



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
07.05.2014 Bulletin 2014/19

(51) Int Cl.:
F21V 29/00 ^(2006.01) **F21Y 101/02** ^(2006.01)

(43) Date of publication A2:
19.03.2014 Bulletin 2014/12

(21) Application number: **13182216.5**

(22) Date of filing: **29.08.2013**

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

(30) Priority: **12.09.2012 IT TO20120786**

(71) Applicants:
• **OSRAM GmbH**
80807 München (DE)
• **OSRAM S.P.A. - SOCIETA' RIUNITE OSRAM EDISON CLERICI**
20126 Milano (IT)
Designated Contracting States:
IT

(72) Inventors:
• **Martini, Michele**
30038 Spinea, VE (IT)
• **Cacchione, Fabrizio**
30031 Dolo (IT)

(54) **Method for assembling heat sinks and related tool**

(57) A tubular secondary heat sink (22) is fitted onto a primary heat sink (10), with thermal interface material (20) placed in between. The secondary heat sink (22) is radially expanded and the primary heat sink (10) is inserted into the radially expanded secondary heat sink (22) with the thermal interface material (102) interposed between the primary heat sink (10) and the secondary heat sink (22). The subsequent radial contraction of the secondary heat sink (22) with the primary heat sink (10) inserted therein causes the thermal interface material (20) to be pressed between the primary heat sink (10) and the secondary heat sink (22).

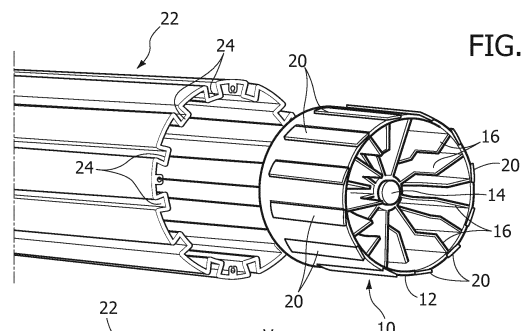


FIG. 1

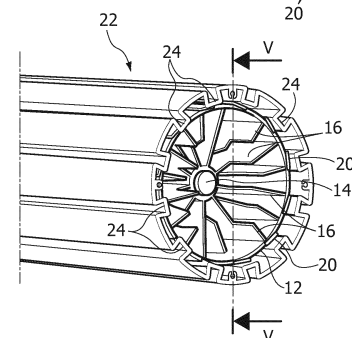


FIG. 2



EUROPEAN SEARCH REPORT

Application Number
EP 13 18 2216

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2010/321893 A1 (ANDREWS PETER SCOTT [US]) 23 December 2010 (2010-12-23) * paragraphs [0058], [0063], [0069] - [0071]; figures 2A, 10 * -----	1,4,5	INV. F21V29/00 ADD. F21Y101/02
X	US 2011/249406 A1 (ANDREWS PETER SCOTT [US]) 13 October 2011 (2011-10-13) * paragraphs [0061], [0062], [0068], [0069]; figures 2A, 6 * -----	1,4,5	
X	WO 2010/102594 A1 (SPRINGER JOACHIM [DE]) 16 September 2010 (2010-09-16) * the whole document * -----	1	
X	DE 10 2010 002235 A1 (ZUMTOBEL LIGHTING GMBH [DE]) 25 August 2011 (2011-08-25) * the whole document * -----	1	
A	US 2010/246178 A1 (GIARDINA RICHARD N [US] ET AL) 30 September 2010 (2010-09-30) * the whole document * -----	1	TECHNICAL FIELDS SEARCHED (IPC)
A	US 2011/051430 A1 (CHEN SHIH-MING [TW]) 3 March 2011 (2011-03-03) * the whole document * -----	1	F21V F21Y
1 The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 21 November 2013	Examiner von der Hardt, M
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)



Application Number

EP 13 18 2216

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due 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 those claims for which no payment was due.

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

☐ The present supplementary 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 (Rule 164 (1) EPC).



**LACK OF UNITY OF INVENTION
SHEET B**

Application Number
EP 13 18 2216

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

method for fitting a tubular secondary heat sink about a
primary heat sink

2. claims: 9, 10

dilation tool suitable for radially expanding a tubular heat
sink

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

EP 13 18 2216

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.

21-11-2013

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2010321893 A1	23-12-2010	NONE	
US 2011249406 A1	13-10-2011	NONE	
WO 2010102594 A1	16-09-2010	NONE	
DE 102010002235 A1	25-08-2011	CN 102884376 A	16-01-2013
		DE 102010002235 A1	25-08-2011
		EP 2539632 A1	02-01-2013
		US 2013120998 A1	16-05-2013
		WO 2011104254 A1	01-09-2011
US 2010246178 A1	30-09-2010	NONE	
US 2011051430 A1	03-03-2011	NONE	