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- (74) Agents: MOORE, Barry et al.; 13 Lower Lad Lane, Dublin, 2 (IE).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
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[Continued on next page]

(54) Title: THERMAL STORAGE DEVICE

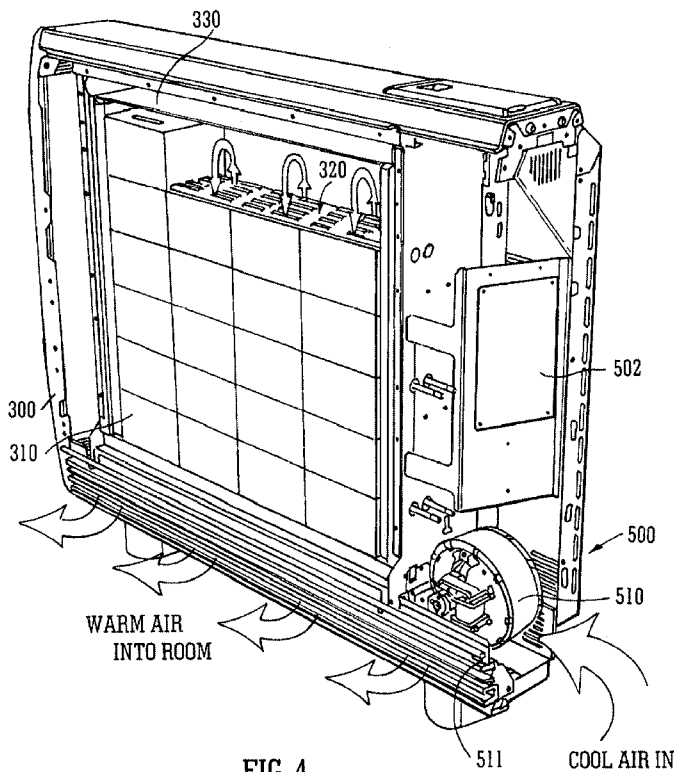
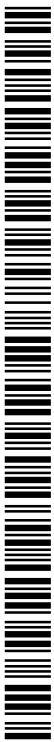


FIG. 4

(57) Abstract: An improved thermal store is provided. The thermal decouples the heat output from the thermal store from the energy provided to the heater.





TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

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20 March 2014

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2013/056449

A. CLASSIFICATION OF SUBJECT MATTER
INV. G05D23/19 F24H9/20 H04L12/28
ADD.
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
G05D F24H H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| X | WO 2011/154521 A2 (BASIC HOLDINGS [IE]; MCDONALD ALAN [GB]) 15 December 2011 (2011-12-15) | 1-3,12, 14, 16-18, 34-39 |
| Y | page 4 - page 5; claims | 13 |
| A | 1,3,11,12,14-16,18,20,46,49,51,53,57-59,61 ; figures 1-3 page 7, line 6 - page 11, line 12 page 21, line 4 - page 24, line 30 | 4-11,15, 19-33 |
| X | US 2010/004790 A1 (HARBIN III BENJAMIN F [US] ET AL) 7 January 2010 (2010-01-07) | 22-24, 27,28 |
| Y | paragraph [0042]; claims 1,2,4,8,11,12,17; | 13 |
| A | figures 1,3,5 | 1-12, 14-21, 25,26, 29-39 |
| | ----- -/-- | |

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier application or patent but published on or after the international filing date
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- "O" document referring to an oral disclosure, use, exhibition or other means
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- "&" document member of the same patent family

| | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| Date of the actual completion of the international search 20 January 2014 | Date of mailing of the international search report 27/01/2014 |
| Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016 | Authorized officer Mallet, Philippe |

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2013/056449

| C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT | | |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------|
| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
| X | US 4 234 782 A (BARABAS MIKLOS F ET AL) 18 November 1980 (1980-11-18) | 30,32,33 |
| A | column 5, line 38 - column 6, line 28; claims 1,3; figures 13-16 column 7, line 17 - column 8, line 47 ----- | 1-29, 34-39 |
| X | US 5 956 462 A (LANGFORD NEWTON [AU]) 21 September 1999 (1999-09-21) | 34,37,39 |
| A | column 6, lines 40-59; claims 1,3; figure 3 ----- | 1-33,35, 36,38 |

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2013/056449

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-21, 34-39

Heat accumulator comprising an interface with a remote computer or operator

2. claims: 30-33

Local control of a heat accumulator

3. claims: 22-29

Electrical power supply load controller

INTERNATIONAL SEARCH REPORT

Information on patent family members

| |
|---------------------------------------------------|
| International application No PCT/EP2013/056449 |
|---------------------------------------------------|

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|----------------------------------------|------------------|-------------------------|------------------|
| WO 2011154521 A2 | 15-12-2011 | AU 2011263698 A1 | 10-01-2013 |
| | | CA 2801973 A1 | 15-12-2011 |
| | | CN 103190049 A | 03-07-2013 |
| | | EP 2580832 A2 | 17-04-2013 |
| | | JP 2013528349 A | 08-07-2013 |
| | | KR 20130048223 A | 09-05-2013 |
| | | US 2013146587 A1 | 13-06-2013 |
| | | WO 2011154521 A2 | 15-12-2011 |
| ----- | | | |
| US 2010004790 A1 | 07-01-2010 | CA 2765674 A1 | 07-01-2010 |
| | | EP 2304513 A1 | 06-04-2011 |
| | | US 2010004790 A1 | 07-01-2010 |
| | | US 2013146586 A1 | 13-06-2013 |
| | | WO 2010002825 A1 | 07-01-2010 |
| ----- | | | |
| US 4234782 A | 18-11-1980 | NONE | |
| ----- | | | |
| US 5956462 A | 21-09-1999 | CA 2227523 A1 | 20-07-1999 |
| | | US 5956462 A | 21-09-1999 |
| ----- | | | |