

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) Publication number:

0 607 872 A3

(12)

EUROPEAN PATENT APPLICATION(21) Application number: **94100446.7**(51) Int. Cl.⁶: **F23Q 7/00**(22) Date of filing: **13.01.94**(30) Priority: **14.01.93 JP 22011/93**(43) Date of publication of application:
27.07.94 Bulletin 94/30(84) Designated Contracting States:
DE FR IT(88) Date of deferred publication of the search report:
19.04.95 Bulletin 95/16(71) Applicant: **NIPPONDENSO CO., LTD.**
1-1, Showa-cho
Kariya-city
Aichi-pref., 448 (JP)(72) Inventor: **Makino, Sigeharu**
18967, Kurobe,
Ano-cho
Toyoake-shi,**Aichi-ken (JP)**Inventor: **Koyama, Taiji****288, Aza Asahi,****Asahi-machi****Toyohashi-shi,****Aichi-ken (JP)**Inventor: **Tsuji, Nobuyuki****62-2, Araya,****Shimosawaki,****Mito-cho****Hoi-gun,****Aichi-ken (JP)**(74) Representative: **Bühling, Gerhard, Dipl.-Chem.**
et al
Patentanwaltsbüro
Tiedtke-Bühling-Kinne & Partner
Bavariaring 4
D-80336 München (DE)(54) **Glow plug for diesel engine.**

(57) A glow plug for a diesel engine is provided which includes generally a heating coil (1). The heating coil is provided with a first resistance element (11) and a second resistance element (12) connected in series with the first resistance element and having a resistance temperature coefficient positively higher than that of the first resistance element. The second resistance element (12) is made of a Co-Fe alloy whose compositions fall in a range where a change in phase from a body-centered cubic lattice arrangement to a face-centered cubic lattice arrangement does not occur and a change in phase from a close-packed hexagonal lattice arrangement to the face-centered cubic lattice arrangement does not occur even when the second

resistance element is subjected to a temperature change from a given room temperature to 1000 °C. The first resistance element (11) is welded at its end to an end of the second resistance element (12) to form a connection therebetween which consists of part of material forming the first resistance element and part of the Co-Fe alloy forming the second resistance element (12), the material forming the first resistance element (11) being so selected as to prevent compositions of the Co-Fe alloy in the connection from changing in phase from the body-centered cubic lattice arrangement to the face-centered cubic lattice arrangement and from the close-packed hexagonal lattice arrangement to the face-centered cubic lattice arrangement.

EP 0 607 872 A3

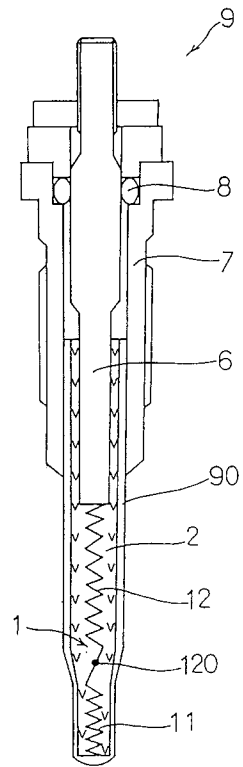


Fig. 1.



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 94 10 0446

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.5)
X	DE-A-40 10 479 (ROBERT BOSCH) * the whole document *	1,2,8,9	F23Q7/00
A	---	5	
A	EP-A-0 351 883 (BERU RUPRECHT) * page 5, line 10 - line 43; figures *	1-5	
A	---		
A	US-A-4 144 380 (BELTRAN) * claim 1 *	1	
A	---		
A	GB-A-2 216 952 (WELLMAN) * claims 1-4 *	1	

			TECHNICAL FIELDS SEARCHED (Int.Cl.5)
			F23Q
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 17 February 1995	Examiner Vanheusden, J
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	