(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 420 217 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
19.05.2004 Bulletin 2004/21

(51) Int Cl.[7]: **F24H 9/12**, F24D 3/10

(21) Application number: **02404001.6**

(22) Date of filing: **13.11.2002**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LI LU MC NL PT SE SK TR
Designated Extension States:
AL LT LV MK RO SI

(71) Applicant: **T.M.S. Türker Makina Sanayi Ve Ticaret Limited Sirketi**
Bursa (TR)

(72) Inventor: **Cilingir,Türker Bursa Organize Sanayi**
Bursa (TR)

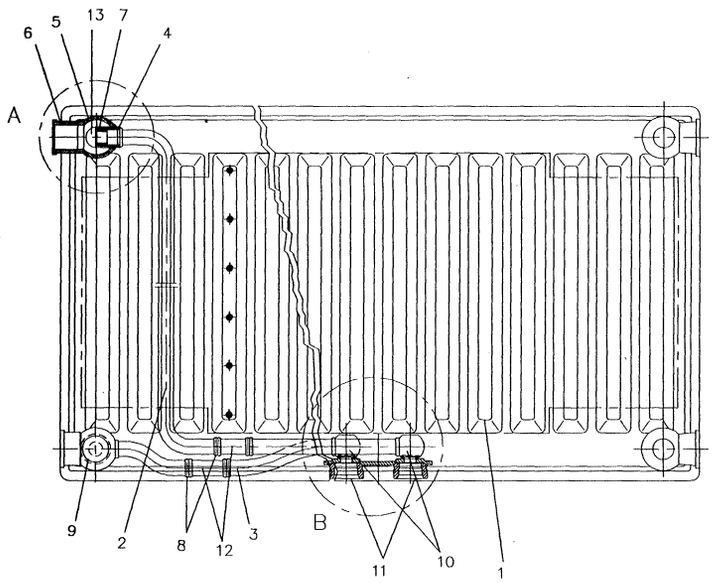
(74) Representative: **Esinoglu, Emine**
Alacamescit Mah. Tuzpazari Sok. No. 16
Bursa (TR)

(54) Panel-radiator with modular built-up connection pipes, thus variable in their length, that connect the lower central adapter fittings of the radiator with its upper valve housing

(57) Claim 1: A panel radiator (1) with

- an upper adapter fitting (5)
- two lower adapter fittings (10,11,9), two of them (10,11) in the lower center portion the radiator,
- inter-connecting pipes (2,3), connecting the lower central adapter fittings (10,11) with the upper and the remaining lower adapter fitting (5,9),
- the inter-connecting pipes (2,3), being weld modularly together depending of the length of the panel radiator (1),

Further claims 2-4 are related to design matters of the valve/valve seat, (e.g. location of o-ring). Claims 5-7 are related to design matters of the connection between the inter-connecting pipe and the valve body/valve seat.



SEKIL 1

EP 1 420 217 A1

Description

Technological Area:

[0001] The invention is relating to the thermostatic valve installation part providing entrance of a fitting to the panel radiator both from below and through center of panel radiator. This fitting enables the entry into the panel radiator as well as circulation in the panel radiator of the hot water. The characteristic of this part is that as it provides a center-connection to the panel radiator, thus, providing an easy assembling from the right and left and consists of two parts, namely, installation upper group and lower group. Therefore, because of the adaptation of hot water pipe to various length and the modular structure of it, when required, the weld assembly can be made providing an easiness in stocking and conveying and, thus, minimizing costs of stocking.

[0002] In case single-pipe version in place of two-pipe version is used in installation lower group, an additional advantage in material cost-saving is obtained.

[0003] Since the passes in the piping are spherical and radius-twisted, a smooth flow is provided by decreasing internal flow resistance and, thus, sounds originating from turbulence during flow arc dissipated.

The Current State of the Technique

[0004] During the circulation of hot water in the panel radiators, owing to the manufacturing and combining method, the fittings used for the water flow and return by means of combined piping cause the low quantities of production in the unit time. Meanwhile, since two distinct pipes are used for inlet and outlet with the installation lower group, excess material is not used. Because of these reasons, cost of installation is found high.

[0005] Moreover, since the valve installations of particular size is required for panel radiators of particular height and length, cost of stocking is increased.

Explanation of Figures:

[0006]

Figure-1 Picture of cross-section showing position of the version with two- line inter-fitted-pipe in the panel radiator.

Figure-2 the Version with two-linc inter-fitted-pipe

Figure-3 Picture of cross-section showing position of the version with single- line inter-fitted-pipe in the panel radiator.

Figure-4 the Version with single-line inter-fitted-pipe

References:

[0007]

A Installation upper group
B Installation lower group
K Collector

1. Panel radiator (casing)
2. Inter-fitted-pipe VCP
3. Inter-fitted-pipe HCP
4. The welding point upset from pipe, for the resistance welding
5. Valve box and distributor
6. Valve inlet
7. Valve seat
8. The welding points upset from pipe, for the connection of installation lower group and upper group
9. Valve housing group for water return
10. Sphere segment for connecting inter-fitted-piping to installation lower group
11. Sleeves for lower connection group
12. Modular inter-connection pipes
13. Thermostatic valve part
14. Support

An Illustration of the invention

[0008]

Figure 1 : The position of a version of the invention on the panel radiator is exhibited.

Figure 2 : In the version of thermostatic valve installation part, the position of which on the panel radiator is shown in Figure 1; the flow to upper installation group of the hot water in the panel radiator chasing (1) is performed by means of the inter-fitted pipe VCP (2), and the returning cold water is conducted through inter-fitted pipe HCP(3) to installation lower group (B) by means of valve box group (9). The connection between installation upper group (A) and installation lower group (B) is accomplished by means of inter-fitted pipes of VCP (2) and HCP (3), respectively. Modular inter-fitted pipes (12) are fitted to the VCP (2) and HCP (3) pipes according to the length of panel radiator so as to provide sealing, being connected to each other with the welded assembling method. Thanks to the small spherical segments (10) contained in the installation lower group, a smooth flow with the exit of hot water and the return of cold water is established. Since there is no turbulence occurred throughout the process, there is no any sound coming out of the radiator.

Figure 3 : Position of the single-line thermostatic valve installation part on the panel radiator.

Figure 4 : : In the version of thermostatic valve installation part, the position of which on the panel radiator is shown in Figure 3; the most important aspect is that the flow of hot water from lower installation group to upper installation group is provided by means of a single inter-fitted pipe. The return of cold water is supplied by means of the collector (K) in the lower installation group. The inter-fitted pipe VCP (2) and the modular inter-fitted pipe HCP (3), which is variable according to the radiator lengths, are united by welded-uniting method, thus, obtaining a single line. During the mounting of thermostatic valve part (13) on the panel radiator (1), a smooth mounting is established using support part (14) and thus the slipping down of thermostatic valve part is prevented. There are two different types of this version dependent on the lower installation group (B), panel radiator (1) being on the right hand side or left hand side of the thermostatic valve.

Figure 4 (LEFT), Figure 4 (RIGHT) In all the versions; thermostatic valve part (13) existing in the upper installation group (A) connects to the valve scat at the end of insertion part in three different forms. These three different application is illustrated in Figure 2 (C, D, E). Valve seat is mounted on the valve casing in three different weld fittings illustrated in Figure 2 (F,G,H).

[0009] In the case of Figure 2(C), the fitting of thermostatic valve part (12) to valve seat at the and of insertion part has an external o-ring scaling.

[0010] In the case of Figure 2(D), thermostatic valve part (12) operates when a plastic plug piece in the vent presses on the top of the valve scat (7) located at the end of insertion part.

In the case of Figure 2(E), the fitting of thermostatic. valve part (12) to valve seat at the and of insertion part has an internal o-ring scaling.

In the case of Figure 2(F), this valve seat (7) and weld insertion part(1) are welded, and then the end of connection pipe is upset in shape of ring for welding (8), and consequently the upset section is welded with the insertion part.

[0011] In the case of Figure 2(G), inter-fitted pipe(2) is upset in shape of ring, and then this upset section and valve casing (5) arc united by welding.

[0012] In the case of Figure 2(G), the end of inter-fitted pipe(2) is upset in shape of ring, and then this upset section and valve scat (7) are united by welding.

Claims

1. The invention is relating to the thermostatic valve installation part providing entrance of a fitting to the panel radiator both from below and through center of panel radiator. This fitting enables the entry into the panel radiator as well as circulation in the panel radiator of the hot water. The characteristic of this part is that as the connection between the spherical segments in the installation upper group (A) and installation lower group (B) is established by means of inter-fitted pipes VCP (2) and HCP (3), and depending on the length of panel radiator, modular inter-fitted pipes (12) arc mounted on the inter-fitted pipes VCP (2) and HCP (3) by means of welded-uniting method.

2. This is the requirement regarding the connection of upper installation group (A) conforming to the requirement 1 to lower installation group (B), and thermostatic valve part (13) connects to the valve seat (7) at the end of inter-fitted pipe (2), with external O-ring (C).

3. This is the requirement regarding the connection of upper installation group (A) conforming to the requirement 1 to lower installation group (B), thermostatic, valve part (13) connects (D) to the valve seat (7) located at the end of inter-fitted pipe (2) when a vcnt piece on top of it presses on the plastic plug piece.

4. This is the requirement regarding the connection of upper installation group (A) conforming to the requirement 1 to lower installation group (B), and thermostatic valve part (13) connects to the valve seat (7) at the end of inter-fitted pipe (2), with internal O-ring (C).

5. This is the requirement regarding the connection of upper installation group (A) conforming to the requirement 1 to lower installation group (B), the valve seat (7) and weld insertion part(1) are welded (4), and then the end of inter-fitted pipe (2) is upset in shape of O- ring for welding ,and consequently the upset section is welded with the insertion part (F).

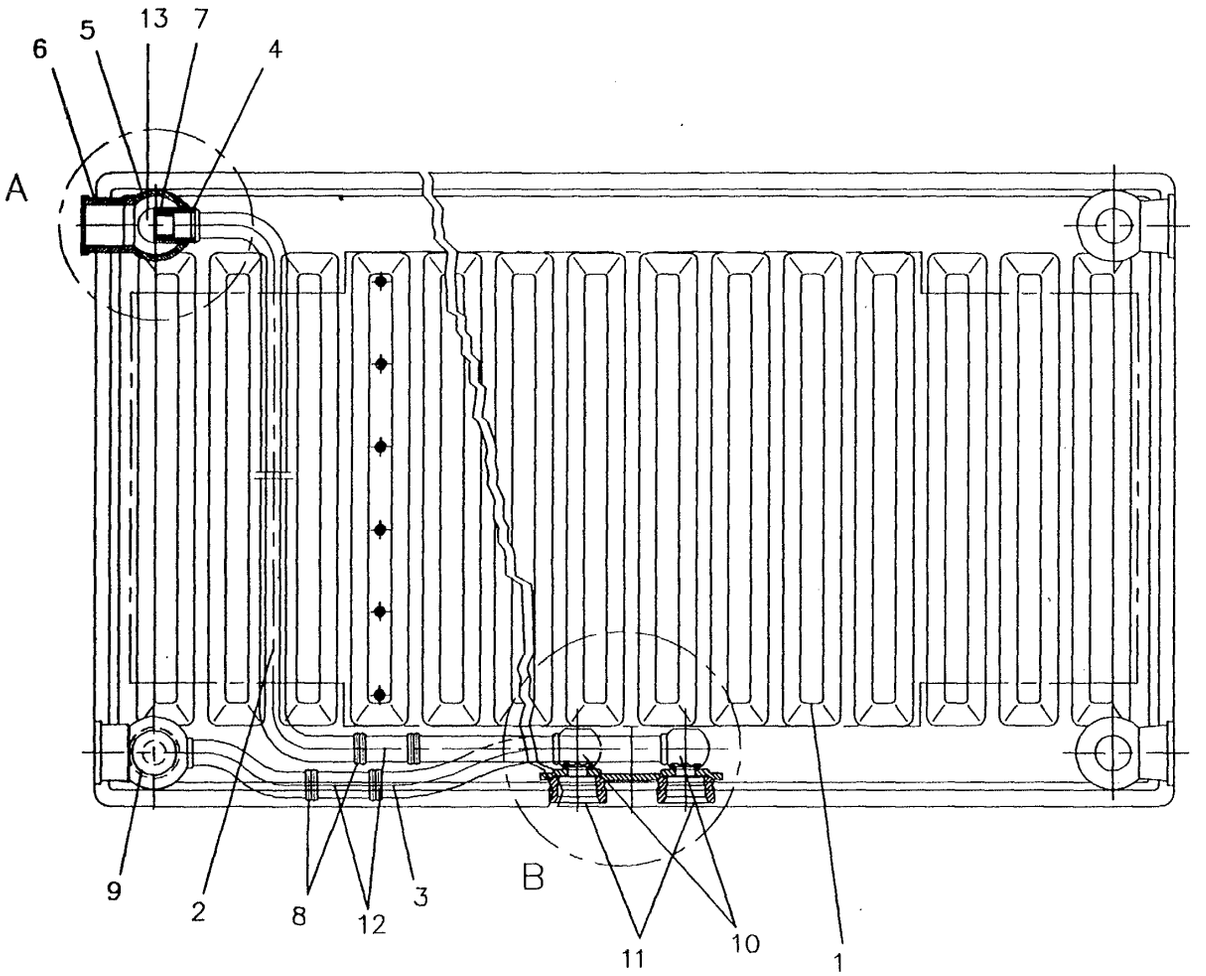
6. This is the requirement regarding the connection of upper installation group (A) conforming to the requirement 1 to lower installation group (B),inter-fitted pipe(2) is upset in shape of O-ring, and then this upset section and valve casing (5) are united by welding (G).

7. This is the requirement regarding the connection of upper installation group (A) conforming to the requirement 1 to lower installation group (B),inter-fitted pipe(2) is upset in shape of O-ring, and then this upset section and valve seat (7) are united by welding(H).

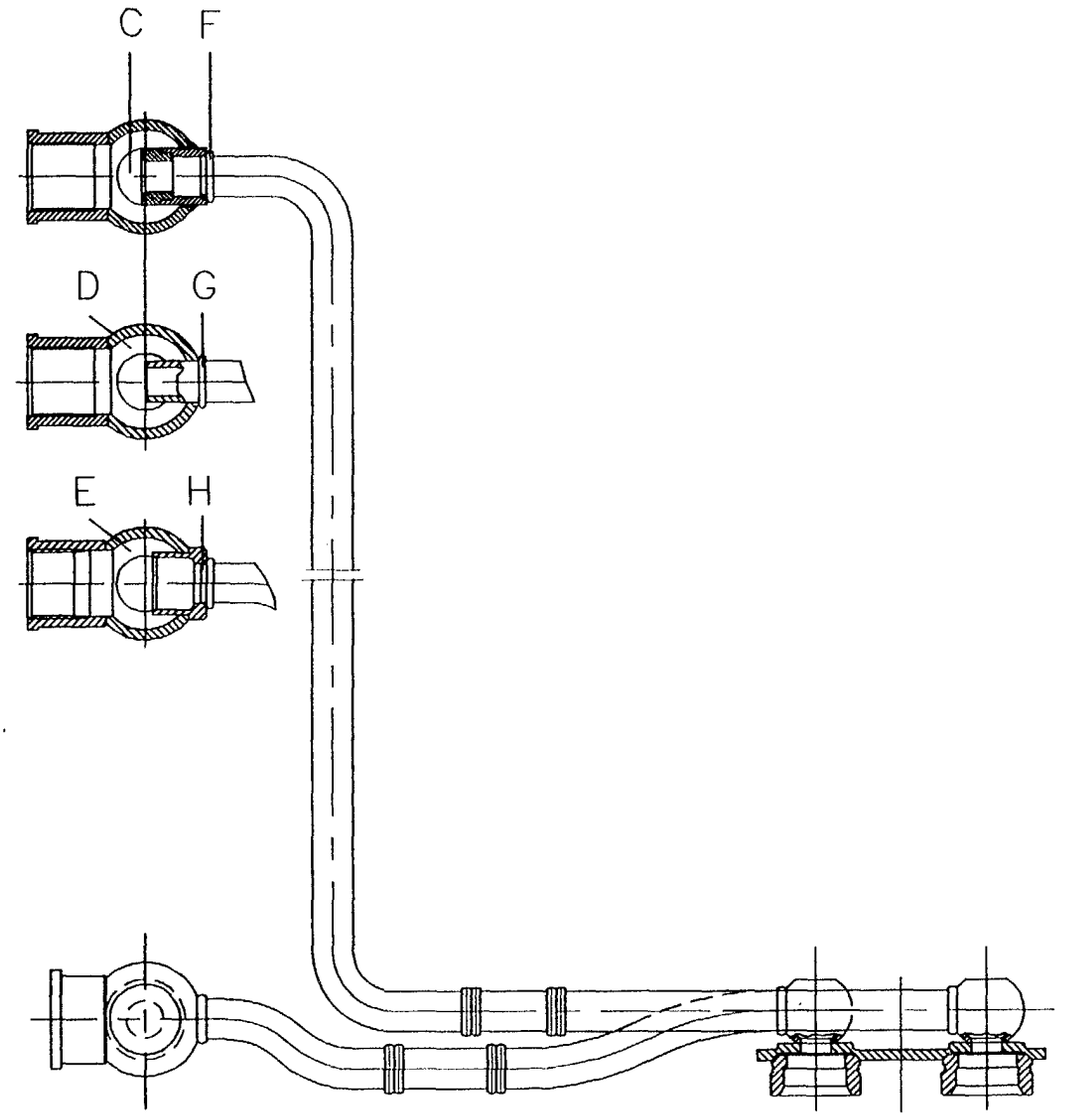
8. The inter-fitted pipes conforming to the requirement 1 and the modular inter-fitted pipes (12) of VCP (2) and HCP (3) arc united at the upset pipe section (8),

with the weld-uniting method.

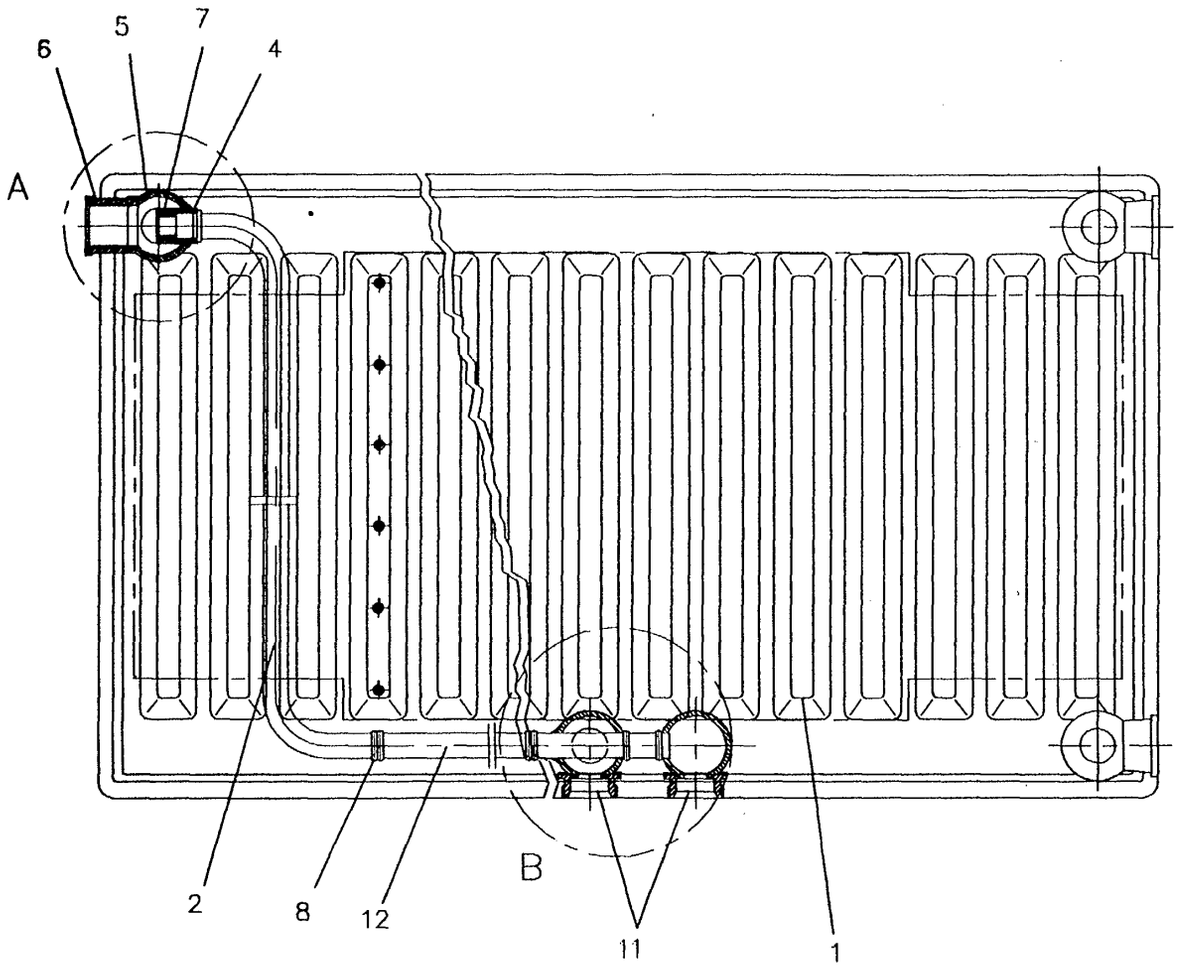
9. During mounting of thermostatic valve part (13) on the panel radiator (1), the support piece (14) is used.



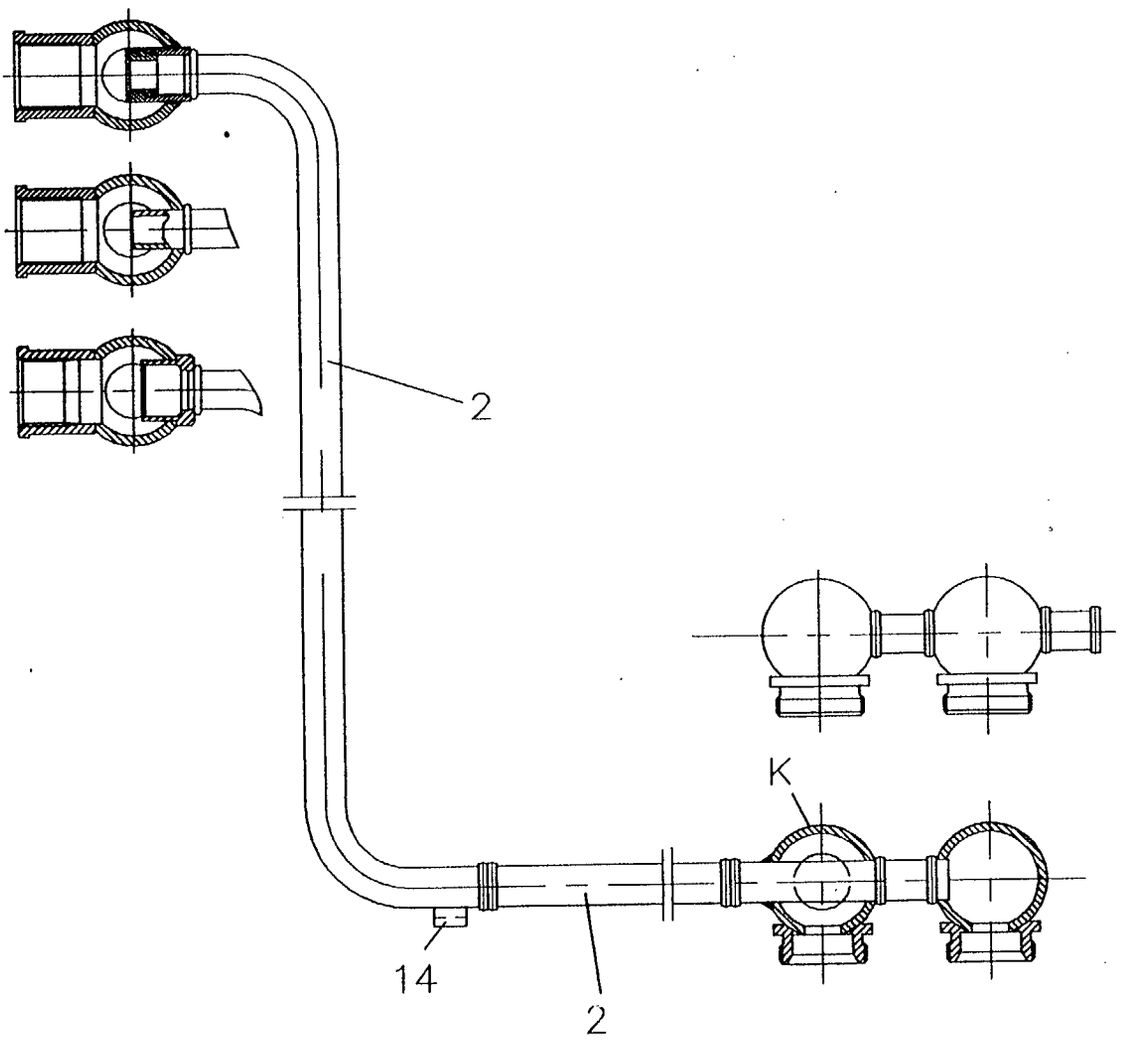
SEKIL 1



SEKIL 2



SEKIL 3



SEKIL 4

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 02 40 4001

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X Y	WO 00 55548 A (VOGEL & NOOT WAERMETECHNIK AKT) 21 September 2000 (2000-09-21) * page 1-23; figures 3,4,4A,7,14 *	1,3 2,4,6,8	F24H9/12 F24D3/10
Y	DE 196 02 364 A (HEIMEIER GMBH METALL THEODOR) 31 July 1997 (1997-07-31) * figure 1 *	2	
Y	DE 195 07 022 A (BERG HANS GMBH & CO KG) 11 April 1996 (1996-04-11) * the whole document *	4,6,8	
X	EP 1 136 765 A (KERMI GMBH) 26 September 2001 (2001-09-26) * column 1; figures 1,2 *	1	
A	US 2002 084 068 A1 (HUGGER WERNER) 4 July 2002 (2002-07-04) * figures *	2	
A	EP 0 217 321 A (VIESSMANN HANS) 8 April 1987 (1987-04-08) * figures *	6	TECHNICAL FIELDS SEARCHED (Int.Cl.7) F24H F24D
A	DE 197 44 482 C (OVENTROP SOHN KG F W ;RETTIG VAERME AB (FI)) 28 January 1999 (1999-01-28) * the whole document *		
A	DE 197 44 981 C (OVENTROP SOHN KG F W) 18 March 1999 (1999-03-18) * the whole document *		
A	EP 0 952 410 A (KERMI GMBH) 27 October 1999 (1999-10-27) * the whole document *		

~~The present search report has been drawn up for all claims~~

Place of search	Date of completion of the search	Examiner
MUNICH	25 March 2003	von Kolczynski, A

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

European Patent Office

Application Number
EP 02 40 4001

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-8

European Patent Office

LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 02 40 4001

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1-8

   A panel-radiator with connection pipes, connecting the lower central adapter fittings of the radiator with its upper valve housing and with its lower fitting to the panels. The connection pipes are modular built-up, and are thus variable in their length, according to the lenght of the radiator.

2. Claim : 9

   A method for mounting a thermostatic valve on a panel radiator, using a support piece.

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 02 40 4001

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

25-03-2003

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0055548 A	21-09-2000	AT 44399 A	15-04-2003
		AT 111499 A	15-04-2003
		AU 1530700 A	04-10-2000
		DE 29980186 U	19-12-2002
		EP 1161645 A	12-12-2001
DE 19602364 A	31-07-1997	NONE	
DE 19507022 A	11-04-1996	DE 19516613 A	11-04-1996
EP 1136765 A	26-09-2001	DE 10014454 A	11-10-2001
		CZ 20011054 A	13-02-2002
		DE 20105092 U	28-06-2001
		PL 346384 A	24-09-2001
US 2002084068 A	04-07-2002	DE 19837012 A	24-02-2000
EP 0217321 A	08-04-1987	DE 8528066 U	07-11-1985
		DE 8533090 U	16-01-1986
		DE 8608736 U	28-05-1986
		DE 8614038 U	03-07-1986
		AT 69497 T	15-11-1991
		DE 3774465 D	19-12-1991
		EP 0240860 A	14-10-1987
DE 19744482 C	28-01-1999	FI 974143 A	10-04-1999
		GR 1003325 B	24-02-2000
		PL 329092 A	12-04-1999
		SE 9704616 A	10-04-1999
DE 19744981 C	18-03-1999	NONE	
EP 0952410 A	27-10-1999	DE 29807226 U	16-07-1998
		CZ 9901388 A	17-11-1999
		PL 332587 A	25-10-1999

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82