIA CO			
Inventor(s):(std):	KIM DONG WON ; KIM KEW WAN			
International class (IPC 8-9):	A47J27/08 A47J27/086 H05B3/12 H05B3/16 H05B3/20 (Advanced/Invention)			
CPC:	A47J27/08 A47J27/086 H05B3/12 H05B3/16 H05B3/20			

[Classification Explorer](#)

Abstract:
The present invention relates to an electric cooker with a plane heater. In the electric cooker with the plane heater, the configuration is as follows. The electric cooker with the plane heater comprises: a resistance heating body print film layer on which a resistance heating body is arranged and which is configured to generate heat when power is applied to the resistance heating body; an insulation layer disposed on one surface of the resistance heating body print film layer; and a protection layer disposed on the opposite side of the surface of the insulating layer on which the resistance heating body print film layer is disposed, and has holes formed therein. According to the above configuration, the holes are formed in the protection layer provided for transferring the heat generated in the resistance heating body to reduce the area of the protection layer, thereby improving the withstand voltage performance of an AC high voltage.



Title:

ELECTRIC RICE COOKER

Priority:

KR20150180018 20151216

Family:

Publication number	Publication date	Application number	Application date
 KR20170071855 A	20170626	KR20150180018	20151216

Probable Assignee:

DAYOU WINIA CO LTD

Assignee(s):(std):

DAYOU WINIA CO LTD

Assignee(s):

LTD DAEYOO WINIAH ; DAYOU WINIA CO

Inventor(s):(std):

KIM DONG WON

International class

A47J27/08 A47J27/086 H05B3/06 H05B3/20 (Advanced/Invention)

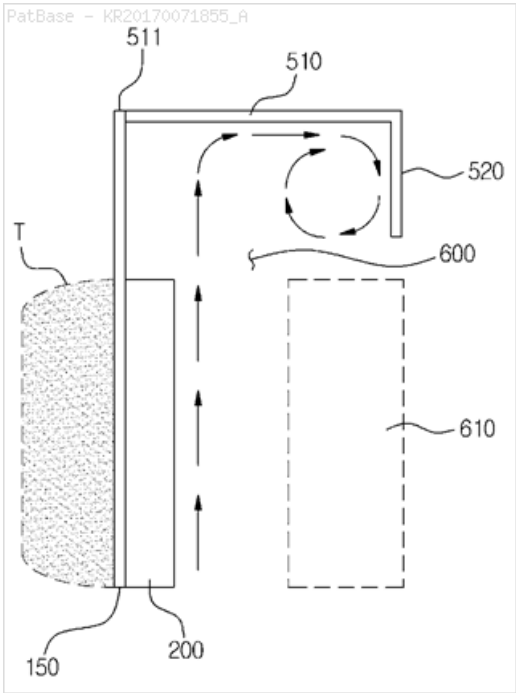
(IPC 8-9):

CPC:

A47J27/08 A47J27/086 H05B3/06 H05B3/20

[Classification Explorer](#)

Abstract:
The present invention relates to an electric rice cooker and, more specifically, to an electric rice cooker capable of improving heat efficiency by reducing heat transfer into a rice cooker body and reducing heat effects to internal components of the electric rice cooker. The electric rice cooker has the rice cooker body, a base heating an inner pot, a ring-shaped case, a sheet heating body, side walls and a side heater heating space.



Title: ELECTRIC RICE COOKER
Priority: KR20150180021 20151216
Family:

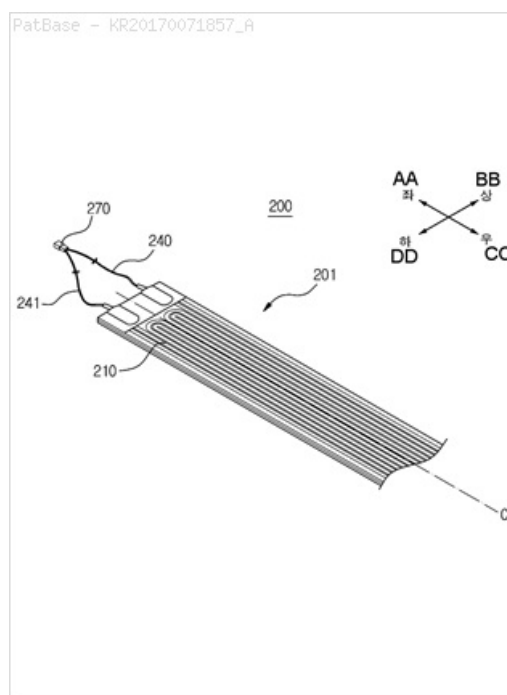
Publication number	Publication date	Application number	Application date
 KR20170071857 A	20170626	KR20150180021	20151216

Probable Assignee: DAYOU WINIA CO LTD
Assignee(s):(std): DAYOU WINIA CO LTD
Assignee(s): LTD DAERYOO WINIAH ; DAYOU WINIA CO
Inventor(s):(std): CHOI GUY JIN ; KIM DONG WON
International class A47J27/08 A47J27/086 H05B3/06 H05B3/20 (Advanced/Invention)
(IPC 8-9):
CPC: A47J27/08 A47J27/086 H05B3/06 H05B3/20

[Classification Explorer](#)

Abstract:

The present invention relates to an electric rice cooker which comprises: a ring-like case installed at an upper inner portion of a base; and a planar heat-emitting object fixated onto an outer surface of the ring-like case. According to the present invention, since additional processes for forming projections and grooves on the upper inner portion of the base and the ring-like case are not needed, productivity increases.



Title:

ELECTRIC RICE COOKER

Priority:

KR20150180023 20151216

Family:

Publication number	Publication date	Application number	Application date
 KR20170071859 A	20170626	KR20150180023	20151216

Probable Assignee:

DAYOU WINIA CO LTD

Assignee(s):(std):

DAYOU WINIA CO LTD

Assignee(s):

LTD DAEYOO WINIAH ; DAYOU WINIA CO

Inventor(s):(std):

CHOI GUY JIN ; KIM DONG WON ; KIM JUN WOO

International class

A47J27/08 A47J27/086 H05B3/06 H05B3/20 (Advanced/Invention)

(IPC 8-9):

CPC:

A47J27/08 A47J27/086 H05B3/06 H05B3/20

[Classification Explorer](#)

Abstract:
The present invention relates to a planar heating element fixed to an outer surface of a ring-shaped case, and more specifically, to an electric rice cooker in which the degree of freedom of power supply connection is improved by changing the position of a terminal to which a power line for supplying electricity to the planar heating element is connected. The electric rice cooker comprises: a ring-shaped case; a planar heating element fixed to an outer surface of the ring-shaped case; a first film layer on which a resistance heating element pattern is printed, and a second film layer disposed on the outer side of an inner pot than the first film layer; and a power line connection unit formed on the planar heating element.

