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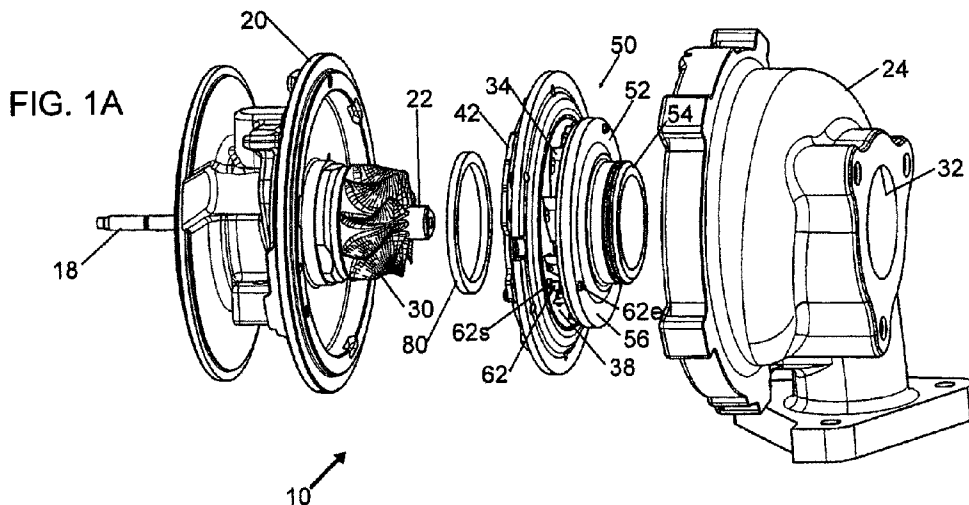
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(54) Title: METHOD FOR MANUFACTURING A VARIABLE-VANE MECHANISM FOR A TURBOCHARGER



(57) Abstract: A variable-vane cartridge mechanism for a turbocharger is assembled from a nozzle ring, an insert that engages a turbine housing bore, and a plurality of spacers. Holes larger in diameter than the spacers are formed in the nozzle ring and a nozzle portion of the insert, such that the spacers fit loosely in the holes. A locating fixture is engaged with the nozzle ring and insert for precisely locating these parts radially (and optionally also axially) with respect to each other; the spacers can move within the holes as needed to allow the positions of the parts to be adjusted. Once located relative to each other, the nozzle ring and insert are fixed in the desired relative positions by affixing the spacers to them, such as by welding.

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B. FIELDS SEARCHED		
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C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1 635 040 A (BORG WARNER INC [US]) 15 March 2006 (2006-03-15) paragraphs [0005], [0006], [0008], [0017], [0021] - [0024], [0036], [0038]; figures 6-9	1-19
A	DE 10 2004 023281 A1 (VOLKSWAGEN AG [DE]) 1 December 2005 (2005-12-01) paragraphs [0012], [0013]; figure 1	1,11
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A	US 4 654 941 A (BURDETTE FRED E [US] ET AL) 7 April 1987 (1987-04-07) column 5, lines 5-12; figure 9	1,11
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> 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 document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed		*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *&* document member of the same patent family
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Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer <p align="center">Chatziapostolou, A</p>

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Information on patent family members

International application No

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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DE 102004023281	A1	01-12-2005	NONE	
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US 4654941	A	07-04-1987	NONE	