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(54) **VALVE WITH OVERHEAD INVERTED SEAT AND INVERTED CAMSHAFT**

(57) Overhead inverted seat valve and inverted camshaft comprising at least: one inverted overhead seat (7), in which the supporting base of the valve (6) is located inside the intake and exhaust nozzles (3); a valve (6) having an inverted seat on the outer face, opposite to the rod (2); a spring (4) located only in the intake valve; a system supporting cartridge (5); and a camshaft (1) having an inverted round cam with a flat surface for actuating the valves.

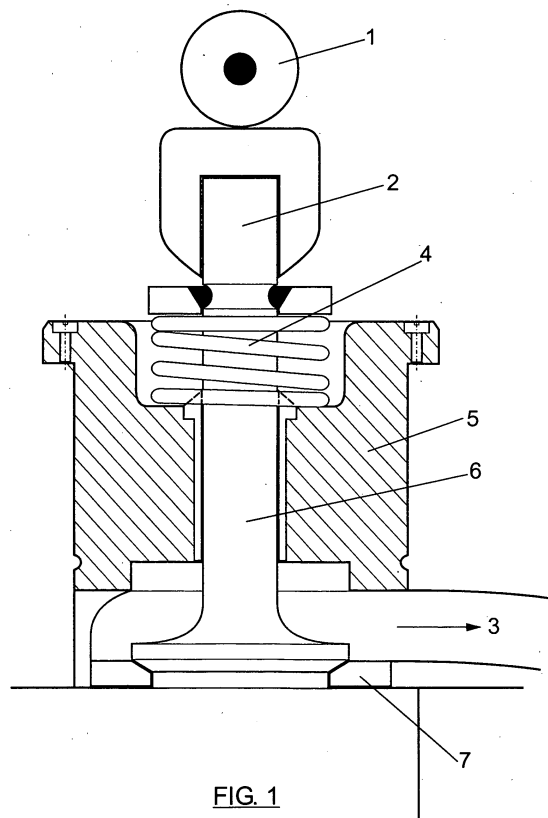


FIG. 1

Description

Object of the invention

[0001] The object of the present invention is a new valve with an overhead inverted seat and inverted camshaft of an internal combustion engine, so that improvements in its general performance are obtained.

Background of the invention

[0002] There are known different types of valves used in internal combustion engines. These valves generally have a series of deficiencies in their functioning and performance. One of the most common deficiencies is the breakdown of the valve in the shaft unheading device, and that in certain cases and, depending on the type of valve, it can result in the breakdown of pistons, rods and head.

[0003] Another effect known are the problems derived from the breakdown of the drive chain-belt where, in general, there is a general breakdown of the engine due to the normal constitution of internal combustion engines, where the valves are in contact with the pistons.

[0004] In the known valves, the breakdown of the springs maintaining the valves pressed causes a general failure in the engine, including its breakdown.

Description of the invention

[0005] In order to solve the aforementioned problems, the overhead inverted seat valve and inverted camshaft are presented for all kinds of internal combustion engines. This valve comprises, at least:

an overhead inverted seat, where the supporting base of the valve is located inside the intake and exhaust nozzles,

valve with inverted seat on the outer face opposite to the rod,

a rod, generally with a greater diameter than conventional valves and also shorter,

a spring, being only located in the intake valve, and which is generally under smaller pressure than in conventional systems known in the state of the art,

a system supporting cartridge, which facilitates the mounting and dismounting of the valve without any need of dismounting the engine head,

a camshaft with inverted round cam with a flat surface for actuating the valves, which enable to run and give opening and closing time without problems.

[0006] The functioning of the valve is based on its

opening and closing by the eccentricity of the camshaft, keeping the closing on the head seat, by the circular diameter of the eccentric movement, enabling to open the valve, when the plane thereof allows the valve to open.

In the escape valve no spring is required since the piston compression is used after the explosion to open the valve to the passage of the camshaft opening, and closing this opening with it, although a low pressure spring can be mounted to help speeding up the opening. In the case of the intake, this opening will be performed by a spring which will help the opening passage of the eccentric movement.

[0007] From this constitution and functioning the following advantages are derived:

- It prevents the valves from breaking down when the shaft is not working, due to its reinforcement possibility in the camshaft, and since the valve head would not go inside the cylinder.
- There is no contact between the valves and the pistons, therefore in case the drive chain-belt breaks down, the engine would stop but it would not break down.
- It improves the friction between the different elements forming the valve and the engine assembly.
- The combustion performance is much more efficient, since the gases are not found in their intake path in the intake, as in the exhaust with the valve axis. It is possible to make the opening as wide as desired without the problem affecting the piston.
- The pistons do not have to have their heads with extreme forms, they can be flat, since, as there is no valve problem in the cylinder, the problem derived from the configuration does not exist, nor does its compression or gas sweeping.

Brief description of the drawings

[0008] The following is a brief description of a series of drawings which will help understand the invention better relating to an embodiment of said invention which is presented as a non-limiting example thereof.

Figure 1 is a schematic plan view of the valve object of the present invention

Preferred embodiment of the invention

[0009] As it can be seen in the attached figure, the valve object of the invention comprises, at least:

an overhead inverted seat (7), where the supporting base of the valve (6) is located inside the intake and exhaust nozzles (3),

valve (6) with inverted seat on the outer face opposite to the rod,

a rod (2), generally with a greater diameter than conventional valves and also shorter,

a spring (4), being only located in the intake valve, and which is generally under smaller pressure than in conventional systems known in the state of the art,

a system supporting cartridge (5), which facilitates the mounting and dismounting of the valve without any need of dismounting the engine head,

a camshaft (1) with inverted round cam with a flat surface for actuating the valves, which enable to run and give opening and closing time without problems.

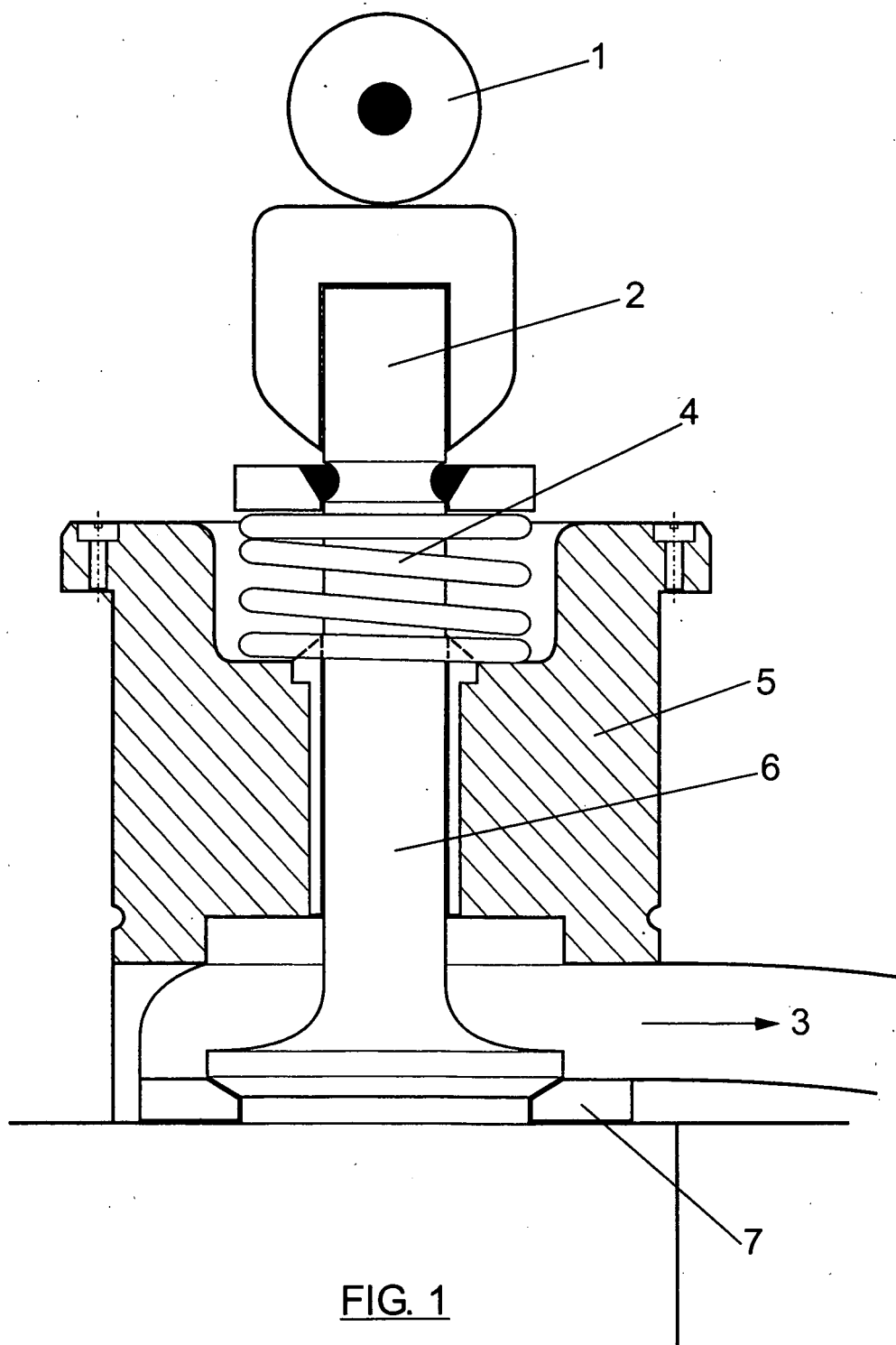
[0010] The functioning of the valve is based on the opening and closing by the eccentricity of the camshaft, keeping the closing on the head seat, by the circular diameter of the eccentric movement, enabling to open the valve, when the plane thereof allows the valve to open. In the escape valve no spring is required since the piston compression is used after the explosion to open the valve to the passage of the camshaft opening, and closing this opening with it, although a low pressure spring can be mounted to help speeding up the opening. In the case of the intake, this opening will be performed by a spring which will help the opening passage of the eccentric movement.

Claims

1. Valve with overhead inverted seat and inverted camshaft, **characterized in that** it comprises, at least:

an overhead inverted seat (7), where the supporting base of the valve (6) is located inside the intake and exhaust nozzles (3),
 valve (6) with inverted seat on the outer face opposite to the rod,
 a rod (2), generally with a greater diameter than conventional valves and also shorter,
 a spring (4), being only located in the intake valve, and which is generally under smaller pressure than in conventional systems known in the state of the art,
 a system supporting cartridge (5), which facilitates the mounting and dismounting of the valve without any need of dismounting the engine head,
 a camshaft (1) with inverted round cam with a flat surface for actuating the valves, which enable to run and give opening and closing time without problems.

2. Valve with overhead inverted seat and inverted camshaft according to claim 1, **characterized in that** the opening and closing of the valve is carried out by the eccentricity of the camshaft, keeping the closing on the head seat by the circular diameter of the eccentric movement, enabling to open the valve, when the plane thereof allows the valve to open.
3. Valve with overhead inverted seat and inverted camshaft according to claim 1, **characterized in that** in the escape valve the piston compression is used after the explosion to open the valve to the passage of the camshaft opening, and closing this opening with it, avoiding the use of a spring.
4. Valve with overhead inverted seat and inverted camshaft according to claim 1, **characterized in that** in the fastness of the opening can be improved by a low-pressure spring.
5. Valve with overhead inverted seat and inverted camshaft according to claim 1, **characterized in that** in the case on the intake, this opening will be performed by a spring which will help the opening passage of the eccentric movement.



INTERNATIONAL SEARCH REPORT

International application No.

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A. CLASSIFICATION OF SUBJECT MATTER

see extra sheet

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

F01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

INVENES, EPODOC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3289658 A (T. SUROVEK) 06.12.1966 Column 1, line 56 - col.3, lín.12; figures 1-5	1-5
A	FR 2854426 A (J. MORSILLO) 05.11.2004 The whole document	1-5
A	JP 60201014 A (OKUEMON NAKAMURA) 11.10.1985, & PATENT ABSTRACT OF JAPAN, vol.0100, núm.51 (M-457) 28.02.1986 Abstract; figure 1	1-5
A	US 2816532 A (W. RATLIFF) 17.12.1957 The whole document	1-5

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:	"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
"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)	"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
"O" document referring to an oral disclosure use, exhibition, or other means	"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 documents, such combination being obvious to a person skilled in the art
"P" document published prior to the international filing date but later than the priority date claimed	"&"	document member of the same patent family

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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Patent document cited in the search report	Publication date	Patent family member(s)	Publication date
US 3289658 A	06.12.1966	NONE	-----
FR 2854426 A	05.11.2004	NONE	-----
JP 60201014 A	11.10.1985	NONE	-----
US 2816532 A	17.12.1957	NONE	-----

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