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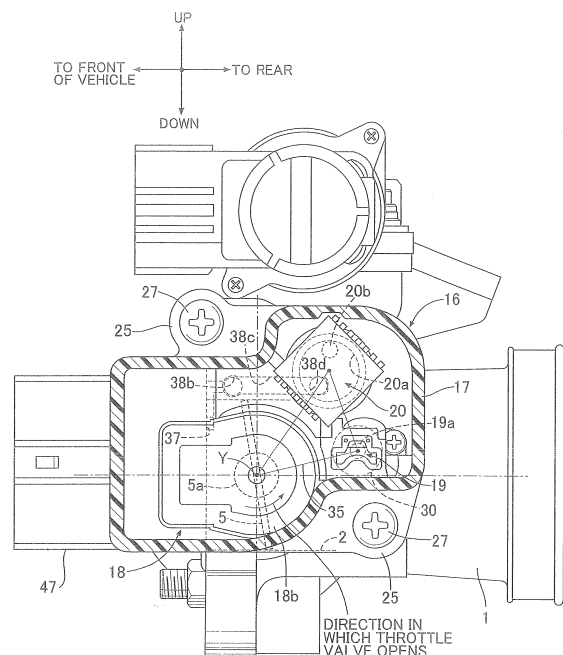
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(54) **AIR INTAKE DEVICE FOR ENGINE FOR TWO-WHEELED MOTOR VEHICLE**

(57) An air intake device for an engine for a two-wheeled motor vehicle is provided in which a throttle sensor (18), an air intake temperature sensor (19) and an air intake pressure sensor (20) are disposed so that the centers thereof are positioned on apexes of a triangle (35) on a sensor housing (17) further upstream in an air intake path (2) than an axis (Y) of a valve shaft (5a), the air intake pressure sensor (20) is disposed so that the center thereof is on the uppermost apex of the triangle (35), the throttle sensor (18), and the air intake temperature sensor (19) are disposed in a concentrated manner further upstream in the air intake path (2) than the axis (Y) of the valve shaft (5a) in the sensor housing (17). Thus, it becomes possible to reduce the axial length of the throttle body (1) further downstream in the air intake path (2) than the valve shaft (5a) without interfering with the air intake pressure sensor (19) in particular, and it also becomes possible to make the throttle body (1) compact, lighten the weight, and at the same time make the sensor housing compact (17).

FIG.4



Description

TECHNICAL FIELD

[0001] The present invention relates to an improvement of an air intake device for an engine for a two-wheeled motor vehicle, the air intake device including a Throttle body that has a horizontal air intake path in a central part thereof, a throttle valve that has a valve shaft horizontally supported on the throttle body and that opens and closes the air intake path, and a sensor unit that includes, attached to a sensor housing mounted on a mounting face on one side of the throttle body, a throttle sensor that is on an axis of the valve shaft of the throttle valve and that detects rotation of the valve shaft as a degree of opening of the throttle valve, an air intake temperature sensor that detects an air intake temperature of the air intake path further upstream than the throttle valve, and a negative pressure sensor that detects an air intake negative pressure of the air intake path further downstream than the throttle valve.

BACKGROUND ART

[0002] Such an air intake device for an engine is already known, as disclosed in Patent Document 1.

RELATED ART DOCUMENTS

PATENT DOCUMENTS

[0003] Patent Document 1: Japanese Patent Application Laid-open No. 2007-127091

SUMMARY OF THE INVENTION

PROBLEMS TO BE SOLVED BY THE INVENTION

[0004] In such an air intake device for an engine for a two-wheeled motor vehicle, there is a demand for reducing the dimension in the axial direction of a throttle body in order to lighten the weight. However, in such a conventional air intake device for an engine for a two-wheeled motor vehicle, since an air intake pressure sensor attached to a sensor housing detects the air intake pressure of the air intake path downstream of a throttle valve, the air intake pressure sensor is disposed in the air intake path downstream of the valve shaft in the sensor housing, thereby preventing the dimension of the throttle body from being reduced in the axial direction. Furthermore, since in the sensor housing the air intake temperature sensor and the air intake pressure sensor are disposed so as to be distributed between the upstream side and the downstream side of the air intake path with the valve shaft as the border therebetween, it is difficult to make the sensor housing compact.

[0005] The present invention has been accomplished in light of such points, and it is an object thereof to provide

an air intake device for an engine for a two-wheeled motor vehicle that enables the dimension in the axial direction of a throttle body to be reduced and enables the sensor housing to be made compact.

MEANS FOR SOLVING THE PROBLEMS

[0006] In order to attain the above object, according to a first aspect of the present invention, there is provided an air intake device for an engine for a two-wheeled motor vehicle, the air intake device comprising a throttle body that has an air intake path in a central part thereof, a throttle valve that has a valve shaft horizontally supported on the throttle body and that opens and closes the air intake path, and a sensor unit comprising, attached to a sensor housing mounted on a mounting face on one side of the throttle body, a throttle sensor that is on an axis of the valve shaft of the throttle valve and that detects rotation of the valve shaft as a degree of opening of the throttle valve, an air intake temperature sensor that detects an air intake temperature of the air intake path further upstream than the throttle valve, and an air intake pressure sensor that detects an air intake negative pressure of the air intake path further downstream than the throttle valve, characterized in that the throttle sensor, the air intake temperature sensor, and the air intake pressure sensor are disposed so that the centers thereof are positioned on apexes of a triangle on the sensor housing further upstream in the air intake path than the axis of the valve shaft and the air intake pressure sensor is disposed so that the center thereof is on the uppermost apex of the triangle, a pressure-receiving chamber of the air intake pressure sensor that a sensor chip faces communicates, via an air intake pressure-transmitting passage, with a detection hole opening in the air intake path further downstream than the throttle valve, part of the air intake pressure-transmitting passage passing a position above an axis of the air intake path, a part of the air intake pressure-transmitting passage that opens in the pressure-receiving chamber is disposed above a part of the detection hole that opens in the air intake path, and a part of the detection hole opening in the air intake path is disposed above the axis of the air intake path.

[0007] Further, according to a second aspect of the present invention, in addition to the first aspect, the detection hole is formed into a longitudinal groove shape opening on a downstream side end face of the throttle body to which an air intake tube of the engine is joined, and the air intake pressure-transmitting passage is formed from a first sideways hole that bends from an upper end of the detection hole and extends in an upstream side direction of the air intake path, a second sideways hole that bends from the first sideways hole and heads toward the mounting face, a through groove in the mounting face that bends from the second sideways hole and extends so as to cross above the valve shaft, and a third sideways hole that bends from the through groove and opens in the pressure-receiving chamber.

[0008] Furthermore, according to a third aspect of the present invention, in addition to the first or second aspect, the sensor chip is disposed so as to be offset higher than a part of the air intake pressure-transmitting passage that opens in the pressure-receiving chamber.

EFFECTS OF THE INVENTION

[0009] In accordance with the first aspect of the present invention, since the throttle sensor, the air intake temperature sensor and the air intake pressure sensor are disposed so that their centers are positioned on apexes of the triangle in the sensor housing further upstream in the air intake path than the axis of the valve shaft, the throttle sensor, the air intake temperature sensor, and the air intake pressure sensor are disposed in a concentrated manner further upstream in the air intake path than the axis of the valve shaft in the sensor housing, and it therefore becomes possible to reduce the axial length of the throttle body further downstream in the air intake path than the valve shaft without interfering with the air intake pressure sensor in particular, and it also becomes possible to make the throttle body compact, lighten the weight, and at the same time make the sensor housing compact.

[0010] Moreover, the air intake pressure sensor is disposed so that its center is at the uppermost apex of the triangle, the pressure-receiving chamber of the air intake pressure sensor, which the sensor chip faces, communicates with the detection hole, which opens in the air intake path further downstream than the throttle valve, via the air intake pressure-transmitting passage, a part of which goes by way of a position above the axis of the air intake path, the part of the air intake pressure-transmitting passage opening in the pressure-receiving chamber is disposed above the part of the detection hole opening in the air intake path, and the part of the detection hole opening in the air intake path is disposed above the axis of the air intake path. Therefore, the part of the air intake pressure-transmitting passage opening in the pressure-receiving chamber occupies a position above the part of the detection hole opening in the air intake path, the part of the detection hole opening in the air intake path occupies a position above the axis of the air intake path, and the part of the air intake pressure-transmitting passage extending from the detection hole to the pressure-receiving chamber of the air intake pressure sensor is one that is long and goes by way of a position above the axis of the air intake path. It is therefore possible to make it difficult for foreign matter such as soot or moisture contained in blow-back gas at the time of back firing of the engine to enter the pressure-receiving chamber of the air intake pressure sensor because of the gravity acting on the foreign matter and the flow path resistance of the long air intake pressure-transmitting passage, thereby preventing foreign matter from making contact with the sensor chip of the air intake pressure sensor.

[0011] In accordance with the second aspect of the present invention, since the detection hole is formed into a longitudinal groove shape that opens on the downstream side end face of the throttle body, to which the air intake tube of the engine is joined, and the air intake pressure-transmitting passage is formed from the first sideways hole, which bends from the upper end of the detection hole and extends in the upstream side direction of the air intake path, the second sideways hole, which bends from the first sideways hole and heads toward the mounting face, the through groove in the mounting face, which bends from the second sideways hole and extends so as to cross above the valve shaft, and the third sideways hole, which bends from the through groove and opens in the pressure-receiving chamber, it is difficult for foreign matter such as soot or moisture contained in blow-back gas of the engine to enter the detection hole. Even if this foreign matter enters together with the blow-back gas, since this blow-back gas collides with a plurality of corners while passing through the long air intake pressure-transmitting passage before reaching the pressure-receiving chamber of the air intake pressure sensor, its energy is attenuated effectively. As a result, foreign matter is separated from the blow-back gas en route, thereby making it possible to prevent the foreign matter from entering the pressure-receiving chamber.

[0012] In accordance with the third aspect of the present invention, since the sensor chip is disposed so as to be offset higher than the part of the air intake pressure-transmitting passage that opens in the pressure-receiving chamber, even if the foreign matter enters the pressure-receiving chamber from the air intake pressure-transmitting passage, since the sensor chip, which faces the pressure-receiving chamber, is disposed so as to be offset higher than the third sideways hole, it is possible to prevent foreign matter that has dropped from the air intake pressure-transmitting passage into the pressure-receiving chamber from coming into contact with the sensor chip.

BRIEF DESCRIPTION OF DRAWINGS

[0013]

[FIG. 1] FIG. 1 is a sectional plan view of an air intake device for an engine for a two-wheeled motor vehicle related to an embodiment of the present invention. (first embodiment)

[FIG. 2] FIG. 2 is a view in the direction of arrow 2 in Fig. 1. (first embodiment)

[FIG. 3] FIG. 3 is a sectional view along line 3-3 in FIG. 2. (first embodiment)

[FIG. 4] FIG. 4 is a sectional view along line 4-4 in FIG. 1. (first embodiment)

EXPLANATION OF REFERENCE NUMERALS AND SYMBOLS

[0014]

1	Throttle body
1a	Downstream side end face
2	Air intake path
5	Throttle valve
5a	Valve shaft
15	Mounting face
16	Sensor unit
17	Sensor housing
18	Throttle sensor
19	Air intake temperature sensor
20	Air intake pressure sensor
20a	Pressure-receiving chamber
20b	Sensor chip
35	Triangle
37	Detection hole
38	Air intake pressure-transmitting passage
38a	First sideways hole
38b	Second sideways hole
38c	Through groove
38d	Third sideways hole
55	Air intake tube
Y	Axis

MODE FOR CARRYING OUT THE INVENTION

[0015] An embodiment of the present invention is explained below by reference to the attached drawings.

FIRST EMBODIMENT

[0016] First, in FIG. 1, the air intake device for an engine for a two-wheeled motor vehicle of the present invention includes a throttle body 1 connected to an air intake tube 55 of the engine, and a horizontal air intake path 2 communicating with the interior of the air intake tube 55 is formed in a central part of the throttle body 1, the air intake path 2 extending in the fore-and-aft direction of the vehicle. A pair of bearing holes 3 and 4 are formed in a peripheral wall of the throttle body 1 so as to be arranged in the horizontal direction with the air intake path 2 sandwiched therebetween; these bearing holes 3 and 4 rotatably support a valve shaft 5a of a butterfly type throttle valve 5 that opens and closes the air intake path 2, and this valve shaft 5a is disposed horizontally so as to extend in the left-and-right direction of the vehicle. Fixed to one end part of the valve shaft 5a projecting outward from the bearing hole 3 is a throttle drum 8 that is operated by an operator via a throttle wire.

[0017] A mounting face 15 is formed on a side face of the throttle body 1 on the opposite side to the throttle drum 8, the mounting face 15 being stepped higher than other faces, and a sensor unit 16 is mounted on the mounting face 15.

[0018] In FIG. 1, FIG. 3, and FIG. 4, the sensor unit 16 is formed by mounting a throttle sensor 18, an air intake temperature sensor 19, an air intake pressure sensor 20, and a signal processor 21 on a sensor housing 17 joined to the mounting face 15, these components being explained in sequence.

[0019] First, the sensor housing 17 integrally has a pair of mounting bosses 25 and 25 on mutually opposing corners of the outer periphery, threaded holes 26 corresponding to these mounting bosses 25 and 25 are provided in the mounting face 15, and the sensor housing 17 is secured to the mounting face 15 by screwing and tightening a bolt 27 inserted through the respective mounting boss 25 into the corresponding threaded hole 26.

[0020] Provided in the mounting face 15 of the throttle body 1 are a circular positioning recess 50 concentrically surrounding the valve shaft 5a (see FIG. 1) and a positioning hole 52 spaced from the positioning recess 50 in the radial direction (see FIG. 3). On the other hand, the sensor housing 17 is made of a synthetic resin, and a positioning tube 51 fitted into the positioning recess 50 (see FIG. 1) and a positioning pin 53 fitted into the positioning hole 52 (see FIG. 3) are formed together with the mounting bosses 25 at the time of molding the sensor housing 17.

[0021] Provided in the sensor housing 17 as shown in FIG. 1 is a rotor support hole 28 disposed coaxially with the bearing hole 4, rotatably supported by the rotor support hole 28 is a rotor 18a linked to an end part of the valve shaft 5a, and fixed to the sensor housing 17 is a stator 18b that forms the throttle sensor 18 in cooperation with the rotor 18a. The throttle sensor 18 detects rotation of the valve shaft 5a as a degree of opening of the throttle valve 5 by means of the rotor 18a and outputs an electric signal corresponding thereto via the stator 18b.

[0022] Formed in the throttle body 1 is a through hole 29 extending from the mounting face 15 to the air intake path 2 further upstream than the throttle valve 5, formed integrally with the sensor housing 17 is a sensor-retaining tube 30 extending through the through hole 29 and having its extremity facing the air intake path 2, and fitted into the sensor-retaining tube 30 is a sensor chip 19a of the air intake temperature sensor 19 that detects the air intake temperature on the upstream side of the air intake path 2.

[0023] Furthermore, a sensor-retaining recess 31 is formed in an outside face of the sensor housing 17, and the air intake pressure sensor 20 is fitted into the sensor-retaining recess 31.

[0024] As shown in FIG. 4, in the above arrangement, the air intake temperature sensor 19 is disposed further upstream in the air intake path 2 than the throttle sensor 18, and the air intake pressure sensor 20 is disposed further upstream in the air intake path 2 than the throttle sensor 18 and above the air intake temperature sensor 19. In this way, the throttle sensor 18, the air intake temperature sensor 19, and the air intake pressure sensor

20 are disposed so that their centers are positioned on the apexes of a triangle 35 further upstream in the air intake path 2 than an axis Y of the valve shaft 5a of the sensor housing 17, and the air intake pressure sensor 20 is disposed so that the center thereof is at the uppermost apex. The uppermost apex is disposed above the axis of the air intake path 2.

[0025] As shown in FIG. 2 to FIG. 4, a detection hole 37 communicates with a pressure-receiving chamber 20a via an air intake pressure-transmitting passage 38, a sensor chip 20b of the air intake pressure sensor 20 facing the pressure-receiving chamber 20a, and the detection hole 37 opening downward in the air intake path 2 further downstream than the throttle valve 5. The part of the detection hole 37 opening in the air intake path 2 is disposed above the axis of the air intake path 2.

[0026] The detection hole 37 is formed into a longitudinal groove shape on a downstream side end face of the throttle body 1 to which the air intake tube 55 is joined. The air intake pressure-transmitting passage is formed from a first sideways hole 38a that bends from the upper end of the detection hole 37 and extends in the upstream side direction (that is, rearward) of the air intake path 2, a second sideways hole 38b that bends from the first sideways hole 38a and heads toward the mounting face 15, a through groove 38c in the mounting face 15 that bends from the second sideways hole 38b and extends so as to pass a position above the axis of the air intake path 2, and a third sideways hole 38d that bends from the through groove 38c and opens in the pressure-receiving chamber 20a. The third sideways hole 38d is provided with an orifice 39 that attenuates pulsations of the air intake pressure. The sensor chip 20b, which faces the pressure-receiving chamber 20a, is disposed so as to be offset higher than the third sideways hole 38d (see FIG. 5). The detection hole 37, the first and second sideways holes 38a and 38b, and the through groove 38c are provided in the throttle body 1, and the third sideways hole 38d is provided in the sensor housing 17. In this way, the part of the air intake pressure-transmitting passage 38 that opens in the pressure-receiving chamber 20a is disposed above the part of the detection hole 37 opening in the air intake path 2.

[0027] An O ring 40 is fitted into a downstream side end face of the throttle body 1, the O ring 40 being in intimate contact with the air intake tube 55 while surrounding the air intake path 2 and the detection hole 37, and an O ring 41 is fitted into the mounting face 15, the O ring 41 being in intimate contact with the sensor housing 17 while surrounding the throttle sensor 18 and the through groove 38c.

[0028] A board 45 of the signal processor 21 is placed on an outer end part of the sensor housing 17. In this arrangement, terminals of the throttle sensor 18, the air intake temperature sensor 19, and the air intake pressure sensor 20 are connected to the board 45. Furthermore, a coupler 47 is formed integrally with one side of the sensor housing 17, the coupler 47 taking out output sig-

nals of the various types of sensors 18 to 20 to the outside via the signal processor 21. Mounted on the sensor housing 17 is a cover 48 that covers an open outside face of the sensor housing 17.

[0029] The operation of this embodiment is now explained.

[0030] During operation of the engine, output signals of each of the throttle sensor 18, the air intake temperature sensor 19, and the air intake pressure sensor 20 are used to control the fuel injection volume, the ignition timing, the fast idle air intake volume, etc. in the engine.

[0031] Since the throttle sensor 18, the air intake temperature sensor 19, and the air intake pressure sensor 20 are disposed so that their centers are positioned on apexes of the triangle 35 in the sensor housing 17 further upstream in the air intake path 2 than the axis Y of the valve shaft 5a of the throttle valve 5, the throttle sensor 18, the air intake temperature sensor 19, and the air intake pressure sensor 20 are disposed in a concentrated manner further upstream in the air intake path 2 than the axis Y of the valve shaft 5a in the sensor housing 17, and it therefore becomes possible to reduce the axial length of the throttle body 1 further downstream in the air intake path 2 than the valve shaft 5a without interfering with the air intake pressure sensor 20 in particular, and it also becomes possible to make the throttle body 1 compact, lighten the weight, and at the same time make the sensor housing 17 compact.

[0032] Moreover, the air intake pressure sensor 20 is disposed so that its center is at the uppermost apex of the triangle, the pressure-receiving chamber 20a of the air intake pressure sensor 20, which the sensor chip 20b faces, communicates with the detection hole 37, which opens in the air intake path 2 further downstream than the throttle valve 5, via the air intake pressure-transmitting passage 38, a part of which goes by way of a position above the axis of the air intake path 2, the part of the air intake pressure-transmitting passage 38 opening in the pressure-receiving chamber 20a is disposed above the part of the detection hole 37 opening in the air intake path 2, and the part of the detection hole 37 opening in the air intake path 2 is disposed above the axis of the air intake path 2. Therefore, the part of the air intake pressure-transmitting passage 38 opening in the pressure-receiving chamber 20a occupies a position above the part of the detection hole opening in the air intake path 2, the part of the detection hole 37 opening in the air intake path 2 occupies a position above the axis of the air intake path 2, and the part of the air intake pressure-transmitting passage 38 extending from the detection hole 37 to the pressure-receiving chamber 20a of the air intake pressure sensor 20 is one that is long and goes by way of a position above the axis of the air intake path 2. It is therefore possible to make it difficult for foreign matter such as soot or moisture contained in blow-back gas at the time of back firing of the engine to enter the pressure-receiving chamber 20a of the air intake pressure sensor 20 because of the gravity acting on the foreign matter and the

flow path resistance of the long air intake pressure-transmitting passage 38, thereby preventing foreign matter from becoming attached to the sensor chip 20b of the air intake pressure sensor 20.

[0033] In particular, since the detection hole 37 is formed into a longitudinal groove shape that opens on the downstream side end face of the throttle body 1, to which the air intake tube 55 of the engine is joined, and the air intake pressure-transmitting passage 38 is formed from the first sideways hole 38a, which bends from the upper end of the detection hole 37 and extends in the upstream side direction of the air intake path 2, the second sideways hole 38b, which bends from the first sideways hole 38a and heads toward the mounting face 15, the through groove 38c in the mounting face 15, which bends from the second sideways hole 38b and extends so as to cross above the valve shaft 5a, and the third sideways hole 38d, which bends from the through groove 38c and opens in the pressure-receiving chamber 20a, it is difficult for foreign matter such as soot or moisture contained in blow-back gas of the engine to enter the detection hole 37. Even if this foreign matter enters together with the blow-back gas, since this blow-back gas collides with a plurality of corners while passing through the long air intake pressure-transmitting passage before reaching the pressure-receiving chamber 20a of the air intake pressure sensor 20, its energy is attenuated effectively. As a result, foreign matter such as soot contained in the blow-back gas is separated en route, thereby making it possible to prevent the foreign matter from entering the pressure-receiving chamber 20a.

[0034] Furthermore, even if the foreign matter enters the pressure-receiving chamber 20a from the final third sideways hole 38d of the air intake pressure-transmitting passage 38, since the sensor chip 20b, which faces the pressure-receiving chamber 20a, is disposed so as to be offset higher than the third sideways hole 38d, it is possible to prevent foreign matter that has dropped from the third sideways hole 38d into the pressure-receiving chamber 20a from becoming attached to the sensor chip 20b.

[0035] From the above, it is possible for the air intake pressure sensor 20 to always appropriately detect the air intake pressure of the downstream side of the air intake path 2.

[0036] Furthermore, the longitudinal groove-shaped detection hole 37 and the through groove 38c can be molded at the same time as casting the throttle body 1 and, moreover, the longitudinal groove-shaped detection hole 37 contributes to a reduction in the axial length of the throttle body 1 further downstream in the air intake path 2 than the valve shaft 5a.

[0037] As shown in FIG. 4, since the part of the detection hole 37 opening in the air intake path 2 is disposed so as to be relatively close to the valve shaft 5a when the air intake path 2 is viewed from the axial direction of the valve shaft 5a, at the time of an idle degree of opening of the throttle valve 5, the detection hole 37 can be suf-

ficiently separated from the throttle valve 5 to the downstream side without particularly extending the downstream side end part of the throttle body 1 with respect to the throttle valve 5, and it is possible to appropriately detect a boost pressure of the engine.

[0038] The present invention is not limited to the above embodiment, and may be modified in a variety of ways as long as the modifications do not depart from the spirit and scope thereof.

Claims

1. An air intake device for an engine for a two-wheeled motor vehicle, the air intake device comprising a throttle body (1) that has an air intake path (2) in a central part thereof, a throttle valve (5) that has a valve shaft (5a) horizontally supported on the throttle body (1) and that opens and closes the air intake path (2), and a sensor unit (16) comprising, attached to a sensor housing (17) mounted on a mounting face (15) on one side of the throttle body (1), a throttle sensor (18) that is on an axis (Y) of the valve shaft (5a) of the throttle valve (5) and that detects rotation of the valve shaft (5a) as a degree of opening of the throttle valve (5), an air intake temperature sensor (19) that detects an air intake temperature of the air intake path (2) further upstream than the throttle valve (5), and an air intake pressure sensor (20) that detects an air intake negative pressure of the air intake path (2) further downstream than the throttle valve (5),

characterized in that the throttle sensor (18), the air intake temperature sensor (19), and the air intake pressure sensor (20) are disposed so that the centers thereof are positioned on apexes of a triangle (35) on the sensor housing (17) further upstream in the air intake path (2) than the axis (Y) of the valve shaft (5a), and the air intake pressure sensor (20) is disposed so that the center thereof is on the uppermost apex of the triangle (35), a pressure-receiving chamber (20a) of the air intake pressure sensor (20) that a sensor chip (20b) faces communicates, via an air intake pressure-transmitting passage (38), with a detection hole (37) opening in the air intake path (2) further downstream than the throttle valve (5), part of the air intake pressure-transmitting passage (38) passing a position above an axis of the air intake path (2), a part of the air intake pressure-transmitting passage (38) that opens in the pressure-receiving chamber (20a) is disposed above a part of the detection hole (37) that opens in the air intake path (2), and a part of the detection hole (37) opening in the air intake path (2) is disposed above the axis of the air intake path (2).

2. The air intake device for an engine for a two-wheeled motor vehicle according to Claim 1, wherein

the detection hole (37) is formed into a longitudinal groove shape opening on a downstream side end face (1a) of the throttle body (1) to which an air intake tube (55) of the engine is joined, and the air intake pressure-transmitting passage (38) is formed from a first sideways hole (38a) that bends from an upper end of the detection hole (37) and extends in an upstream side direction of the air intake path (2), a second sideways hole (38b) that bends from the first sideways hole (38a) and heads toward the mounting face (15), a through groove (38c) in the mounting face (15) that bends from the second sideways hole (38b) and extends so as to cross above the valve shaft (5a), and a third sideways hole (38d) that bends from the through groove (38c) and opens in the pressure-receiving chamber (20a).

3. The air intake device for an engine for a two-wheeled motor vehicle according to Claim 1 or 2, wherein the sensor chip (20b) is disposed so as to be offset higher than a part of the air intake pressure-transmitting passage (38) that opens in the pressure-receiving chamber (20a).

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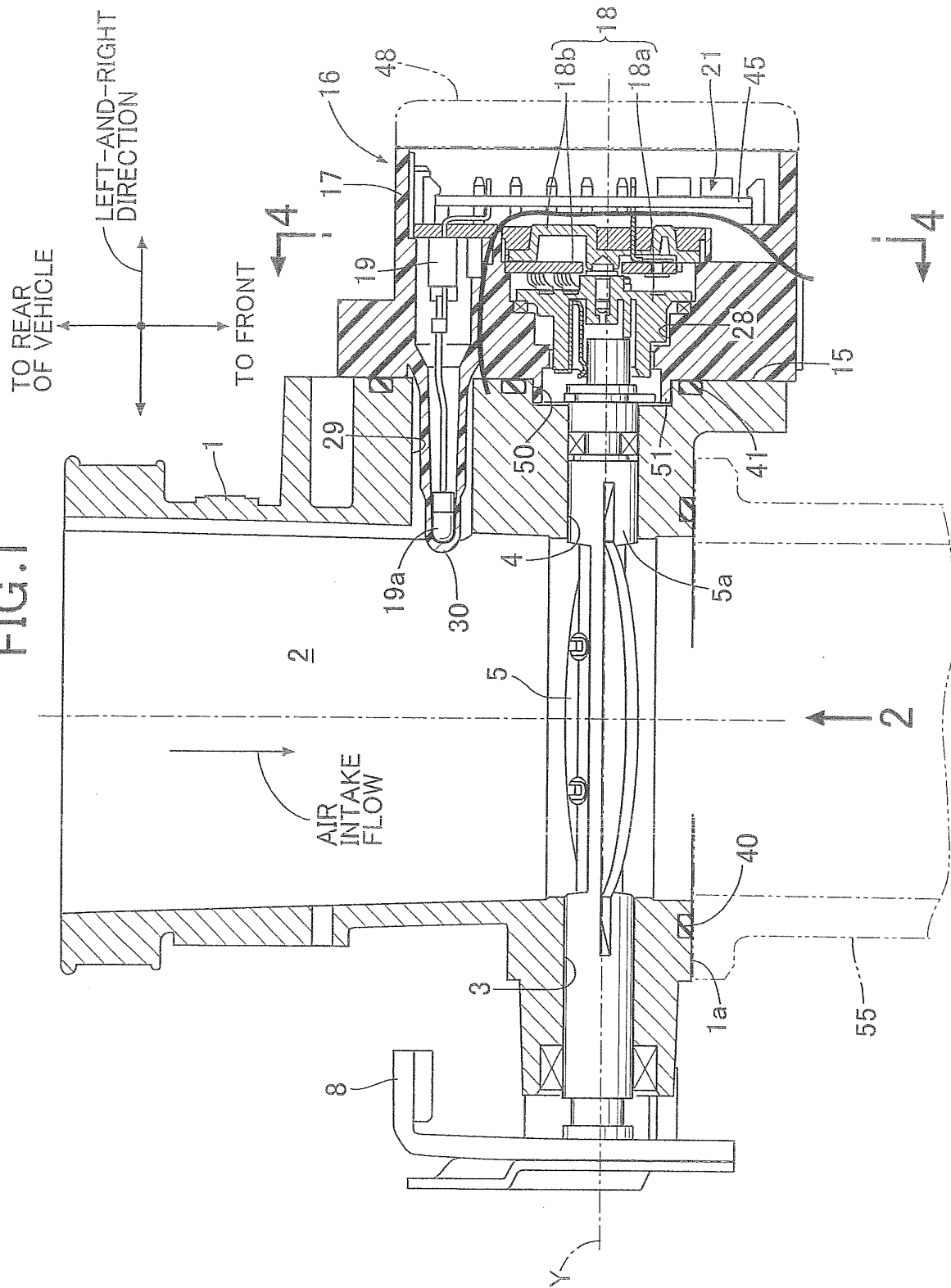
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FIG.1



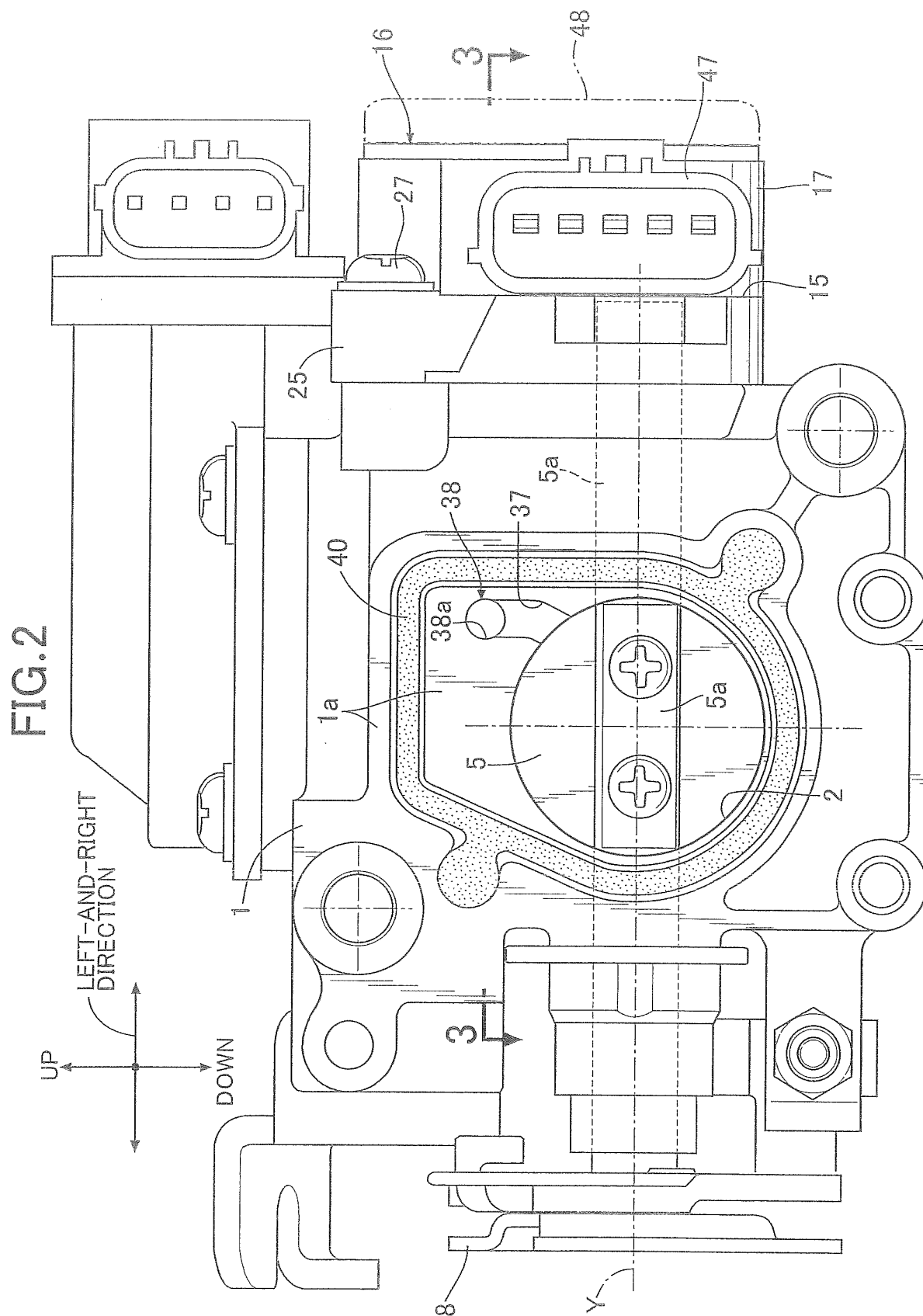


FIG.3

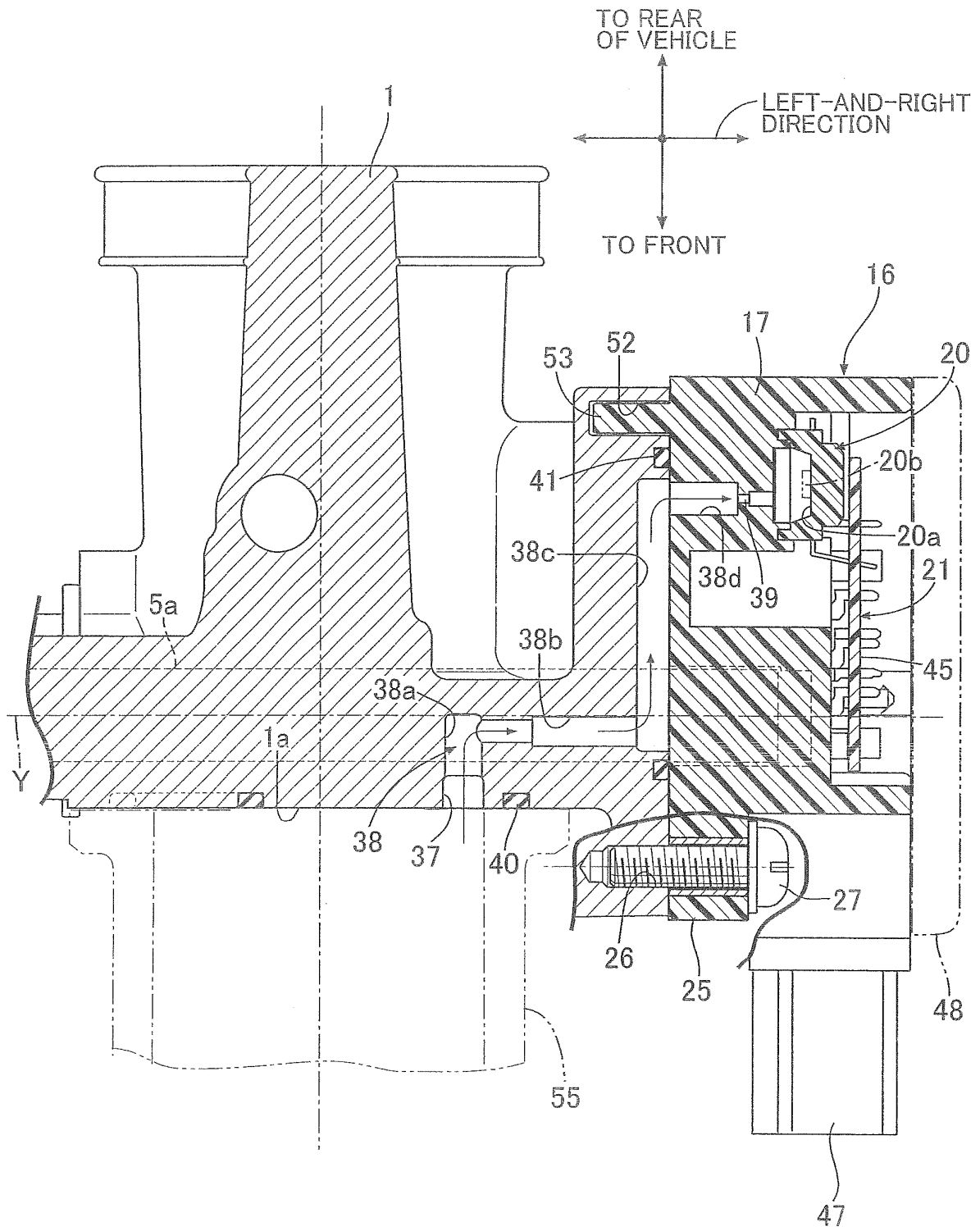
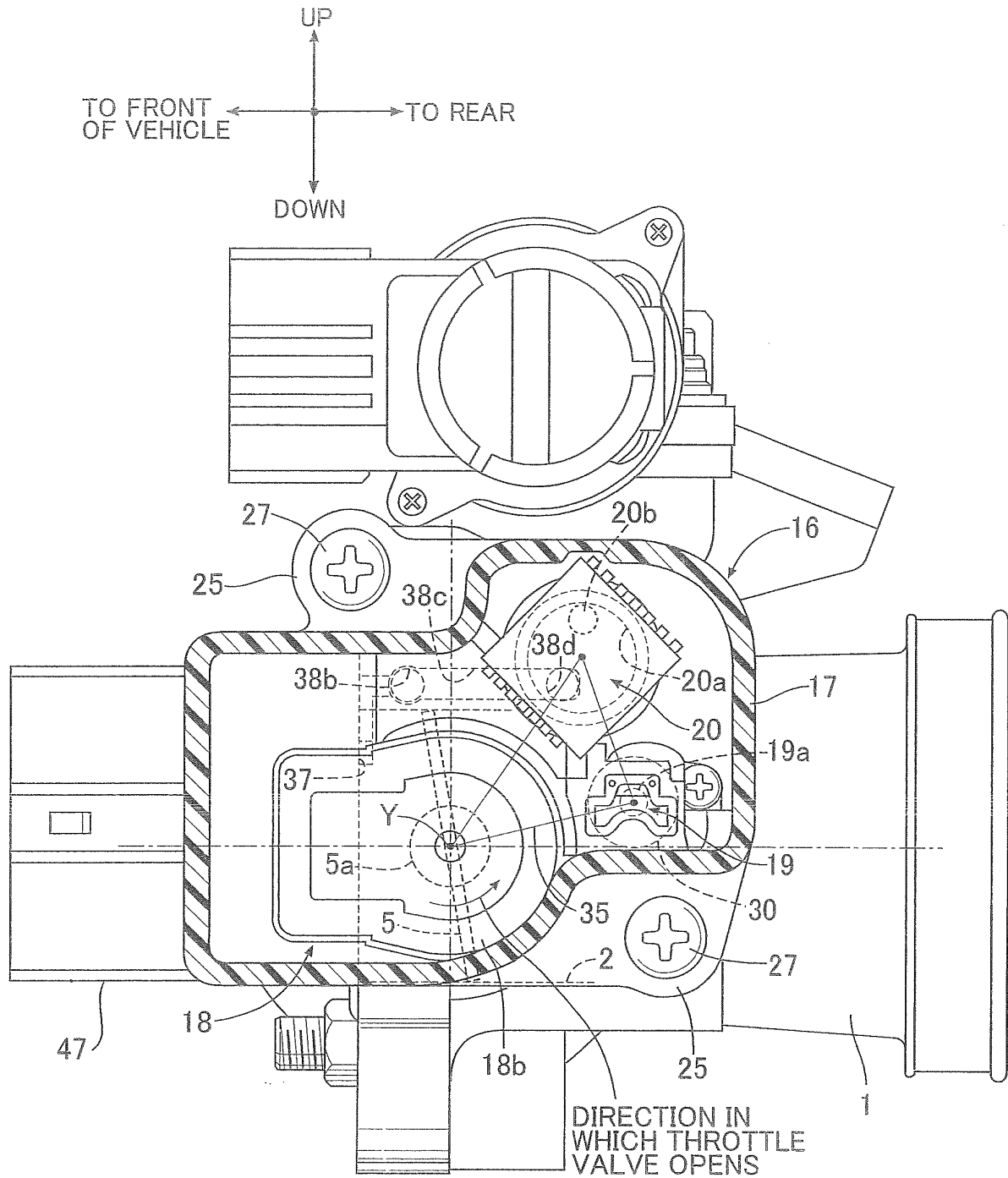


FIG.4



5	INTERNATIONAL SEARCH REPORT		International application No. PCT/JP2014/056254
	A. CLASSIFICATION OF SUBJECT MATTER F02D35/00(2006.01)i, F02D9/10(2006.01)i		
10	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) F02D35/00, F02D9/10		
15	Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2014 Kokai Jitsuyo Shinan Koho 1971-2014 Toroku Jitsuyo Shinan Koho 1994-2014		
20	Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
	C. DOCUMENTS CONSIDERED TO BE RELEVANT		
	Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
25	Y A	JP 2003-74379 A (Honda Motor Co., Ltd.), 12 March 2003 (12.03.2003), paragraphs [0015] to [0021], [0032] to [0033], [0037] to [0038]; fig. 5, 9 to 11, 14 (Family: none)	1, 3 2
30	Y	JP 2007-127091 A (Kehin Corp.), 24 May 2007 (24.05.2007), paragraphs [0022], [0028] to [0029]; fig. 3 & US 2010/0006052 A1 & EP 1947317 A1 & WO 2007/052554 A1 & CN 101305175 A	1, 3
35	Y	JP 11-64145 A (Nippon Soken, Inc.), 05 March 1999 (05.03.1999), paragraphs [0018] to [0019]; fig. 1, 4, 6 (Family: none)	3
40	<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
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50	Date of the actual completion of the international search 08 May, 2014 (08.05.14)		Date of mailing of the international search report 27 May, 2014 (27.05.14)
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2014/056254

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
10 A	JP 2007-255240 A (Denso Corp.), 04 October 2007 (04.10.2007), paragraph [0062]; fig. 5 & CN 101042074 A	1-3
15 A	JP 2005-155515 A (Mikuni Corp.), 16 June 2005 (16.06.2005), paragraphs [0038] to [0039]; fig. 9 (Family: none)	2
20 A	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 30642/1990 (Laid-open No. 122246/1991) (Honda Motor Co., Ltd.), 13 December 1991 (13.12.1991), page 8, lines 5 to 11; drawings (Family: none)	2
25 A	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 172714/1983 (Laid-open No. 81234/1985) (Aisan Industry Co., Ltd.), 05 June 1985 (05.06.1985), page 3, line 10 to page 4, line 2; fig. 2 (Family: none)	2
30 A	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 51320/1986 (Laid-open No. 162360/1987) (Aisan Industry Co., Ltd.), 15 October 1987 (15.10.1987), page 7, lines 3 to 15; fig. 2 (Family: none)	2
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Patent documents cited in the description

- JP 2007127091 A [0003]