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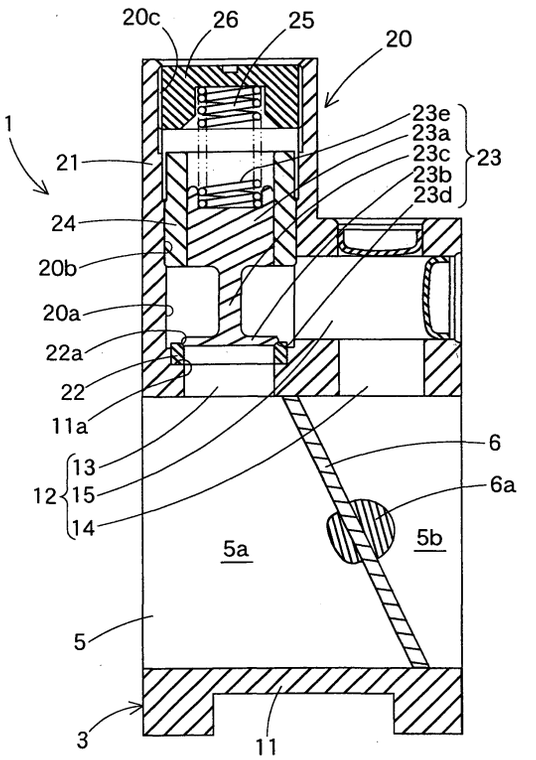
(54) Exhaust pressure control valve

(57) An exhaust pressure control valve (1) is provided with a relief valve chamber (20) having a relief body (21) integrally formed with a valve body (11). The relief valve chamber (20) is arranged in an orthogonal direction to a main passage of an exhaust gas, and a seat member (22) made of a stainless steel material or the like and having a relief valve seat (22a) is attached to the relief valve chamber in a side of the valve body (11). Further, within the relief valve chamber (20), there are arranged a relief valve body sliding guide (24) arranged by press fitting, a relief valve body (23) arranged so as to freely slide within the relief valve body sliding guide (24), a relief spring (25) energizing the relief valve body (23) to a side of the seat member (22), and a plug (26). Further, each of the elements arranged within the relief valve chamber (20) is inserted from an upper opening portion of the relief valve chamber (20) in one direction.

Fig. 2



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Description

Background of the Invention

(1) Field of the Invention

[0001] The present invention relates to an exhaust pressure control valve in which a main passage and a bypass passage are provided, a throttle valve is arranged in the main passage, and a relief valve for regulating a pressure of a fluid flowing into the bypass passage is provided.

(2) Description of the Prior Art

[0002] In conventional, the exhaust pressure control valve provided with the relief valve is structured such that a part of an exhaust gas in which a pressure is too high is relieved from an upstream side of a brake valve to a downward side through the bypass passage, in order to prevent an exhaust valve of an engine from being damaged. At this time, a relief valve seat arranged so as to oppose to a relief valve body is integrally formed as a part of a valve body. Since the valve body is generally formed by a spheroidal graphite cast iron, a corrosion resistance of the relief valve seat can not be improved, and the valve body tends to be corroded by an acid condensate water flowing through the main passage or the bypass passage. When the relief valve seat is corroded, the relief valve body and the relief valve seat are firmly fixed so as to generate a malfunction.

[0003] Accordingly, as shown in Japanese Unexamined Patent Publication No. 9-144569, in order to improve an abrasion resistance by adding a hardness to the relief valve seat, there has been provided an exhaust brake apparatus in which the relief valve seat is structured by a separate element from the valve body.

[0004] In accordance with the exhaust brake apparatus 50, as shown in Fig. 5, a relief valve 60 is structured by a separate body from a brake body 52 of an exhaust brake valve 51, and is attached so as to form a bypass passage 61 of the exhaust brake valve 51 in the relief valve 60.

[0005] The relief valve 60 is provided with a relief valve chamber 65 having a seat member 63 separately formed from the relief body 62 and having a relief valve seat 63a, and a relief valve body 64 moving in a direction going close to or apart from the relief valve seat 63a, and a relief spring chamber 67 attached to the relief valve chamber 65. A relief spring 68 energizing the relief valve body 64 toward a side of the relief valve seat 63a is installed in the relief spring chamber 67.

[0006] Further, an inflow port 61a and an outflow port 61b which are arranged with holding the seat member 63 therebetween are arranged, via a gasket 55, so as to oppose to an inflow port 53a and an outflow port 53b of the brake body 52, and the relief valve 60 is attached to the exhaust brake valve 51. In accordance with this structure, it is possible to increase a hardness by applying a hardness to the seat member 63 formed by a simple substance, and it is possible to prevent the relief valve seat 63a from being worn out.

[0007] However, in the conventional exhaust brake apparatus 50 in the publication shown above, since the relief valve 60 is separately constructed from the brake valve 51, the exhaust brake apparatus 50 itself becomes complex, and a wide mounting space is required for the relief valve 60. Further, the relief valve 60 is separated into the relief valve chamber 65 and the relief spring chamber 67, and the relief valve chamber 65 is separated into the valve chamber 65a and the seal chamber 65b with holding a protruding wall in a center portion of the relief body 62 therebetween.

[0008] Further, each of the portions arranged in each of the chambers is inserted from each of the opening portions so as to be assembled. Accordingly, for example, at a time of assembling the relief valve body 64 and the seat member 63 in the relief valve chamber 65, the relief valve body 64 and the seat member 63 are inserted from a left opening portion of the valve chamber 65a, that is, a left direction of the relief valve chamber 65 in the drawing, into the valve chamber 65a, and the seal member 66 is inserted from a right opening portion of the seal chamber 65b, that is, a right direction of the relief valve chamber 65 in the drawing, into the seal chamber 65b.

[0009] Further, at a time of assembling the relief spring 68 in the relief spring chamber 67 , the relief spring 68 is inserted from a left opening portion of the relief valve chamber 67, that is, a left direction in the drawing, into the relief spring chamber 67, whereby the portions are assembled in the chambers respectively from the different directions.

[0010] Accordingly, a lot of time is required for assembling due to a poor assembling property, and an assembling cost is increased. Further, since the seat member 63 is inserted from the left opening portion of the valve chamber 65a at a time of inserting the seat member 63 to the relief valve chamber 65, the relief valve body 64 is pressed in the left direction by the relief spring 68 energizing in the left direction, whereby the seat member 63 is assembled in a direction of falling off the relief body 62.

Summary of the Invention

[0011] The present invention solves the problem mentioned above, and an object of the present invention is to provide an exhaust pressure control valve which can shorten an assembling time by simultaneously assembling a relief valve body, a seat member or a relief spring from one direction so as to achieve a compact structure, can prevent the seat member from falling off a body, and can prevent the seat member from being corroded.

[0012] The exhaust pressure control valve in accord-

ance with the present invention is structured as follows in order to solve the problem mentioned above . That is , in accordance with the present invention, there is provided an exhaust pressure control valve comprising:

a main passage having a throttle valve arranged within a valve body; and
a bypass passage arranged so as to avoid the throttle valve,

characterized in that a relief valve chamber for regulating a pressure of a fluid flowing from the main passage is integrally formed with the valve body, in the bypass passage, and

the relief valve chamber is provided with at least a relief valve body, a seat member which is separately formed from the valve body, has a relief valve seat capable of being brought into contact with the relief valve body and is arranged in the valve body, a relief valve body sliding guide which slidably guides the relief valve body, and a relief spring which energizes the relief valve body to a side of the relief valve seat, and the relief valve chamber is structured in such a manner that at least the relief valve body, the seat member, the relief valve body sliding guide and the relief spring are allowed to be inserted to the relief valve chamber from one direction.

[0013] Further, it is preferable that the seat member is formed so as to have a high corrosion resistance.

[0014] In accordance with the structure mentioned above, since at least the seat member, the relief valve body, the relief valve body guide and the relief spring can be inserted to the relief valve chamber integrally formed in the valve body sequentially or by a set from one direction, it is possible to significantly shorten the assembling time.

[0015] Further, since the seat member can be separately formed from the valve body and can be attached to the valve body, the seat member can be made of a material having a high corrosion resistance or a material applying a high corrosion resistance to the relief valve seat. Accordingly, it is possible to prevent the relief valve seat from being corroded. Further, since it is possible to form not only a whole of the valve body but also only the seat member by the material having the high corrosion resistance, by separately forming the seat member, it is possible to manufacture at a low cost.

[0016] Further, in accordance with the present invention, there is provided an exhaust pressure control valve comprising:

a main passage having a throttle valve arranged within a valve body; and
a bypass passage arranged so as to avoid the throttle valve,

characterized in that a relief valve chamber for regulating a pressure of a fluid flowing from the main passage is formed in the bypass passage, and a relief valve body capable of sliding within the relief valve chamber, and a seat member capable of being brought into contact with the relief valve body are arranged in the relief valve chamber, and the seat member is formed so as to have a high corrosion resistance.

[0017] In accordance with the structure mentioned above, the exhaust pressure control valve can prevent the seat member from being corroded by forming the seat member so as to have the high corrosion resistance, as far as the relief valve chamber which is the slidable relief valve body and the seat member capable of being brought into contact with the relief valve body are arranged is provided in the bypass passage, whereby it is possible to provide the exhaust pressure control valve in which a durability can be improved.

Brief Description of the Drawings

[0018]

Fig. 1 is a schematic view showing a relation of arrangement between an engine and an exhaust pressure control valve;
Fig. 2 is a cross sectional view showing an exhaust pressure control valve in accordance with one aspect of the present invention;
Fig. 3 is an enlarged view of a main portion showing a relief valve body and a relief valve seat in Fig. 2;
Fig. 4 is an exploded view showing a state in which each of elements is inserted into a relief valve chamber; and
Fig. 5 is a cross sectional view showing a conventional exhaust brake apparatus.

Description of the Preferred Embodiments

[0019] A description will be given below of one embodiment in accordance with the present invention with reference to the accompanying drawings.

[0020] An exhaust pressure control valve (hereinafter, refereed to as a control valve) 1 in accordance with the embodiment is, as shown in Fig. 1, arranged in a middle path of an exhaust pipe 3 piped from an engine 2 to a discharge side, and is provided with a throttle valve 6 so as to open and close a main passage 5 through which an exhaust gas passes. The throttle valve 6 is rotated around an axis by an electromagnetic valve 7 and an actuator 8, and controls a displacement of the exhaust gas flowing from an upstream side 5a toward a downstream side 5b in accordance with an amount of a gap with respect to an inner diameter of the pipe 3.

[0021] A description will be given in detail of the control valve 1 in accordance with the embodiment arranged in the exhaust pipe 3. The control valve 1 is provided with the main passage 5, a valve body 11 installing

the main passage 5 therein, the throttle valve 6 arranged so as to freely open and close the main passage 5 in accordance with driving of the electromagnetic valve 7, a bypass passage 12 formed by an inflow port 13 formed in the upstream side (a left side in Fig. 1) 5a of the main passage with holding the throttle valve 6 therebetween, an outflow port 14 formed in the downstream side 5b and a bypass passage 15 connected to the inflow port 13 and the outflow port 14, and a relief valve chamber 20 arranged so as to freely open and close the inflow port 13 of the bypass passage 12, as shown in Fig. 2.

[0022] The relief valve chamber 20 is structured such that a relief body 21 is integrally formed with the valve body 11, and the relief body 21 is formed so as to protrude in an orthogonal direction to the main passage 5.

[0023] In the relief valve chamber 20, there are arranged a seat member 22 which is attached to a side of an outer peripheral surface of the valve body 11 in such a manner as to oppose to the inflow port 13 of the bypass passage 12, a relief valve body 23 which slides toward or away from the seat member 22, a relief valve body sliding guide 24 which guides and supports the sliding of the relief valve body 23, a relief spring 25 which energizes the relief valve body 23 to a side of the seat member 22, and a plug 26 which supports one end side of the relief spring 25 and engages with the relief valve chamber 20.

[0024] The valve body 11 is formed in an approximately rectangular shape in an outer diameter and is made of a cast steel or the like, the main passage 5 is formed in a round hole, and the relief body 21 is formed in a cylindrical shape so as to constitute the relief valve chamber 20.

[0025] The throttle valve 6 is formed in a disc shape, and an axial portion thereof is supported by a shaft 6a transversing the main passage 5. The shaft 6a is connected to an actuator 8 driven by the electromagnetic valve 7. Further, the throttle valve 6 is rotated around the shaft 6a in accordance with an operation of the actuator 8, whereby a predetermined amount of gap can be formed with respect to an inner diameter of the exhaust pipe 3.

[0026] The relief valve chamber 20 is formed in a stepped round hole shape in an inner portion thereof, and is constituted by a lower small diameter portion 20a and an upper large diameter portion 20b. A valve portion 23b of the relief valve body 23 is received in the small diameter portion 20a, and the relief valve body sliding guide 24 is arranged in the large diameter portion 20b in a pressure inserted state so as to bring a lower end portion into contact with a step surface with the small diameter portion 20a. Further, a female screw 20c is formed in an upper portion of the large diameter portion 20b, and a plug 26 is engaged with the female screw 20c.

[0027] The sheet member 22 is formed in a ring shape, and is made of a stainless steel material (SUS430 or the like) in the embodiment, in order to improve a corrosion resistance. In this case, the sheet member 22 is not limited to the stainless steel material as far as the material has a high corrosion resistance, and, for example, may be formed by a member formed by a carbon steel and coated by a thin-film material having an excellent corrosion resistance on a surface.

[0028] Further, as shown in Fig. 3, a taper-shaped relief valve seat 22a is formed in a peripheral edge portion of an inner diameter portion on one end surface of the sheet member 22. The relief valve seat 22a is arranged so as to oppose to the relief valve body 23, and is formed in such a manner that a leading end portion of the relief valve body 23 can be brought into contact therewith. Further, the structure is made such that the leading end portion of the relief valve body 23 is brought into contact with the relief valve body 22a, thereby closing the inflow port 13, and then the relief valve body 23 moves apart therefrom, whereby a part of the exhaust gas can flow into the bypass passage 12.

[0029] The relief valve body 23 has , as shown in Fig. 2 , a sliding portion 23a which is slid and guided by the relief valve body sliding guide, and a valve portion 23b which is formed so as to protrude from the sliding portion 23a, and the sliding portion 23a and the valve portion 23b are connected by a connection portion 23c having a small diameter. A periphery of the connection portion 23c is communicated with the bypass passage 15 , and a leading end of the valve portion 23b is provided with a taper portion 23d (refer to Fig. 3) capable of engaging with the relief valve seat 22a of the seat member 22. Further, a recess portion 23e capable of receiving one end of the relief spring 25 is formed in a rear end portion of the sliding portion .

[0030] Next, a description will be given of amethodof assembling the relief valve chamber 20 structured in the manner mentioned above. An inner side of the relief valve chamber 20 is formed in a hollow shape and is open in a top portion, before the respective elements are inserted into the relief valve chamber 20. As shown in Fig. 4, first, the seat member 22 is inserted into the relief valve chamber 20 from an upper opening portion 20d of the relief valve chamber 20 in a state of directing the relief valve seat 22a upward, and is fitted into a seat member insertion recess portion 11a formed in a side of an end surface of the bypass passage 15 in the valve body 11 in a pressure inserted state. It is desired that an inner peripheral surface of the seat member 22 is formed so as to have approximately the same dimension as the inner diameter of the inflow port 13 so as to prevent the seat member 22 from falling off the valve body 11 due to a pressure of the fluid.

[0031] Next, the relief valve body 23 is fitted into the relief valve body sliding guide 24 , and the relief spring 25 is inserted to the plug 26 at one end and fitted to the recess portion 23e of the relief valve body 23 at another end, thereby forming one set assembly. In this state, this one set assembly is inserted into the relief valve chamber 20 from the upper opening portion 20d. At this time,

the relief valve body sliding guide 24 is inserted by press fitting into the large diameter portion 20b of the relief valve chamber 20, and a leading end surface of the relief valve sliding guide 24 is brought into contact with the step surface with respect to the small diameter portion 20a of the relief valve chamber 20 so as to be fixed.

[0032] Then, the top portion of the relief valve chamber 20 is closed by screwing the plug 26 with the female screw 20c of the relief valve chamber 20. At this time, an energizing force to be applied to the relief valve body 23 of the relief spring 25 is set so as to oppose to a set pressure of the fluid passing through the bypass passage 12. This is set in accordance with a fastening position of the plug 26.

[0033] In this case, at a time of inserting the respective elements into the relief valve chamber 20, the respective elements except the seat member 22 may be inserted into the relief valve chamber 20 one part by one part. In any case, all the elements will be inserted from the upper opening portion 20d of the relief valve chamber 20.

[0034] Next, a description will be given of an operation of the control valve 1 assembled in the manner mentioned above with reference to Figs. 1 to 3.

[0035] At a normal time, the exhaust gas flowed from the engine flows from the upstream side 5a of the main passage 5 to the downstream side 5b through a gap between the throttle valve 6 and the inner peripheral surface of the exhaust pipe 3 and is discharges to an external portion. In this state, the relief valve body 23 presses the relief valve seat 22a on the basis of the energizing force of the relief spring 25 and closes the inflow port 13.

[0036] Further, in the case that a pressure higher than a set pressure is applied to the upstream side in a state in which the throttle valve 6 closes the inner peripheral surface of the exhaust pipe 3 or in a state in which the throttle valve 6 is inclined by a set amount of the gap between the throttle valve 6 and the inner peripheral surface of the exhaust pipe 3, for example, under an operation of the exhaust brake or under a warm-up operation, when a pressure in the upstream side 5a is increased by high speed rotation of the engine, the exhaust gas in the upstream side 5a presses the relief valve body 23. If the pressing force is stronger than the energizing force applied to the relief valve body 23 of the relief spring 25, the relief valve body 23 moves apart from the state in which the relief valve body 23 is brought into contact with the relief valve seat 22a, and opens the inflow port 13. The exhaust gas having the increased pressure flows through the bypass passage 15 via the outflow port 14 to the downstream side 5b from the inflow port 13 . Accordingly, since the exhaust gas is appropriately discharged to the external portion through the bypass passage 12 even if the engine speed is high, it is possible to avoid the high pressure state within the exhaust pipe, so that the exhaust valve 2a of the engine 2 is not damaged.

[0037] As mentioned above, in the control valve 1 in accordance with the embodiment, since it is possible to sequentially or simultaneously insert and assemble the seat member 22, the relief valve body 23, the relief valve body sliding guide 24, the relief spring 25 and the plug 26 from the upper opening portion 20d of the relief valve chamber 20 in one direction, at a time of assembling the parts such as the relief valve body 23 and the like within the relief valve chamber 20, it is possible to improve an assembling property, and it is possible to assemble in an extremely short time. Accordingly, it is possible to reduce an assembling cost and it is possible to provide the control valve 1 having a reduced cost.

[0038] Further, since the seat member 22 is separately formed from the valve body 11, it is possible to form the seat member 22 with a high corrosion resistance. That is, it is possible to easily form the seat member 22 by the stainless steel member, and it is possible to easily apply a thin-film coating to the seat member 22. It is possible to prevent the seat member 22 from being corroded so as to provide the control valve 1 having a durability, by forming the seat member 22 with the high corrosion resistance. Since it is sufficient to only form the seat member 22 with the high corrosion resistance, it is unnecessary to form a whole of the valve body 11 with the high corrosion resistance, and it is possible to manufacture the valve body 11 at a low cost.

[0039] In this case, with respect to forming the seat member with the high corrosion resistance, the structure is not limited to the control valve 1 in accordance with the embodiment, as far as the relief valve chamber is structured so as to include the relief valve body and the seat member.

[0040] Further, since the seat member 22 is attached so as to be position controlled by the valve body 11 in the direction that the energizing force of the relief spring 25 is applied, it is possible to carry out a stable operation without falling off the valve body 11 due to the energizing force of the relief spring 25.

[0041] It is explicitly stated that all features disclosed in the description and/or the claims are intended to be disclosed separately and independently from each other for the purpose of original disclosure as well as for the purpose of restricting the claimed invention independent of the compositions of the features in the embodiments and/or the claims. It is explicitly stated that all value ranges or indications of groups of entities disclose every possible intermediate value or intermediate entity for the purpose of original disclosure as well as for the purpose of restricting the claimed invention.

Claims

1. An exhaust pressure control valve comprising:

a main passage having a throttle valve arranged within a valve body; and
a bypass passage arranged so as to avoid said

throttle valve,

characterized in that a relief valve chamber for regulating a pressure of a fluid flowing from said main passage is integrally formed with said valve body, in said bypass passage, and

said relief valve chamber is provided with at least a relief valve body, a seat member which is separately formed from said valve body, has a relief valve seat capable of being brought into contact with said relief valve body and is arranged in said valve body, a relief valve body sliding guide which slidably guides said relief valve body; and a relief spring which energizes said relief valve body to a side of said relief valve seat, and said relief valve chamber is structured in such a manner that at least said relief valve body, said seat member, said relief valve body sliding guide and said relief spring are allowed to be inserted to said relief valve chamber from one direction.

2. An exhaust pressure control valve as claimed in claim 1, **characterized in that** said seat member is formed so as to have a high corrosion resistance.

3. An exhaust pressure control valve comprising:

a main passage having a throttle valve arranged within a valve body; and
a bypass passage arranged so as to avoid said throttle valve,

characterized in that a relief valve chamber for regulating a pressure of a fluid flowing from said main passage is formed in said bypass passage,

a relief valve body capable of sliding within said relief valve chamber, and a seat member capable of being brought into contact with said relief valve body are arranged in said relief valve chamber, and
said seat member is formed so as to have a high corrosion resistance.

Fig. 1

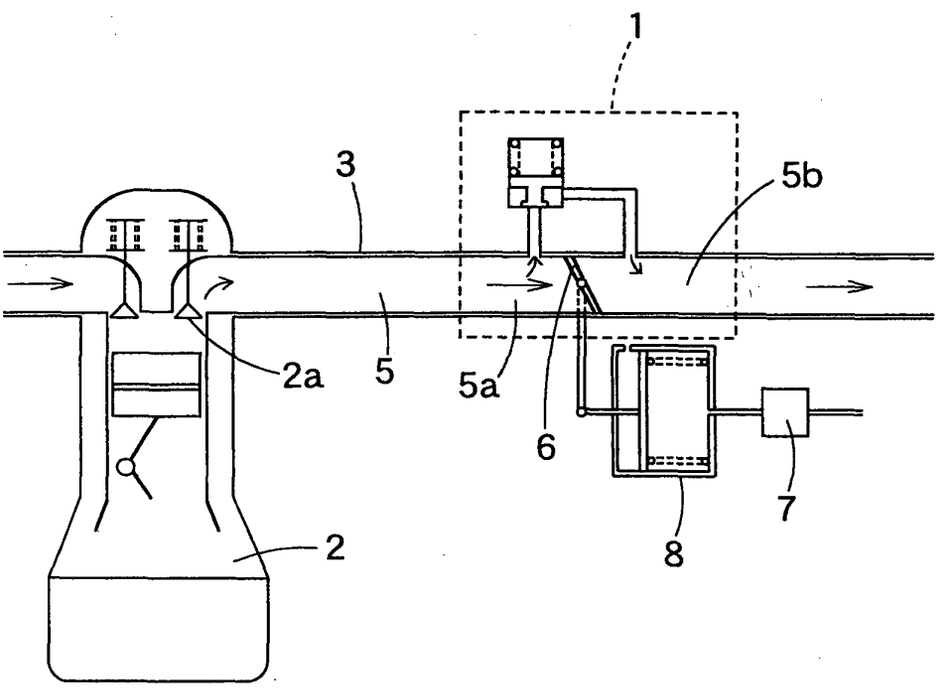

Fig. 2

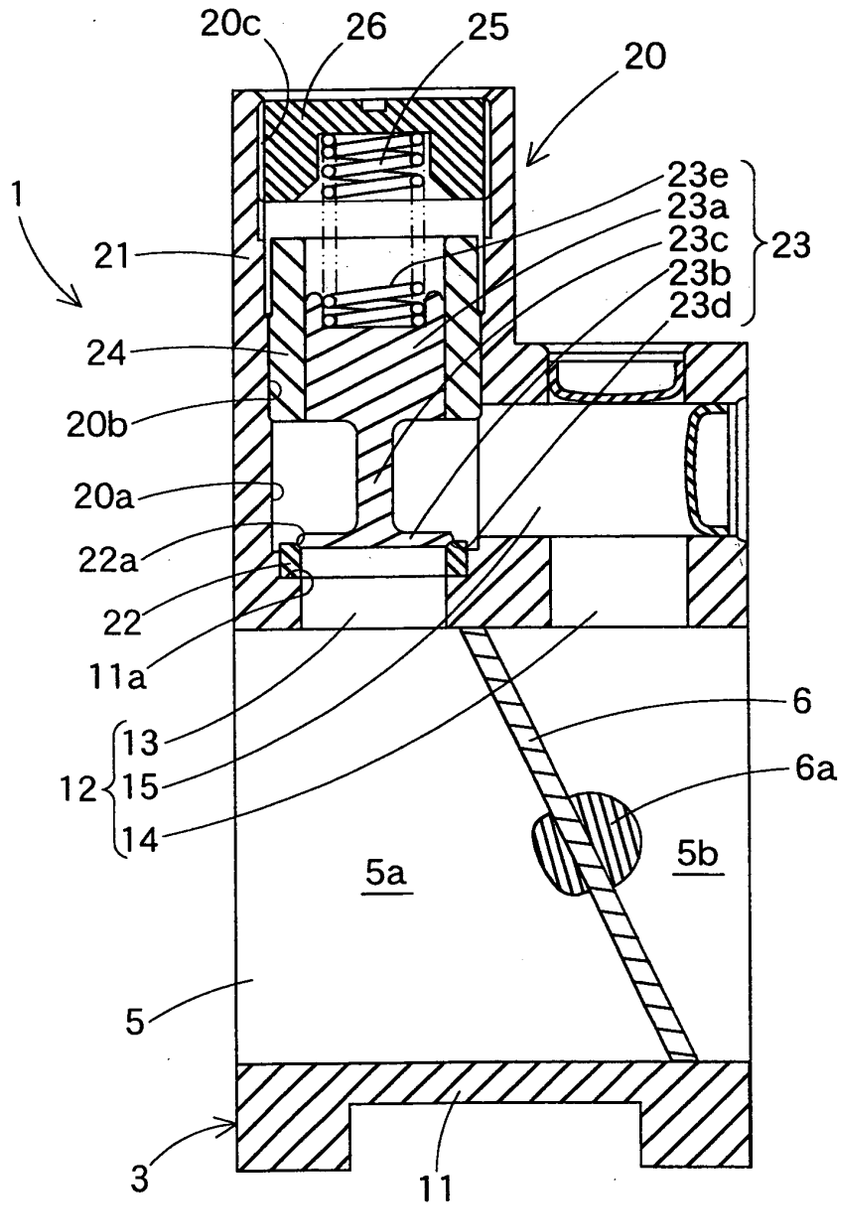
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Fig. 3

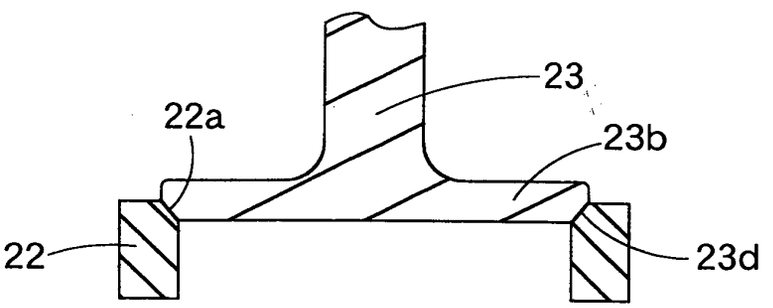


Fig. 4

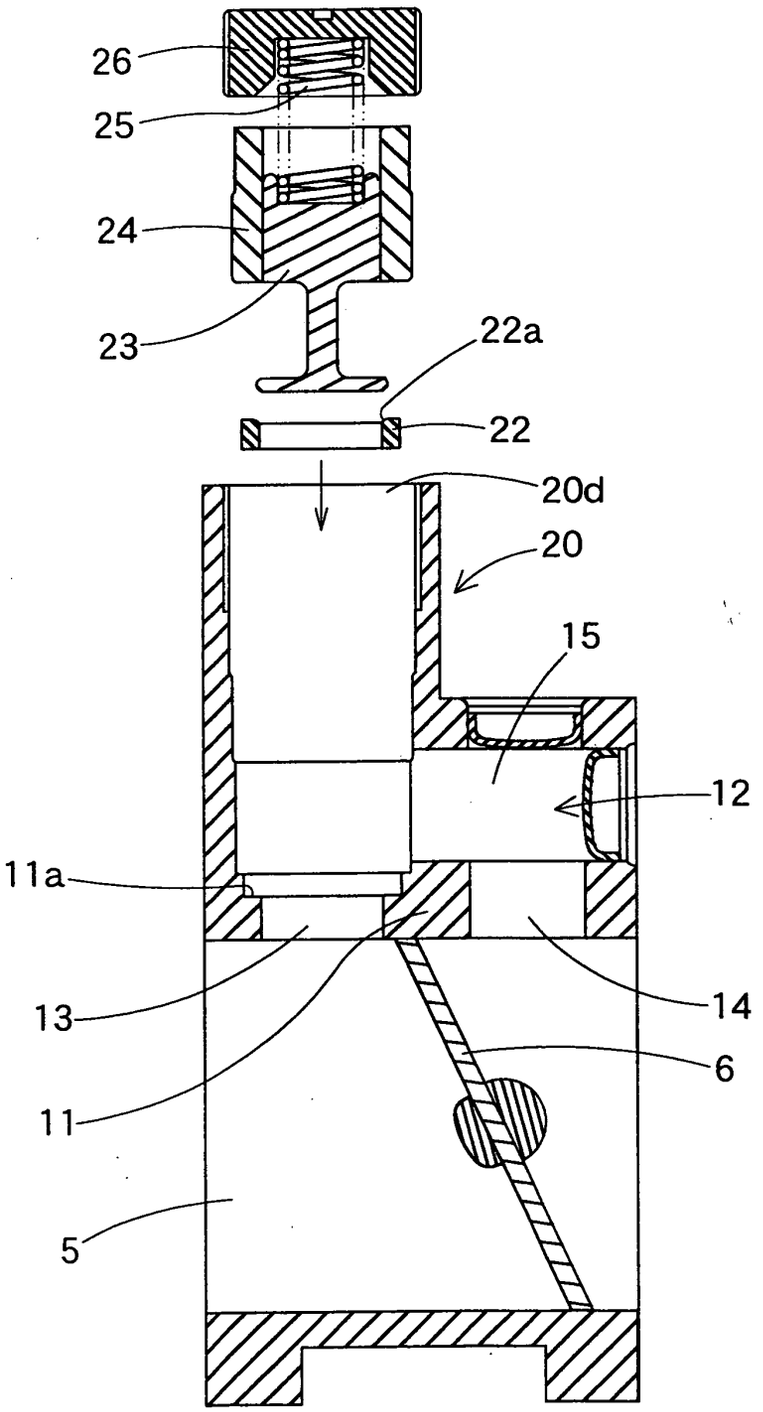
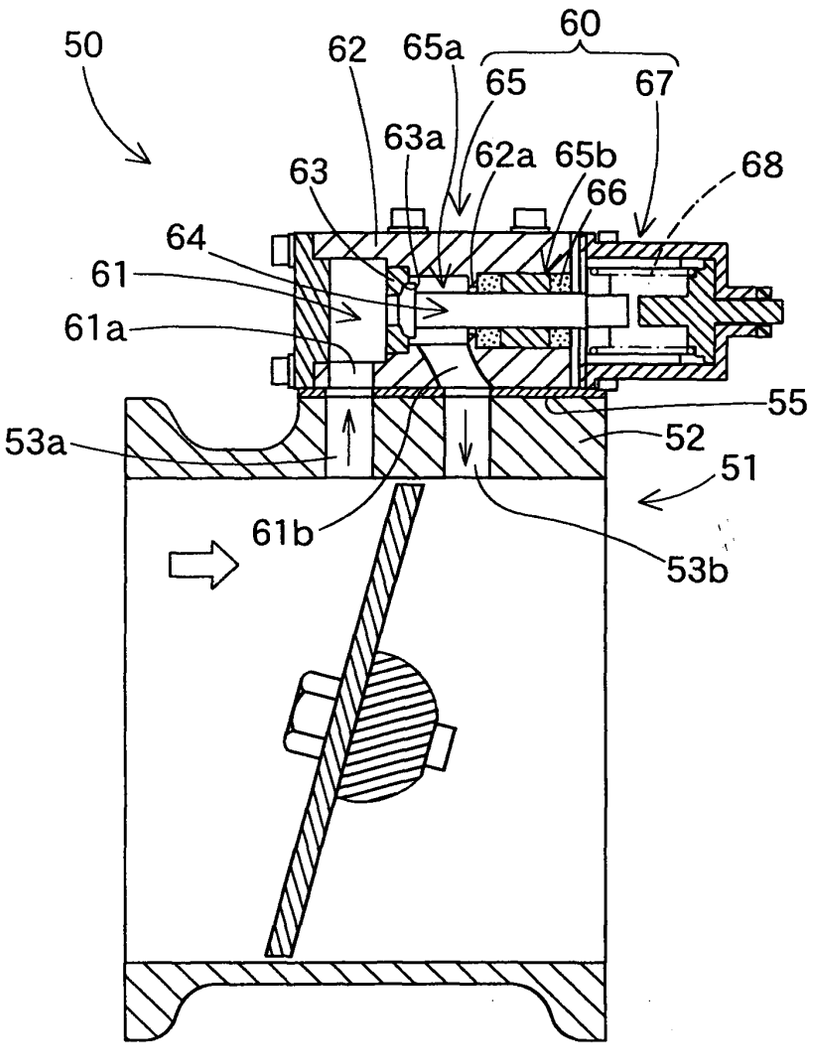


Fig. 5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EUROPEAN SEARCH REPORT

Application Number
EP 03 01 0205

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.7)
X	US 6 273 058 B1 (WAGNER PIERRE-ANDR EACUTE) 14 August 2001 (2001-08-14) * column 4, line 3 - line 40; figures 2-4 *	1-3	F02D9/06 F02D9/10
X	WO 99 41495 A (DIESEL ENGINE RETARDERS INC) 19 August 1999 (1999-08-19) * page 5, line 20 - page 7, line 26; figure 1 *	3	
X	US 5 372 109 A (THOMPSON DEREK ET AL) 13 December 1994 (1994-12-13) * column 6, line 22 - line 62; figure 10 *	3	
X	US 4 750 459 A (SCHMIDT ALFRED) 14 June 1988 (1988-06-14) * column 2, line 18 - line 68; figures 1,2 *	3	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)
F02D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	13 August 2003	Pileri, P

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 03 01 0205

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
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13-08-2003

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6273058 B1	14-08-2001	FR 2777946 A1	29-10-1999
		AT 221956 T	15-08-2002
		AU 3426699 A	08-11-1999
		DE 69902429 D1	12-09-2002
		DE 69902429 T2	08-05-2003
		EP 0991858 A1	12-04-2000
		WO 9954612 A1	28-10-1999
		TR 9903201 T1	21-07-2000
WO 9941495 A	19-08-1999	WO 9941495 A1	19-08-1999
		US 6109027 A	29-08-2000
US 5372109 A	13-12-1994	DE 69114133 D1	30-11-1995
		DE 69114133 T2	02-05-1996
		EP 0536284 A1	14-04-1993
		ES 2077861 T3	01-12-1995
		WO 9200445 A1	09-01-1992
		JP 5507994 T	11-11-1993
US 4750459 A	14-06-1988	DE 3533393 A1	26-03-1987
		EP 0215201 A2	25-03-1987
		ES 2000333 A6	16-02-1988
		JP 62078439 A	10-04-1987

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82