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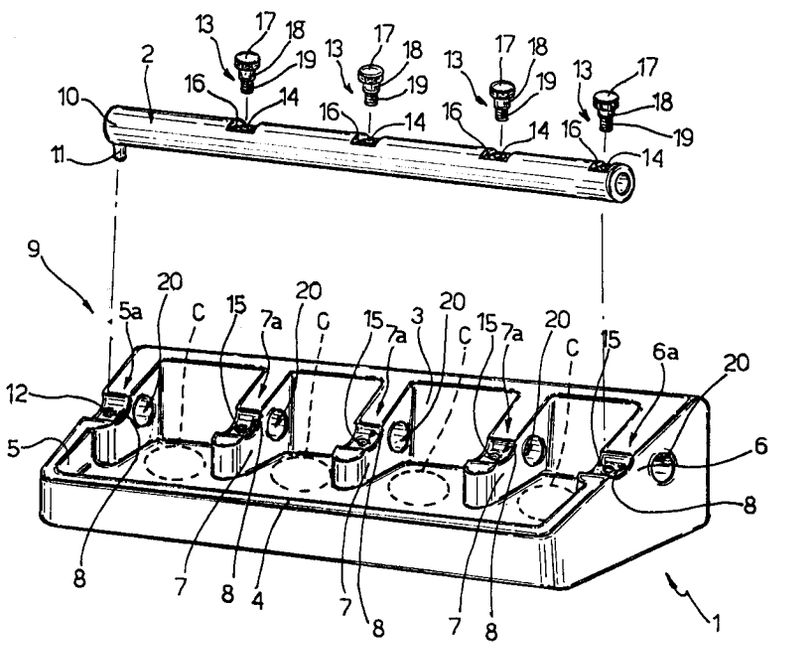
(71) Applicant: **IVECO FIAT S.p.A.**
Via Puglia 35
I-10156 Torino (IT)

(72) Inventor: **Palmisani, Domenico**
Via Boston, 20
I-10137 Torino (IT)

(74) Representative: **Franzolin, Luigi et al**
Studio Torta Società Semplice
Via Viotti 9
I-10121 Torino (IT)

(54) Assembly unit for a rocker shaft in a cylinder head of a heat engine.

(57) An assembly unit (9) for a rocker shaft (2) in a cylinder head (1) of a heat engine, comprising a plurality of transverse support walls (5, 6, 7) integral with said cylinder head (1) and disposed between each pair of adjacent cylinders and at the sides of the end cylinders of the engine, a radial pin (11) integral with the rocker shaft (2) and co-operating with a respective reference hole (12) provided in a bearing surface (8) of one of the support walls (5), and a plurality of screws (13) for fastening the rocker shaft (2) to respective bearing surfaces (8) of the other respective support walls (6, 7).



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The present invention relates to an assembly unit for a rocker shaft in a cylinder head of a heat engine.

It is known to mount a rocker shaft on a cylinder head by means of supports fixed to the head itself and provided with respective through-seatings for accommodating the shaft itself. Supports of this type are generally connected to the head by means of screws.

This solution has a number of drawbacks.

In particular, the assembly operations are relatively long and complicated; furthermore, rather high costs are incurred in machining the supports.

It is the object of the present invention to devise an assembly unit for a rocker shaft in a cylinder head of a heat engine, which enables the aforementioned drawbacks to be obviated.

Said object is achieved by the present invention in that it relates to an assembly unit for a rocker shaft in a cylinder head of a heat engine, characterised in that it comprises a plurality of support walls extending integrally with said cylinder head and transversely to said rocker shaft and disposed between each pair of adjacent cylinders and at the sides of the end cylinders, said support walls defining respective bearing surfaces for said rocker shaft, one of said walls having in its own bearing surface a reference hole, at least one of the other support walls having on its own bearing surface a threaded fastening hole, said unit further comprising a radial pin securely attached to said rocker shaft and co-operating with said reference hole, and at least one fastening screw engaging in a respective diametral hole passing through said rocker shaft and screwed into said fastening hole.

With a view to a better understanding of the present invention a preferred form of embodiment will be described non-restrictively by way of example below, with reference to the accompanying drawing which illustrates an exploded view thereof in perspective.

Referring now to the Figure, the reference numeral 1 denotes a cylinder head of a heat engine, on which is mounted a rocker shaft 2 intended to define, in operation, a pivot axis for a plurality of rockers (not shown) for actuating the valves of the engine (also not shown). The areas of the head 1 situated in alignment with the engine cylinders (not shown) are designated C and are indicated schematically in dashed line; with a view to greater clarity the valve seats and injectors associated with each cylinder are not shown in the drawing, since they are not necessary for comprehension of the present invention.

The head 1 has an upwardly projecting peripheral portion which substantially comprises a pair of longitudinal side walls 3, 4 and a pair of end walls 5, 6 disposed transversely to the shaft 2 and situated on the opposite sides of the end cylinders. The head 1 also has a plurality of intermediate transverse walls 7 which are integral with the wall 3 and which are each interposed between a respective pair of adjacent cylinders.

The end walls 5, 6 and the intermediate walls 7 have respective coaxial through-holes 20 to accommodate a camshaft (not shown) and they form supports for the rocker shaft 2 forming part of an assembly unit 9 in accordance with the present invention.

The walls 5, 6 and 7 have respective upper surfaces 5a, 6a, 7a which are substantially smooth and are inclined downwardly from the wall 3 towards the wall 4; in each of said upper surfaces there is provided a concave seating 8 of cylindrical profile and with a transverse axis with respect to the walls 5, 6, 7, thus forming a respective bearing surface for the rocker shaft 2.

The assembly unit 9 further comprises a pin 11 extending radially from the rocker shaft 2 in the vicinity of one axial end 10 thereof. The pin 11 engages in a corresponding hole 12 provided in the seating 8 of the end wall 5.

The rocker shaft 2 is also secured to the head 1 by means of a plurality of screws 13 (only two of which are shown) which engages in respective diametral through-holes 14 in the rocker shaft itself and are screwed into threaded 15 holes provided in the respective seatings 8 of the end wall 6 and of the intermediate walls 7.

Advantageously, the rocker shaft 2 is provided with respective milled portions 16 defining a flat bearing surface for the respective heads 17 of the screws 13; the latter are provided with a shank formed by a cylindrical portion adjoining the head 17 and engaging with the smallest possible radial clearance in the respective hole 14 in the rocker shaft 2, and by a threaded end portion 19 screwed into the corresponding hole 15.

The assembly of the rocker shaft 2 takes place as follows. The rockers (not shown) are initially mounted on the shaft 2; then the shaft 2 is mounted on the seatings 8 in such a way that the pin 11 engages in the respective reference hole 12. This engagement provides an axial and angular restraint for the shaft 2 and, therefore, defines the location of the shaft itself. The axes of the holes 14 coincide with those of the holes 15 in the walls 6 and 7 and, therefore, it is sufficient to screw down the respective screws 13 to complete the assembly.

The advantages achieved with the present invention are apparent from a study of the features of the assembly unit 9 designed in accordance with therewith. In particular, the mounting of the rocker shaft 2 on the head 1 is carried out rapidly and accurately, thereby eliminating all the additional costs associated with the formation of conventional

supports.

Finally, it is evident that the assembly unit 9 described can be subject to modifications and variants which do not depart from the scope of protection of the present invention.

Claims

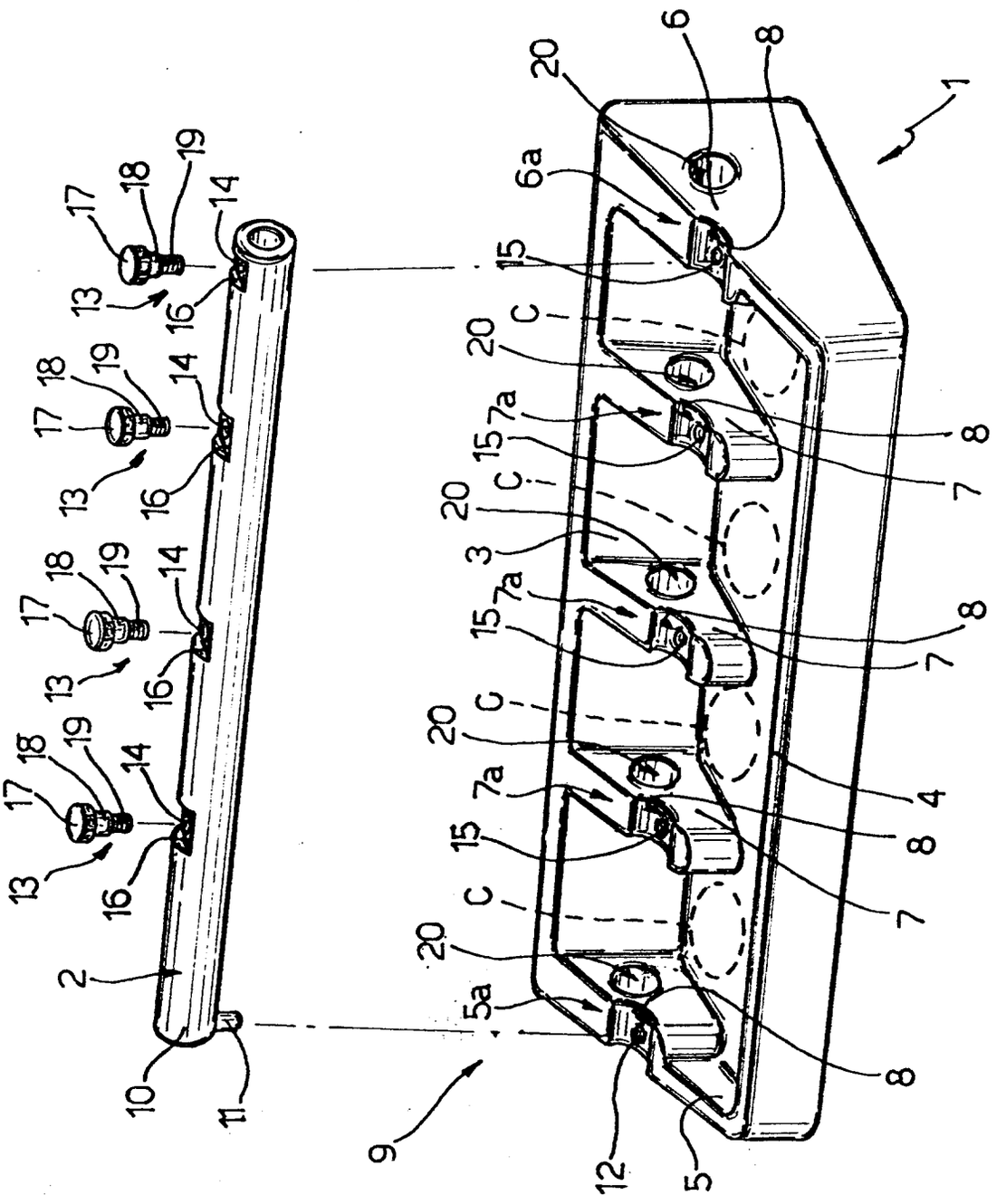
1. An assembly unit (9) for a rocker shaft (2) in a cylinder head (1) of a heat engine, characterised in that it comprises a plurality of support walls (5, 6, 7) extending integrally with said cylinder head (1) and transversely to said rocker shaft (2) and disposed between each pair of adjacent cylinders and at the sides of the end cylinders, said support walls (5, 6, 7) defining respective bearing surfaces (8) for said rocker shaft (2), one of said walls (5) having in its own bearing surface (8) a reference hole (12), at least one of the other support walls (6, 7) having on its own bearing surface (8) a threaded fastening hole (15), said unit (9) further comprising a radial pin (11) securely attached to said rocker shaft (2) and co-operating with said reference hole (12), and at least one fastening screw (13) engaging in a respective diametral hole (14) passing through said rocker shaft (2) and screwed into said fastening hole.

2. A unit according to claim 1, characterised in that said fastening screw (13) comprises a shank provided with a cylindrical portion (18) engaging in said respective diametral through-hole (14) in said rocker shaft (2), and a threaded portion (19) screwed into said fastening hole (15).

3. A unit according to claim 1 or 2, characterised in that it comprises a plurality of screws (13) for fastening said rocker shaft (2) to each of said other support walls (6, 7).

4. A unit according to any one of the preceding claims, characterised in that said bearing surfaces are defined by concave seatings (8) provided on respective upper surfaces (5a, 6a, 7a) of said support walls (5, 6, 7).

5. A unit according to claim 1, characterised in that said upper surfaces (5a, 6a, 7a) of said support walls (5, 6, 7) are smooth and inclined.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EUROPEAN SEARCH REPORT

Application Number
EP 95 10 0630

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.6)
A	EP-A-0 263 734 (PEUGEOT) * the whole document * ---	1	F01L1/18 F02F7/00
A	GB-A-2 037 888 (NISSAN MOTOR COMPANY) * the whole document * ---	1	
A	PATENT ABSTRACTS OF JAPAN vol. 7 no. 5 (M-184) ,11 January 1983 & JP-A-57 165612 (NISSAN JIDOSHA) 12 October 1982, * abstract * -----	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

F01L
F02F
B23P

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	7 April 1995	Wassenaar, G

CATEGORY OF CITED DOCUMENTS

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