

Colombia



सत्यमेव जयते

ACTUAL
PROPERTY INDIA

व्यापार
उपदर्शन

भारत सरकार
GOVERNMENT OF INDIA
वाणिज्य एवं उद्योग मंत्रालय
MINISTRY OF COMMERCE & INDUSTRY
पेटेंट कार्यालय
THE PATENT OFFICE

जिस किसी से संबन्धित हो
TO WHOMSOEVER IT MAY CONCERN

महोदय/महोदया, मैं व्यापार चिह्न की ओर से प्रमाणपत्र हस्ताक्षर व जारी करने के लिए प्राधिकृत अधिकारी हूँ, यह प्रमाणित करता/ती हूँ कि निम्नलिखित पेटेंट आवेदन के संबंध में फाइल दस्तावेज़(जों) की सही प्रतिलिपि इसके साथ संलग्न है:

I, the undersigned, being an officer duly authorized to sign and issue the certificate on behalf of the Controller General of Patents, Designs and Trademarks in accordance with the provisions of Section 73(3) of the Patents Act, 1970, hereby certify that annexed hereto is a true copy of the document(s) as filed in connection with the following Patent Application:

आवेदन संख्या/a) Application Number: 202141008763

फाइल करने की तारीख/b) Date of Filing: 02/03/2021

आरोपित दस्तावेज़(जों) का नाम:

c) Name of the document(s) requested: Complete Specification

प्रमाणपत्र पेटेंट अधिनियम, 1970 की धारा 147(1) के अधीन मुझमें निहित शक्तियों के तहत जारी किया गया है। This certificate is issued under the powers vested in me U/S 147(1) of The Patents Act, 1970.

This 28th day of February 2022

नियंत्रक पेटेंट व डिजाइन/Controller of Patents and Designs
(प्राधिकृत हस्ताक्षरी/Authorised Signatory)

FORM 1 THE PATENTS ACT 1970 (39 of 1970) and THE PATENTS RULES, 2003 APPLICATION FOR GRANT OF PATENT (Section 7, 54 and 135 and sub-rule (1) of Rule 20)				(FOR OFFICE USE ONLY)	
			Application No.		
			Filing date:		
			Amount of Fee paid:		
			CBR No:		
			Signature:		
1. APPLICANT'S REFERENCE / IDENTIFICATION NO. (AS ALLOTTED BY OFFICE)					
2. TYPE OF APPLICATION [Please tick (✓) at the appropriate category]					
Ordinary (✓)		Convention ()		PCT-NP ()	
Divisional ()	Patent of Addition ()	Divisional ()	Patent of Addition ()	Divisional ()	Patent of Addition ()
3A. APPLICANT(S)					
Name in Full		Nationality	Country of Residence	Address of the Applicant	
TVS MOTOR COMPANY LIMITED		an Indian company	India	House No.	Chaitanya
				Street	No.12 Khader Nawaz Khan Road, Nungambakkam
				City	Chennai
				State	Tamil Nadu
				Country	India
				Pin code	600 006

3B. CATEGORY OF APPLICANT [Please tick (✓) at the appropriate category]				
Natural Person ()		Other than Natural Person (✓)		
		Small Entity ()	Startup ()	Others (✓)
4. INVENTOR(S) [Please tick (✓) at the appropriate category]				
Are all the inventor(s) same as the applicant(s) named above?		Yes ()		No (✓)
If "No", furnish the details of the inventor(s)				
Name in Full	Nationality	Country of Residence	Address of the Inventor	
THANGAVEL DEEPAN	An Indian national	India	House No.	Chaitanya
			Street	No 12 Khader Nawaz Khan Road, Nungambakkam
			City	Chennai
			State	Tamil Nadu
			Country	India
			Pin code	600 006
RAJENDRAN PADALINGAM	An Indian national	India	House No.	Chaitanya
			Street	No 12 Khader Nawaz Khan Road, Nungambakkam
			City	Chennai
			State	Tamil Nadu
			Country	India
			Pin code	600 006
VAIDHEESWARAN RAMESH	An Indian national	India	House No.	Chaitanya
			Street	No 12 Khader Nawaz Khan Road, Nungambakkam
			City	Chennai
			State	Tamil Nadu
			Country	India
			Pin code	600 006

KARNAM VENKATA MANGARAJU	An Indian national	India	House No.	Chaitanya
			Street	No 12 Khader Nawaz Khan Road, Nungambakkam
			City	Chennai
			State	Tamil Nadu
			Country	India
			Pin code	600 006

5. TITLE OF THE INVENTION

A Fuel Vapour Emission Control System

6. AUTHORISED REGISTERED PATENT AGENT(S)	IN/PA No.	1086
	Name	Adheesh Nargolkar
	Mobile No.	9820776760
7. ADDRESS FOR SERVICE OF APPLICANT IN INDIA	Name	Khaitan & Co
	Postal Address	One Indiabulls Centre, 13th Floor 841, Senapati Bapat Marg Elphinstone Road Mumbai 400013, Maharashtra
	Telephone No.	66365000
	Mobile No.	9820776760
	Fax No.	66365050
	E-mail ID	kcopatents@khaitanco.com adheesh.nargolkar@khaitanco.com

**8. IN CASE OF APPLICATION CLAIMING PRIORITY OF APPLICATION FILED IN
CONVENTION COUNTRY, PARTICULARS OF CONVENTION APPLICATION**

Country	Application Number	Filing date	Name of the applicant	Title of the invention	IPC (as classified in the convention country)

**9. IN CASE OF PCT NATIONAL PHASE APPLICATION, PARTICULARS OF
INTERNATIONAL APPLICATION FILED UNDER PATENT CO-OPERATION TREATY (PCT)**

International application number	International filing date

**10. IN CASE OF DIVISIONAL APPLICATION FILED UNDER SECTION 16, PARTICULARS
OF ORIGINAL (FIRST) APPLICATION**

Original (first) application No.	Date of filing of original (first) application

11. IN CASE OF PATENT OF ADDITION FILED UNDER SECTION 54, PARTICULARS OF MAIN APPLICATION OR PATENT: NOT APPLICABLE

Main application/patent No.	Date of filing of main application
Nil	Nil

12. DECLARATIONS

(i) Declaration by the inventor(s)

(In case the applicant is an assignee: the inventor(s) may sign herein below or the applicant may upload the assignment or enclose the assignment with this application for patent or send the assignment by post/electronic transmission duly authenticated within the prescribed period).

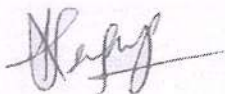
I/We, the above named inventor(s) is/are the true & first inventor(s) for this Invention and declare that the applicant(s) herein is/are my/our assignee or legal representative.

(a) Date: 2 March 2021

(b) Signature(s)

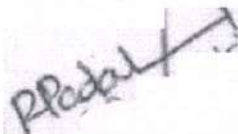
(c) Name(s)

1.



THANGAVEL DEEPAN

2.



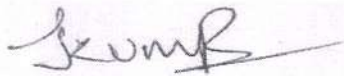
RAJENDRAN PADALINGAM

3.



VAIDHEESWARAN RAMESH

4.



KARNAM VENKATA MANGA RAJU

(ii) Declaration by the applicant(s) in the convention country: NOT APPLICABLE

(In case the applicant in India is different than the applicant in the convention country: the applicant in the convention country may sign herein below or applicant in India may upload the assignment from the applicant in the convention country or enclose the said assignment with this application for patent or send the assignment by post/electronic transmission duly authenticated within the prescribed period)

I/We, the applicant(s) in the convention country declare that the applicant(s) herein is/are

my/our assignee or legal representative.

(a) Date

(b) Signature(s)

(c) Name(s) of the signatory

(iii) Declaration by the applicant(s)

☒ We the applicant(s) hereby declare(s) that: -

☒ We are in possession of the above-mentioned invention.

☒ The ~~provisional~~/complete specification relating to the invention is filed with this application.

☒ The invention as disclosed in the specification uses the biological material from India and the necessary permission from the competent authority shall be submitted by me/us before the grant of patent to me/us.

☒ There is no lawful ground of objection(s) to the grant of the Patent to me/us.

☒ We are the true & first inventor(s).

☒ We are the assignee or legal representative of true & first inventor(s).

☒ The application or each of the applications, particulars of which are given in Paragraph-8, was the first application in convention country/countries in respect of my/our invention(s).

☒ We claim the priority from the above mentioned application(s) filed in convention country/countries and state that no application for protection in respect of the invention had been made in a convention country before that date by me/us or by any person from which we derive the title.

☒ Our application in India is based on international application under Patent Cooperation Treaty (PCT) as mentioned in Paragraph-9.

☒ The application is divided out of my /our application particulars of which is given in Paragraph-10 and pray that this application may be treated as deemed to have been filed on DD/MM/YYYY under section 16 of the Act.

☒ The said invention is an improvement in or modification of the invention particulars of which are given in Paragraph-11.

13. FOLLOWING ARE THE ATTACHMENTS WITH THE APPLICATION

(a) Form 2

Item	Details	Fee	Remarks
Complete/ ~~provisional~~ specification)#	No. of pages 20		

No. of Claim(s)	No. of claims 24 and No. of pages 7		
Abstract	No. of pages 1		
No. of Drawing(s)	No. of drawings 9 and No. of pages 8		

In case of a complete specification, if the applicant desires to adopt the drawings filed with his provisional specification as the drawings or part of the drawings for the complete specification under rule 13(4), the number of such pages filed with the provisional specification are required to be mentioned here.

(b) Complete specification (in conformation with the international application)/as amended before the International Preliminary Examination Authority (IPEA), as applicable (2 copies).

(c) Sequence listing in electronic form

(d) Drawings (in conformation with the international application)/as amended before the International Preliminary Examination Authority (IPEA), as applicable (2 copies).

(e) Priority document(s) or a request to retrieve the priority document(s) from DAS (Digital Access Service) if the applicant had already requested the office of first filing to make the priority document(s) available to DAS.

(f) Translation of priority document/Specification/International Search Report/International Preliminary Report on Patentability. (g) Statement and Undertaking on Form 3 (h) Declaration of Inventorship on Form 5 (i) Power of Authority

(g) Statement and Undertaking on Form 3

(h) Declaration of Inventorship on Form 5

(i) Power of Authority

Total fee is being paid via online payment mode.

We hereby declare that to the best of my/our knowledge, information and belief the fact and matters slated herein are correct and I/We request that a patent may be granted to me/us for the said invention.

Dated this 2nd day of March 2021

TVS MOTOR COMPANY LIMITED
By their Agent & Attorney



(Nikhil Ranjan)
of Khaitan & Co
Reg No IN/PA-1471

To
The Controller of Patents
The Patent Office, at Chennai

Note: -

- * Repeat boxes in case of more than one entry.
- * To be signed by the applicant(s) or by authorized registered patent agent otherwise where mentioned.
- * Tick (✓)/cross (x) whichever is applicable/not applicable in declaration in paragraph-12.
- * Name of the inventor and applicant should be given in full, family name in the beginning.
- * Strike out the portion which is/are not applicable.
- * For fee: See First Schedule.

FORM 2
THE PATENTS ACT, 1970
(39 OF 1970)
&
THE PATENTS RULES, 2003
COMPLETE SPECIFICATION
[See section 10, Rule 13]

TITLE OF INVENTION

A Fuel Vapour Emission Control System

APPLICANT

**TVS MOTOR COMPANY LIMITED, an Indian company, having its
address at "Chaitanya", No.12 Khader Nawaz Khan Road,
Nungambakkam, Chennai 600 006, Tamil Nadu, India.**

PREAMBLE TO THE DESCRIPTION

The following specification particularly describes the invention and the manner in which it is to be performed.

FIELD OF THE INVENTION

[001] The present invention relates to a fuel vapour emission control system.

BACKGROUND OF THE INVENTION

5 [002] In evaporative emission control systems (EVAP) of conventional two-wheeled vehicles, fuel vapours generated in a fuel tank is tapped and passed to a canister containing carbon layers through a discharge tube. The vapours get adsorbed in the carbon layers inside the canister. The adsorbed vapours are then sent to an engine for combustion. However, the amount of carbon
10 required to carry out effective vapour adsorption in a canister depends on the fuel tank volume and hence, it varies from vehicle to vehicle.

[003] Further, usage a standard canister with a standard volume of carbon for different fuel tanks may add more cost to a particular vehicle, especially the vehicle which requires lesser carbon volume than the standard canister to
15 carry out effective vapour adsorption. Furthermore, usage of different standardised canisters for different vehicles creates more part counts and thus increases the cost and impact serviceability and assembly.

[004] Furthermore, mounting of a canister is limited as the mounting needs to be done in a manner that the canister is protected from environmental
20 disturbances, without affecting the functionality and serviceability of adjacent and interfacing vehicle parts. Further, the carbon canister needs to be provided in a safe location in the vicinity of the fuel tank to improve

performance and improving fire safety. The vehicle layout constraints and space limitations severely limit the packaging of the canister and its supporting components.

[005] Another challenge in the conventional EVAP systems is that vapour
5 generation from the fuel tank continues even when the vehicle is in off condition. Hence, the hose from fuel tank to canister always carries fuel vapours as long as there is fuel is available inside the fuel tank. Especially during cold climate or vehicle getting exposed to temperature less than room temperature, vaporized fuel stored in canister gets condensed which results
10 in flooding of the canister. Once the canister is flooded, the canister ceases to perform its function of adsorption.

[006] Thus, there is a need in the art for a fuel vapour emission control system which addresses at least the aforementioned problems.

15 SUMMARY OF THE INVENTION

[007] In one aspect, the present invention is directed to a fuel vapour emission control system for a motor vehicle. The system has a fuel tank, a fuel inlet assembly having a fuel inlet opening for providing fuel to the fuel tank and a fuel inlet tube for connecting the fuel inlet opening to the fuel tank,
20 and a housing provided on the fuel inlet tube. The housing has an inlet for receiving fuel vapours from the fuel tank, fuel vapour adsorbing particles for adsorbing the fuel vapours emitted from the fuel tank, and an outlet allowing

for exit of the adsorbed fuel vapours. Further the fuel vapour emission system has an openable cover member for covering one end of the housing.

[008] In an embodiment of the invention, the housing extends between a first end having the inlet and the outlet, and a second end which is configured to
5 receive the cover member.

[009] In another embodiment of the invention, the cover member has a vent opening for relieving pressure and vacuum inside the housing and for providing an exit to liquid fuel accumulated in the housing. The cover member further has a filter arranged to filter air or liquid exiting through the vent
10 opening and a breather hose coupled with the vent opening at one end, and another end of the breather hose is left open.

[010] In another embodiment of the invention, a purge control valve is coupled with the outlet for controlling flow rate of fuel vapours purged inside the housing. Further, a first purge pipe is connected between the outlet and
15 the purge control valve, and a second purge pipe is connected to the purge control valve for supplying the purged fuel vapour to an engine.

[011] In another embodiment of the invention, the purge control valve is mounted on the housing.

[012] In another embodiment of the invention, a charge pipe is connected
20 between the inlet and the fuel inlet assembly for supplying fuel vapours from the fuel tank to the housing.

[013] In a further embodiment of the invention, the housing is provided on an outer periphery of the fuel inlet tube.

[014] In a further embodiment of the invention, the housing is provided on the fuel inlet tube such that the housing and the fuel inlet tube share a
5 common vertical plane. Further, the inlet and outlet are disposed adjoining each other on the housing, extending along the common vertical plane of the housing and the fuel inlet tube and the vent opening is provided along the common vertical plane.

[015] In a further embodiment of the invention, the housing has a holding
10 member extending outwardly from the outer periphery of the housing, for mounting the purge control valve.

[016] In another aspect, the present invention relates to a saddle-type vehicle having a head pipe, a main frame extending rearwardly and downwardly of the head pipe, a front panel disposed forwardly of the head
15 pipe in a vehicle front-rear direction, a rear panel disposed rearwardly of the head pipe in the vehicle front-rear direction. The rear panel is configured to define a space therebetween with the front panel. The saddle type vehicle further has a fuel vapour emission control system having a fuel inlet opening for providing fuel to a fuel tank, a fuel inlet tube for connecting the fuel inlet
20 opening to the fuel tank, a housing provided on the fuel inlet tube, the housing having an inlet for receiving fuel vapours from the fuel tank, fuel vapour adsorbing particles, and an outlet allowing for exit of the adsorbed fuel

vapours, and an openable cover member for covering one end of the housing. The fuel vapour emission control system is disposed in the space defined by the front panel and the rear panel therebetween.

[017] In an embodiment of the invention, the fuel vapour emission control
5 system is disposed in the space defined by the front panel and the rear panel, on a left-hand side of the main frame in a vehicle front view.

[018] In an alternative embodiment of the invention, the fuel vapour emission control system is disposed in the space defined by the front panel and the rear panel, on a right-hand side of the main frame in the vehicle front view.

10 [019] In an embodiment of the invention, the housing extends between a first end having the inlet and the outlet, and a second end configured to receive the cover member. Further, the housing is disposed substantially vertically such that a height of the first end of the housing from a ground level is greater than a height of the second end of the housing from the ground level and the
15 cover member has a vent opening facing towards the ground thereby allowing for the liquid fuel accumulated in the housing to be discharged out of the vehicle on the ground.

[020] In another aspect, the present invention relates to an integrated fuel inlet structure having a fuel inlet opening for providing fuel to a fuel tank, a
20 fuel inlet tube for connecting the fuel inlet opening to the fuel tank, a housing provided on the fuel inlet tube. The housing has an inlet for receiving fuel vapours from the fuel tank, fuel vapour adsorbing particles, and an outlet

allowing for exit of the adsorbed fuel vapours. The fuel inlet structure further has an openable cover member for covering one end of the housing.

[021] In an embodiment of the invention, the housing has a holding member extending outwardly from an outer periphery of the housing, for mounting a
5 purge control valve.

[022] In a further embodiment of the invention, the housing is provided on the fuel inlet tube such that the housing and the fuel inlet tube share a common vertical plane, and the inlet and outlet are disposed adjoining each other, extending along the common vertical plane of the housing and the fuel
10 inlet tube.

BRIEF DESCRIPTION OF THE DRAWINGS

[023] Reference will be made to embodiments of the invention, examples of which may be illustrated in accompanying figures. These figures are intended
15 to be illustrative, not limiting. Although the invention is generally described in context of these embodiments, it should be understood that it is not intended to limit the scope of the invention to these particular embodiments.

Figure 1 shows a right-side view of an exemplary saddle-type vehicle in accordance with an embodiment of the invention.

20 Figure 2 shows a perspective view of a fuel vapour emission control system in accordance with an embodiment of the invention.

Figure 3 shows another perspective view of the fuel vapour emission control system in accordance with an embodiment of the invention.

Figure 4 illustrates a cover member in accordance with an embodiment of the invention.

5 Figure 5 shows an exploded view of the fuel vapour emission control system in accordance with an embodiment of the invention.

Figures 6A and 6B show a sectional view and the section of the fuel vapour emission control system in accordance with an embodiment of the invention.

10 Figure 7 illustrates the saddle-type vehicle with the fuel vapour emission control system in accordance with an embodiment of the invention.

Figure 8 illustrates an integrated fuel inlet structure in accordance with an embodiment of the invention.

15 **DETAILED DESCRIPTION OF THE INVENTION**

[024] The present invention relates to a fuel vapour emission control system. More particularly, the present invention relates to a fuel vapour emission control for a saddle-type vehicle.

[025] Figure 1 illustrates a right-side view of an exemplary saddle-type
20 vehicle 10, in accordance with an embodiment of the present subject matter. The vehicle 10 comprises a frame assembly 105. The frame assembly 105 includes a head pipe 105A, a main frame 105B. One or more front

suspensions 110 connect a front wheel 115 to a handlebar assembly 190, which forms a steering assembly of the vehicle 10. The steering assembly is rotatably disposed about the head pipe 105A. The main frame 105B extends rearwardly downward from the head pipe 105A and includes a bent portion
5 thereafter extending substantially in a longitudinal direction. Further, the frame assembly 105 includes one or more rear tubes 105C extending inclinedly rearward from a rear portion of the main frame 105B towards a rear portion of the vehicle 10.

[026] The vehicle 10 includes a power unit comprising at least one of an
10 internal combustion (IC) engine 125. The power unit is coupled to the rear wheel 145. In one embodiment, the engine 125 is swingably connected to the frame assembly 105. In one embodiment, the engine 125 is mounted to the swing arm (not shown) and the swing arm is swingably connected to the frame assembly 105. Further, the vehicle 10 includes a transmission means
15 (not shown) coupling the rear wheel 145 to the power unit. The transmission means includes a continuously variable transmission, an automatic transmission, or a fixed ratio transmission. A seat assembly 151 is disposed above the power unit and is supported by the rear tubes 105C of the frame assembly 105. The seat assembly 151 is hingedly openable. The frame
20 assembly 105 defines a step-through portion ahead of the seat assembly 151. A floorboard 155 is disposed at the step-through portion, wherein a rider

can operate the vehicle 10 in a seated position by resting feet on the floorboard 155. Further, the floorboard 155 is capable of carrying loads.

[027] Further, the frame assembly 105 is covered by plurality of body panels including a front panel 160A, a leg shield 160B, an under-seat cover 160C, a left and a right-side panel 160D, and a rear panel 160E mounted on the frame assembly 105 and covering the frame assembly 105 and parts mounted thereof.

[028] In addition, a front fender 165 is covering at least a portion of the front wheel 115. A utility box is disposed below the seat assembly 151 and is supported by the frame assembly 105. A rear fender 175 is covering at least a portion of the rear wheel 145 and is positioned upwardly of the rear wheel 145. One or more suspension(s) (not shown) are provided in the rear portion of the vehicle 10 for connecting the swing arm 141 and the rear wheel 145 to the frame assembly 105 for damping the forces from the wheel 145 and the power unit from reaching the frame assembly 105.

[029] Furthermore, the vehicle 10 comprises of plurality of electrical and electronic components including a headlight 185A, a taillight 185B, a transistor-controlled ignition (TCI) unit (not shown), and an alternator (not shown), a starter motor (not shown).

[030] Figure 2 shows a perspective view of a fuel vapour emission control system 200 for a motor vehicle. As shown in Figure 2, the fuel vapour emission control system 200 has a fuel tank 210. The fuel vapour emission

control system 200 further has a fuel inlet assembly 220 with a fuel inlet opening 222 for providing fuel to the fuel tank 210, and a fuel inlet tube 224 for connecting the fuel inlet opening 222 to the fuel tank 210. The fuel vapour emission control system 200 further has a housing 230 provided on the fuel inlet tube 224, with an inlet 232 for receiving emitted fuel vapours from the fuel tank 210 which are adsorbed by fuel vapour adsorbing particles 236 (shown in Figure 5) housed inside the housing 230. The housing 230 further has an outlet 234 allowing for the exit of the adsorbed fuel vapours from the housing 230 towards the engine 125. The fuel vapour emission control system 200 further has an openable cover member 240 for covering one end of the housing 230.

[031] The cover member 240 allows alteration in the quantity of fuel vapour adsorbing particles 236 housed inside the housing 230. Accordingly, depending on the size of the fuel tank 210, amount of fuel vapour adsorbing particles may be altered. If the fuel tank 210 is of a larger size, more fuel vapours are generated and hence more fuel vapour adsorbing particles 236 are required for adsorption. In this regard, the openable cover member 240 is opened from one end of the housing 230 to increase the quantity of the fuel vapour adsorbing particles 236 in the housing 230 and then, the openable cover member 240 is placed on one end of the housing 230 thereby sealing the housing 230. Conversely, If the fuel tank 210 is of a smaller size, less fuel vapours are generated and hence less fuel vapour adsorbing particles 236

are required for adsorption. In this regard, the openable cover member 240 is opened from one end of the housing 230 to decrease the quantity of the fuel vapour adsorbing particles 236 in the housing 230 and then, the openable cover member 240 is placed on end of the housing 230, thereby sealing the housing 230.

[032] In an embodiment of the invention, as shown in Figure 2, the housing 230 is provided on an outer periphery of the fuel inlet tube 224.

[033] As further illustrated in Figure 3, and referenced in Figure 2, the housing 230 extends between a first end 230A, and a second end 230B wherein the first end 230A has the inlet 232 and the outlet 234, and the second end 230B is configured to receive the cover member 240. In that, a charge pipe 238 is connected between the inlet 232 and the fuel inlet assembly 220 for supplying fuel vapours from the fuel tank 210 to the housing 230. In an embodiment of the invention, one end of the charge pipe 238 is provided at the fuel inlet opening 222 to receive the fuel vapours emitted from the fuel tank 210, and the other end of the charge pipe 238 is connected at the inlet 232 for supplying the fuel vapours entering the charge pipe 238 from the fuel inlet opening 222 to the housing 230, where the fuel adsorbing particles 236 adsorb the emitted fuel vapours.

[034] Further, a first purge pipe 252 is connected between the outlet 234 of the housing 230 and a purge control valve 250, and a second purge pipe 254 is connected to the purge control valve 250 for supplying the purged fuel

vapour to the engine 125. Thereby, the purge control valve 250 is coupled with the outlet 234 wherein the purge control valve 250 controls flow rate of the fuel vapours purged inside the housing 230 to the engine 125.

[035] Figure 4 illustrates a perspective view of the openable cover member 240. As illustrated in Figure 4, the cover member 240 has a vent opening 242 for relieving pressure and vacuum inside the housing 230 and for providing an exit to liquid fuel accumulated in the housing 230 on condensation of the fuel vapours. In that, a breather hose 246 (shown in Figure 2) is coupled with the vent opening 242 at one end, and another end of the breather hose 246 is left open for allowing the exit of accumulated liquid fuel in the housing 230 to be discharged on to the ground. Further, the cover member 240 has a filter 244 (shown in Fig. 5) arranged in a slot 248 of the cover member 240 to filter air or liquid exiting through the vent opening 242.

[036] Figure 5 illustrates an exploded view of the fuel vapour control emission system 200. As illustrated in Figure 5, an air filter 245 is provided inside the housing 230 adjacent to the inlet 232 and the outlet 234 for filtering the fuel vapours entering the housing 230 through the charge pipe 238 and exiting the housing 230 through the first purge pipe 254 respectively. The fuel vapour adsorbing particles 236 are packaged subsequent to the air filter 245, with the openable cover member 240 having the filter 244 and the vent opening 242 covering the second end 230B of the housing 230 subsequent to the fuel vapour adsorbing particles 236.

[037] As further illustrated in Figure 5, the purge control valve 250 is mounted on the housing 230. In an embodiment of the invention, the housing 230 comprises a holding member 260 extending outwardly from an outer periphery of the housing 230, and the purge control valve 250 is mounted on
5 the holding member 260.

[038] Figure 6A illustrates a sectional view of the fuel vapour emission control system 200 along a common vertical plane (A-A'). As illustrated in Figure 6A and further illustrated in Figure 6B, the housing 230 is provided on the fuel inlet tube 224 such that the housing 230 and the fuel inlet tube 224
10 share the common vertical plane (A-A'). In an embodiment of the invention, the inlet 232 and outlet 234 are disposed adjoining each other, extending along the common vertical plane (A-A') of the housing 230 and the fuel inlet tube 224. In another embodiment of the invention, the vent opening 242 is also provided along the common vertical plane (A-A').

[039] In another aspect of the invention, as illustrated in Figure 7, the fuel vapour emission control system 200 is provided on the saddle-type vehicle
15 10. As shown in Figure 1, the saddle-type vehicle 10 comprises the head pipe 105A and the main frame 105B extending rearwardly and downwardly of the head pipe 105A. The front panel 100A is disposed forwardly of the head pipe 105A in a vehicle front-rear direction and the rear panel 160E is disposed
20 rearwardly of the head pipe 105A in the vehicle front-rear direction. The rear panel 160E is configured to define a space therebetween with the front panel

160A. As shown in Figure 5, the fuel vapour emission control system 200 is disposed in the space defined by the front panel 160A and the rear panel 160E therebetween, thereby enclosing the fuel vapour emission control system 200 away from environmental disturbances. As mentioned
5 hereinbefore and illustrated in Figures 1-6, the fuel vapour emission control system 200 has the fuel tank 210. The fuel vapour emission control system 200 further has the fuel inlet assembly 220 with the fuel inlet opening 222 for providing fuel to the fuel tank 210, and the fuel inlet tube 224 for connecting the fuel inlet opening 222 to the fuel tank 210. The fuel vapour emission
10 control system 200 further has the housing 230 provided on the fuel inlet tube 224, with the inlet 232 for receiving emitted fuel vapours from the fuel tank 210 which are adsorbed by the fuel vapour adsorbing particles 236 housed inside the housing 230. The housing 230 further has the outlet 234 allowing for the exit of the adsorbed fuel vapours from the housing 230 towards the
15 engine 125. The fuel vapour emission control system 200 further has the openable cover member 240 for covering one end of the housing 230, thereby allowing for alteration in the quantity of fuel vapour adsorbing particles 236 inside the housing 230 depending on the size of the fuel tank 210.

20 [040] In an embodiment of the invention, the fuel tank 210 is disposed under the floorboard 155 of the vehicle, thereby allowing the emitted fuel vapours from the fuel tank 210 to rise in the fuel inlet tube 224.

[041] In an embodiment of the invention, the fuel vapour emission control system 200 is disposed in the space defined by the front panel 160A and the rear panel 160E, on a left-hand side of the main frame 105B in a vehicle front view. In an alternative embodiment of the invention, the fuel vapour emission control system 200 is disposed in the space defined by the front panel 160A and the rear panel 160E, on a right-hand side of the main frame 105B in the vehicle front view.

[042] In embodiment of the invention, the housing 230 is disposed substantially vertically such that a height of the first end 230A of the housing 230 from a ground level is greater than a height of the second end 230B of the housing 230 from the ground level, hence allowing for any accumulated fuel in the housing 230 to move towards the second end 230B and subsequently to the cover member 240, assisted by gravity. Further, the cover member 240 having the vent opening 242, faces towards the ground thereby allowing for the liquid fuel accumulated in the housing 230 to be discharged out of the vehicle 10 on to the ground.

[043] In another aspect of the invention, as illustrated in Figure 8, the fuel inlet opening 222, the fuel inlet tube 224 for connecting the fuel inlet opening 222 to the fuel tank 210, the housing 230 provided on the fuel inlet tube 224, with the inlet 232 and the outlet 234 and the openable cover member 240 together form an integrated fuel inlet structure 300. The integrated fuel inlet structure 300 is configured to be adapted in the saddle-type vehicle 10.

[044] In an embodiment of the invention, the housing 230 is mounted on the outer periphery of the fuel inlet tube 224, thereby being integrated with the fuel inlet tube 224 by means of a plurality of ribs 302. Resultantly, the integrated fuel inlet structure 300 can be fabricated as a single unified entity.

5 [045] Advantageously, the fuel vapour emission control system of the present invention allows for the alteration of the quantity of vapour adsorbing particles for effective adsorption of fuel particles and purging, based on the size of the fuel tank thereby negating the requirement of using a standard canister for all fuel tank sizes and hence reducing the cost and improving
10 serviceability and assembly of the fuel vapour emission system.

[046] Further, the fuel emission control system is provided in the saddle-type vehicle in a manner that the fuel vapour emission control system is protected from environmental disturbances and the accessibility and the serviceability of the adjacent parts is not impacted.

15 [047] Furthermore, the provision of the housing on the fuel inlet tube and integration of the housing on the fuel inlet tube by means of the ribs improves the durability of the fuel vapour emission control system and reduces the number of separate mechanical parts, bringing down the cost and improving serviceability, assembly and reliability.

20 [048] In addition, the provision of the breather assembly on the cover member of the fuel vapour emission control system ensures that no liquid fuel is accumulated in the housing due to condensation by discharging the liquid

fuel from the housing, thereby improving the functionality of the fuel vapour emission control system under all climatic conditions, and increasing the life of the fuel vapour emission control system over conventional canisters.

[049] While the present invention has been described with respect to certain
5 embodiments, it will be apparent to those skilled in the art that various changes and modification may be made without departing from the scope of the invention as defined in the following claims.

LIST OF REFERENCE NUMERALS

- 10 10 – Saddle-type vehicle
- 105 – Frame Assembly
- 105A – Head Pipe
- 105B – Main Frame
- 105C – Rear Tubes
- 15 115 – Front Wheel
- 125 – Engine
- 141 – Swing Arm
- 145 – Rear Wheel
- 151 – Seat Assembly
- 20 155 – Floorboard
- 160A – Front Panel
- 160B – Leg shield

- 160C – Under-seat cover
- 160D – Right-side panel
- 160E – Rear Panel
- 165 – Front Fender
- 5 175 – Rear Fender
- 185A – Headlight
- 185B – Taillight
- 200 – Fuel Vapour Emission Control System
- 210 – Fuel Tank
- 10 220 – Fuel Inlet Assembly
- 222 – Fuel Inlet Opening
- 224 – Fuel Inlet Tube
- 230 – Housing
- 230A – First end of the housing
- 15 230B – Second end of the housing
- 232 – Inlet
- 234 – Outlet
- 236 – Vapour Adsorbing Particles
- 238 – Charge Pipe
- 20 240 – Cover Member
- 242 – Vent Opening
- 244 – Filter

245 – Air Filter

246 – Breather Hose

248 – Slot in the Cover member

250 – Purge Control Valve

5 252 – First Purge Pipe

254 – Second Purge Pipe

260 – Holding Member

300 – Integrated Fuel Inlet Structure

302 – Ribs

10

WE CLAIM:

1. A fuel vapour emission control system (200) for a motor vehicle,
comprising:
a fuel tank (210);
5 a fuel inlet assembly (220) having a fuel inlet opening (222) for providing
fuel to the fuel tank (210), and a fuel inlet tube (224) for connecting the
fuel inlet opening (222) to the fuel tank (210);
a housing (230) provided on the fuel inlet tube (224), the housing (230)
having an inlet (232) for receiving fuel vapours from the fuel tank (210),
10 fuel vapour adsorbing particles (236), and an outlet (234) allowing for exit
of the adsorbed fuel vapours; and
an openable cover member (240) for covering one end of the housing
(230).
- 15 2. The fuel vapour emission control system (200) as claimed in claim 1,
wherein the housing (230) extends between a first end (230A) having the
inlet (232) and the outlet (234), and a second end (230B) configured to
receive the cover member (240).
- 20 3. The fuel vapour emission control system (200) as claimed in claim 1,
wherein the cover member (240) comprises a vent opening (242) for

relieving pressure and vacuum inside the housing (230) and for providing an exit to liquid fuel accumulated in the housing (230).

4. The fuel vapour emission control system (200) as claimed in claim 3,
5 wherein the cover member (240) comprises a filter (244) arranged to filter air or liquid exiting through the vent opening (242).

5. The fuel vapour emission control system (200) as claimed in claim 3 or 4,
comprises a breather hose (246) coupled with the vent opening (242) at
10 one end, and another end of the breather hose (246) is left open.

6. The fuel vapour emission control system (200) as claimed in claim 1,
comprises a purge control valve (250) coupled with the outlet (234) for
controlling flow rate of fuel vapours purged inside the housing (230).

15

7. The fuel vapour emission control system (200) as claimed in claim 6,
comprising a first purge pipe (252) connected between the outlet (234)
and the purge control valve (250), and a second purge pipe (254)
connected to the purge control valve (250) for supplying the purged fuel
20 vapour to an engine (125).

8. The fuel vapour emission control system (200) as claimed in claim 6,
wherein the purge control valve (250) is mounted on the housing (230).
9. The fuel vapour emission control system (200) as claimed in claim 1 or 2,
5 comprising a charge pipe (238) connected between the inlet (232) and the
fuel inlet assembly (220) for supplying fuel vapours from the fuel tank
(210) to the housing (230).
10. The fuel vapour emission control system (200) as claimed in claim 1,
10 wherein the housing (230) is provided on an outer periphery of the fuel
inlet tube (224).
11. The fuel vapour emission control system (200) as claimed in claim 1,
wherein the housing (230) is provided on the fuel inlet tube (224) such that
15 the housing (230) and the fuel inlet tube (224) share a common vertical
plane (A-A').
12. The fuel vapour emission control system (200) as claimed in claim 1 or 11,
wherein the inlet (232) and outlet (234) are disposed adjoining each other,
20 extending along the common vertical plane (A-A') of the housing (230)
and the fuel inlet tube (224).

13. The fuel vapour emission control system (200) as claimed in claim 5 or 11,
wherein the vent opening (242) is along the common vertical plane (A-A').

14. The fuel vapour emission control system (200) as claimed in claim 6 or 10,
5 wherein the housing (230) comprises a holding member (260) extending
outwardly from the outer periphery of the housing (230), for mounting the
purge control valve (250).

15. A saddle-type vehicle (10), comprising;
10 a head pipe (105A);
a main frame (105B) extending rearwardly and downwardly of the head
pipe (105A);
a front panel (160A) disposed forwardly of the head pipe (105A) in a
vehicle front-rear direction;
15 a rear panel (160E) disposed rearwardly of the head pipe (105B) in the
vehicle front-rear direction, the rear panel (160E) configured to define a
space therebetween with the front panel (160A); and
a fuel vapour emission control system (200) having a fuel inlet opening
(222) for providing fuel to a fuel tank (210); a fuel inlet tube (224) for
20 connecting the fuel inlet opening (224) to the fuel tank (210); a housing
(230) provided on the fuel inlet tube (224), the housing (230) having an
inlet (232) for receiving fuel vapours from the fuel tank (210), fuel vapour

adsorbing particles (236), and an outlet (234) allowing for exit of the adsorbed fuel vapours; and an openable cover member (240) for covering one end of the housing (230), the fuel vapour emission control system (200) disposed in the space defined by the front panel (160A) and the rear panel (160E) therebetween.

16. The saddle-type vehicle (10) as claimed in claim 15, wherein the fuel vapour emission control system (200) is disposed in the space defined by the front panel (160A) and the rear panel (160E), on a left-hand side of the main frame (105B) in a vehicle front view.

17. The saddle-type vehicle (10) as claimed in claim 15, wherein the fuel vapour emission control system (200) is disposed in the space defined by the front panel (160A) and the rear panel (160E), on a right-hand side of the main frame (105B) in the vehicle front view.

18. The saddle-type vehicle (10) as claimed in claim 15, wherein the housing (230) extends between a first end (230A) having the inlet (232) and the outlet (234), and a second end (230B) configured to receive the cover member (240).

19. The saddle-type vehicle (10) as claimed in claim 15, wherein the housing (230) is disposed substantially vertically such that a height of the first end (230A) of the housing (230) from a ground level is greater than a height of the second end (230B) of the housing (230) from the ground level.

5

20. The saddle-type vehicle (10) as claimed in claim 15 or 18, wherein the cover member (240) comprises a vent opening (242) facing towards the ground thereby allowing for the liquid fuel accumulated in the housing (230) to be discharged out of the vehicle (10) on the ground.

10

21. An integrated fuel inlet structure (300), comprising:

a fuel inlet opening (222) for providing fuel to a fuel tank (210);

a fuel inlet tube (224) for connecting the fuel inlet opening (222) to the fuel tank (210);

15 a housing (230) provided on the fuel inlet tube (224), the housing (230) having an inlet (232) for receiving fuel vapours from the fuel tank (210), fuel vapour adsorbing particles (236), and an outlet (234) allowing for exit of the adsorbed fuel vapours; and

an openable cover member (240) for covering one end of the housing (230).

20

22. The integrated fuel inlet structure (300) as claimed in claim 21, wherein the housing (230) comprises a holding member (260) extending outwardly from an outer periphery of the housing (230), for mounting a purge control valve (250).

5

23. The integrated fuel inlet structure (300) as claimed in claim 21, wherein the housing (230) is provided on the fuel inlet tube (224) such that the housing (230) and the fuel inlet tube (224) share a common vertical plane (A-A').

10

24. The integrated fuel inlet structure (300) as claimed in claim 21 or 23, wherein the inlet (232) and outlet (234) are disposed adjoining each other, extending along the common vertical plane (A-A') of the housing (230) and the fuel inlet tube (224).

15

Dated this 2nd day of March 2021

TVS MOTOR COMPANY LIMITED
By their Agent & Attorney

20


(Nikhil Ranjan)
of Khaitan & Co
Reg No IN/PA-1471

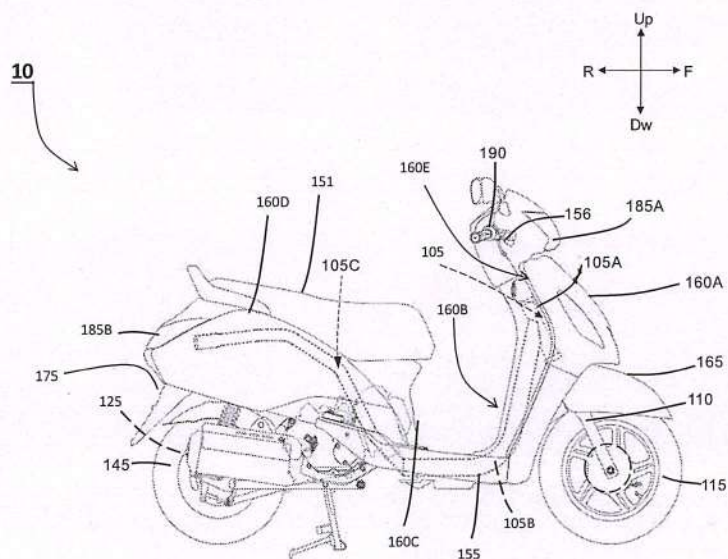
25

ABSTRACT

A Fuel Vapour Emission Control System

The present invention relates to a fuel vapour emission control system (200) for a motor vehicle having a fuel tank (210), a fuel inlet assembly (220) having
5 a fuel inlet opening (222) for providing fuel to the fuel tank (210) and a fuel inlet tube (224) for connecting the fuel inlet opening (222) to the fuel tank (210). The fuel vapour emission control system (200) further has a housing (230) provided on the fuel inlet tube (224). Herein, the housing (230) has an inlet (232) for receiving fuel vapours from the fuel tank (210), fuel vapour
10 adsorbing particles (236) for absorbing the fuel vapours from the fuel tank, and an outlet (234) allowing for exit of the adsorbed fuel vapours. Furthermore, the fuel vapour emission control system (200) has an openable cover member (240) for covering one end of the housing (230).

Reference Figure 2

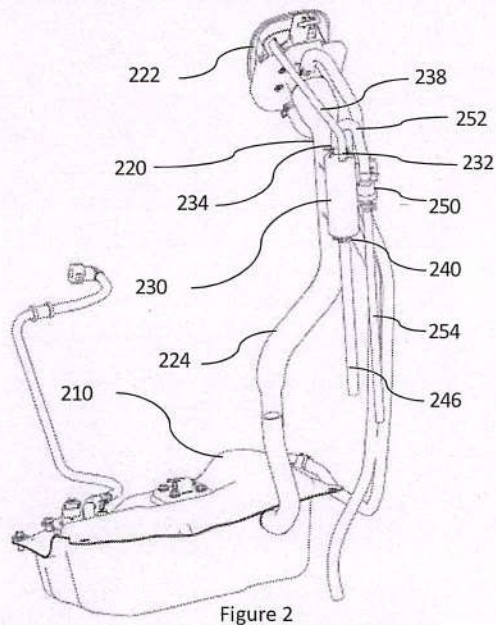


TVS MOTOR COMPANY LIMITED

By their Agent & Attorney

(Nikhil Ranjan)
of Khaitan & Co
Reg No IN/PA-1471

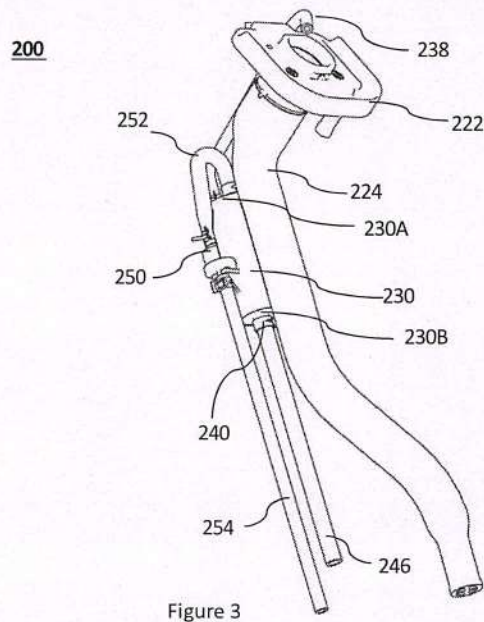
200



TVS MOTOR COMPANY LIMITED

By their Agent & Attorney

(Nikhil Ranjan)
of Khaitan & Co
Reg No IN/PA-1471



TVS MOTOR COMPANY LIMITED

By their Agent & Attorney

(Nikhil Ranjan)
of Khaitan & Co
Reg No IN/PA-1471

240

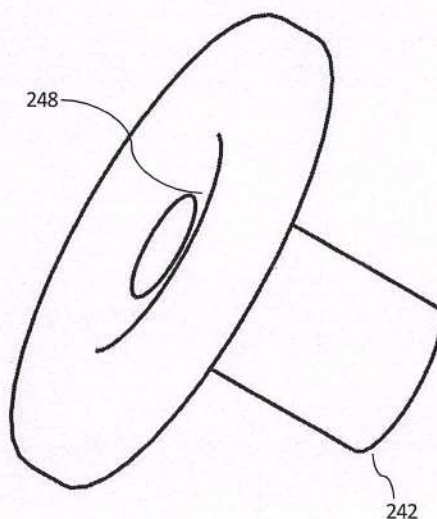


Figure 4

TVS MOTOR COMPANY LIMITED
By their Agent & Attorney

(Nikhil Ranjan)
of Khaitan & Co
Reg No IN/PA-1471

200

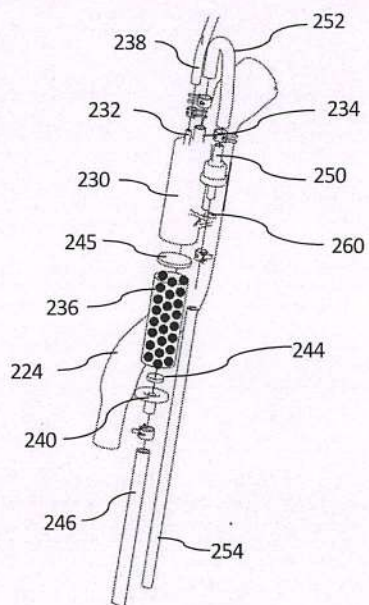


Figure 5

TVS MOTOR COMPANY LIMITED

By their Agent & Attorney

(Nikhil Ranjan)

of Khaitan & Co

Reg No IN/PA-1471

200

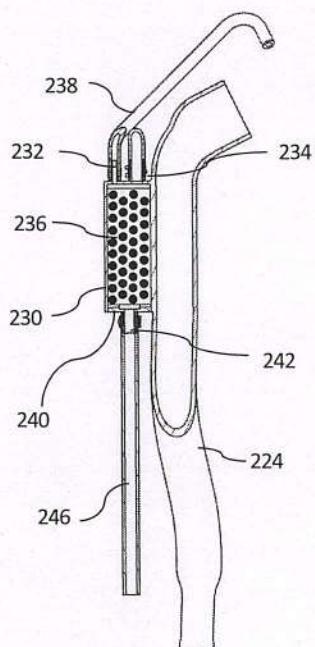


Figure 6A

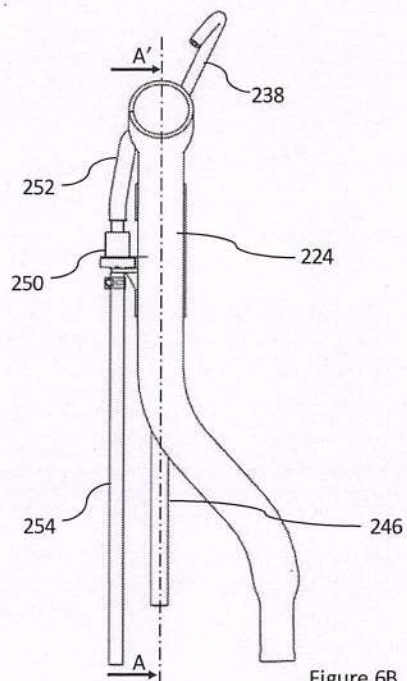
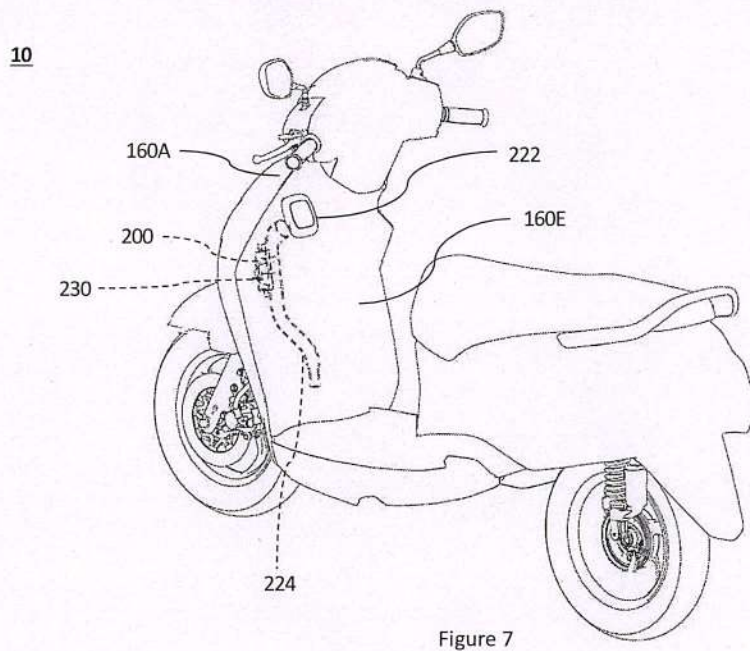


Figure 6B

TVS MOTOR COMPANY LIMITED

By their Agent & Attorney

(Nikhil Ranjan)
of Khaitan & Co
Reg No IN/PA-1471



TVS MOTOR COMPANY LIMITED
By their Agent & Attorney


(Nikhil Ranjan)
of Khaitan & Co
Reg No IN/PA-1471

300

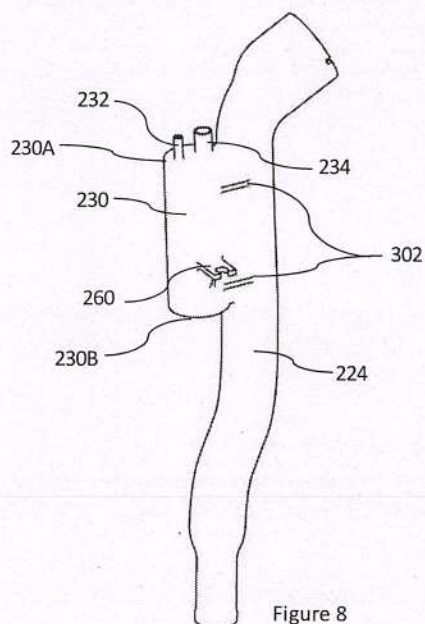


Figure 8

TVS MOTOR COMPANY LIMITED

By their Agent & Attorney

(Nikhil Ranjan)
of Khaitan & Co
Reg No IN/PA-1471

GOBIERNO DE INDIA
MINISTERIO DE COMERCIO E INDUSTRIA
LA OFICINA DE PATENTES

A QUIEN CORRESPONDA

Yo, el abajo firmante, siendo un funcionario debidamente autorizado para firmar y emitir el certificado en nombre del Contralor General de Patentes, Diseños y Marcas de conformidad con las disposiciones del artículo 73 (3) de la Ley de Patentes de 1970, por la presente certifica que el adjunto aquí presente es una copia fiel del documento o documentos presentados en relación con la siguiente Solicitud de Patente:

- a) Número de solicitud: 202141008763
- b) Fecha de presentación: 02/03/2021
- c) Nombre de los documentos solicitados: Descripción completa

Este certificado se emite bajo las facultades que me confieren U/S 147 (1) de la Ley de Patentes de 1970.

Con fecha este día 28 de febrero de 2022

Controlador de Patentes y Diseños
Signatario autorizado

FORMA 1 LA LEY DE PATENTES DE 1970 (39 DE 1970) y EL REGLAMENTO DE PATENTES, 2003 SOLICITUD DE CONCESIÓN DE PATENTE (Ver sección 7, 54 y 135 y la subregla (1) de las reglas 20)		(PARA USO DE OFICINA SOLAMENTE)		
		Solicitud No.		
		Fecha de Presentación:		
		Cantidad de Tasa Pagada:		
		CBR No.:		
		Firma:		
1. REFERENCIA / IDENTIFICACIÓN DEL SOLICITANTE NO. (SEGÚN LO ASIGNADO POR LA OFICINA)				
2. TIPO DE SOLICITUD [Marque (☒) en la categoría correspondiente]				
Ordinaria ☒		Convención ☐		
PCT-NP ☐				
Divisional ☐	Patente de adición ☐	Divisional ☐	Patente de adición ☐	
Divisional ☐	Patente de adición ☐	Divisional ☐	Patente de adición ☐	
3A. SOLICITANTE (S)				
Nombre Completo	Nacionalidad	País de Residencia	Dirección del solicitante	
TVS MOTOR COMPANY LIMITED	Una empresa india	India	No. de casa	Chaitanya
			Calle	No. 12 Khader, Nawaz Khan Road, Nungambakkam
			Ciudad	Chennai
			Estado	Tamil Nadu
			País	India
			Código Pin	600 006
3B. CATEGORÍA DE SOLICITANTE [Marque (☒) en la categoría correspondiente]				
Persona Natural		Otra que persona natural ☒		
		Pequeña entidad ☐	Iniciante ☐ Otro ☒	
4. INVENTOR(ES) [Marque (☒) en la categoría correspondiente]				
¿Son todos los inventores los mismos que los solicitantes mencionados anteriormente?		Sí ☐	No ☒	

Si la respuesta es "No", proporcione los detalles del inventor o inventores.				
Nombre completo	Nacionalidad	País de residencia	Dirección del inventor	
THANGAVEL DEEPAN	India	India	No. casa	Chaitanya
			Calle	No. 12 Khader, Nawaz Khan Road, Nungambakkam
			Ciudad	Chennai
			Estado	Tamil Nadu
			País	India
			Código pin	600 006
RAJENDRAN PADALINGAM	India	India	No. casa	Chaitanya
			Calle	No. 12 Khader, Nawaz Khan Road, Nungambakkam
			Ciudad	Chennai
			Estado	Tamil Nadu
			País	India
			Código pin	600 006
VAIDHEESWARAN RAMESH	India	India	No. casa	Chaitanya
			Calle	No. 12 Khader, Nawaz Khan Road, Nungambakkam
			Ciudad	Chennai
			Estado	Tamil Nadu
			País	India
			Código pin	600 006
KARNAM VENKATA MANGA RAJU	India	India	No. casa	Chaitanya
			Calle	No. 12 Khader, Nawaz Khan Road, Nungambakkam
			Ciudad	Chennai
			Estado	Tamil Nadu

			País	India	
			Código pin	600 006	
5. TÍTULO DE LA INVENCION					
Un sistema de control de emisiones de vapor de combustible					
6. AGENTE (S) AUTORIZADO (S) DE PATENTES REGISTRADOS		IN/PA NO.		1086	
		Nombre		Adheesh Nargolkar	
		No. de móvil		9820776760	
7. DIRECCIÓN DE SERVICIO DEL SOLICITANTE EN LA INDIA		Nombre		Khaitan & Co	
		Dirección Postal		Centro One Indiabulls, Piso 13, 841, Senapati Bapat Calle Elphinstone, Marg Bombay 400013, Maharashtra	
		No. de Teléfono		66365000	
		No. móvil		9820776760	
		No. Fax		66365050	
		e-mail		kcopatents@khaitanco.com adheesh.nargolkar@khaitanco.com	
8. EN CASO DE SOLICITUD QUE RECLAME LA PRIORIDAD DE LA SOLICITUD PRESENTADA EN EL PAÍS DE LA CONVENCION, DATOS DE LA SOLICITUD DE LA CONVENCION					
País	Numero de solicitud	Fecha de presentación	Nombre del solicitante	Título de la invención	IPC (como clasificado en el país de la convención)
9. EN CASO DE SOLICITUD PCT, DATOS DE LA SOLICITUD INTERNACIONAL PRESENTADA BAJO EL TRATADO DE COOPERACION DE PATENTES (PCT)					
Numero de solicitud internacional			Fecha de presentación internacional		
10. EN CASO DE UNA SOLICITUD DIVISIONAL PRESENTADA BAJO LA SECCION 16, DATOS DE LA SOLICITUD ORIGINAL (PRIMERA) SOLICITUD ORIGINAL (PRIMERA)					
No. de solicitud original (primera)			Fecha de presentación de solicitud original (primera)		

☒ Estoy / Estamos en posesión de la invención mencionada anteriormente.

☒ La descripción ~~provisional~~ / completa relacionada con la invención se presenta con esta solicitud.

☒ La invención, tal como se describe en la descripción, utiliza material biológico de la India y yo o nosotros presentaremos el permiso necesario de la autoridad competente antes de otorgarnos la patente.

☒ No hay motivo legal de objeción (es) a la concesión de la Patente para mí / nosotros.

☒ Somos los verdaderos y primeros inventores.

☒ Soy el cesionario o representante legal de los verdaderos y primeros inventores.

☒ La solicitud o cada una de las solicitudes, cuyos detalles se dan en el párrafo 8, fue la primera solicitud en el país o países de la convención con respecto a mi / nuestra invención (es).

☒ Reclamamos la prioridad de las solicitudes mencionadas anteriormente presentadas en el país / países de la convención y declaramos que no se ha presentado ninguna solicitud de protección con respecto a la invención en un país de la convención antes de esa fecha por mí / nosotros o por cualquier persona de donde yo / nosotros derivamos el título.

☒ Nuestra solicitud en la India se basa en una solicitud internacional en virtud del Tratado de Cooperación en materia de Patentes (PCT), como se menciona en el párrafo 9.

☒ La solicitud está separada de mi / nuestra solicitud, cuyos detalles se dan en el Párrafo 10 y además, esta solicitud puede ser tratada como si se considerara presentada el DD / MM / YYY bajo la sección 16 de la Ley.

☒ Dicha invención es una mejora o modificación de los detalles de la invención que se dan en el párrafo 11.

13. LOS SIGUIENTES SON LOS ADJUNTOS CON LA SOLICITUD

(a) Forma 2

Item	Detalles	Tasa	Anotaciones
# Descripción Completa/ ~~provisional~~	No. de páginas - 20		
No. de Reivindicaciones	No. de reivindicaciones - 24 y No. de páginas - 7		
Resumen	No. de páginas - 1		
No. de figuras	No. de figuras - 9 y No. de páginas - 8		

En caso de una descripción completa, si el solicitante desea adoptar los dibujos llenos con su descripción provisional como dibujos o parte de los dibujos para la descripción completa bajo la regla 13 (4), se requiere el número de dichas páginas llenas con la descripción provisional. ser mencionado aquí.

(b) una descripción completa en confirmación con la solicitud internacional enmendada antes de que la Autoridad de examen preliminar internacional (IPEA) sea aplicable (2 copias).

(c) listado de secuencias en formato electrónico

(d) dibujos en confirmación con la solicitud internacional enmendada ante la autoridad de examen preliminar internacional (IPEA) según corresponda (2 copias)

(e) Los documentos de prioridad se solicitan para recuperar los documentos de prioridad del DAS (Servicio de acceso digital) si el solicitante ya había solicitado a la oficina de primera presentación que los documentos de prioridad estén disponibles para el DAS.

(f) Traducción de documento de prioridad / especificación / Informe de búsqueda internacional / Informe preliminar internacional sobre patentabilidad

(g) Declaración y cumplimiento en el formulario 3

(h) Declaración de inventor en el formulario 5

(i) Poder de autoridad

Tarifa total.....se está pagando a través del modo de pago en línea

Por la presente declaramos que, nuestro leal saber y entender, información y creencia, el hecho y los asuntos aquí descritos son correctos y solicitamos que se nos conceda una patente para dicha invención.

Con fecha este día 2 de marzo de 2021

TVS MOTOR COMPANY LIMITED

Por su agente y abogado

FIRMA

(Nikhil Ranjan)

De Khaitan & Co

Reg No IN/PA-1471

A,

El controlador de patentes

La oficina de patentes de Chennai

Nota:

- Repetir casillas en caso de más de una entrada.
- Debe ser firmado por el solicitante o los solicitantes o por un agente de patentes registrado autorizado de lo contrario se mencionó.
- Marque (✓)/cruz (x) a lo que corresponda/no corresponda en la declaración del párrafo 12.
- El nombre del inventor y del solicitante debe indicarse en su totalidad, el apellido al principio.

- | |
|--|
| <ul style="list-style-type: none">• Táchese la parte que no corresponda.• Tarifa: consulte el primer programa |
| |

REIVINDICACIONES

1. Un sistema de control de emisiones de vapor de combustible (200) para un vehículo de motor, que comprende:

un tanque de combustible (210);

un ensamblaje de entrada de combustible (220) que tiene una abertura de entrada de combustible (222) para proporcionar combustible al tanque de combustible (210), y un tubo de entrada de combustible (224) para conectar la abertura de entrada de combustible (222) al tanque de combustible (210);

una carcasa (230) provista en el tubo de entrada de combustible (224), la carcasa (230) que tiene una entrada (232) para recibir vapores de combustible del tanque de combustible (210), partículas adsorbentes de vapor de combustible (236), y una salida (234) que permite la salida de los vapores de combustible adsorbidos; y

un miembro de cubierta que se puede abrir (240) para cubrir un extremo de la carcasa (230).

2. El sistema de control de emisiones de vapor de combustible (200) según la reivindicación 1, en el que la carcasa (230) se extiende entre un primer extremo (230A) que tiene la entrada (232) y la salida (234), y un segundo extremo (230B) configurado para recibir el miembro de cubierta (240).
3. El sistema de control de emisiones de vapor de combustible (200) según la reivindicación 1, en el que el miembro de cubierta (240) comprende una abertura de ventilación (242) para aliviar la presión y el vacío dentro de la carcasa (230) y para proporcionar una salida al combustible líquido acumulado en la carcasa (230).
4. El sistema de control de emisiones de vapor de combustible (200) según la reivindicación 3, en el que el miembro de cubierta (240) comprende un filtro (244) dispuesto para filtrar el aire o el líquido que sale por la abertura de ventilación (242).
5. El sistema de control de emisiones de vapor de combustible (200) según la reivindicación 3 o 4, comprende una manguera de ventilación (246) acoplada con la abertura de ventilación (242) en un extremo, y el otro extremo de la manguera de ventilación (246) se deja abierto.
6. El sistema de control de emisiones de vapor de combustible (200) según la reivindicación 1, comprende una válvula de control de purga (250) acoplada con la salida (234) para controlar el caudal de vapor de combustible purgado dentro de la carcasa (230).
7. El sistema de control de emisiones de vapor de combustible (200) según la reivindicación 6, que comprende un primer tubo de purga (252) conectado entre la salida (234) y la válvula

de control de purga (250), y un segundo tubo de purga (254) conectado a la válvula de control de purga (250) para suministrar el vapor de combustible purgado a un motor (125).

8. El sistema de control de emisiones de vapor de combustible (200) según la reivindicación 6, en el que la válvula de control de purga (250) está montada en la carcasa (230).
9. El sistema de control de emisiones de vapor de combustible (200) según la reivindicación 1 o 2, que comprende un tubo de carga (238) conectado entre la entrada (232) y el ensamblaje de entrada de combustible (220) para suministrar vapores de combustible desde el tanque de combustible (210) a la carcasa (230).
10. El sistema de control de emisiones de vapor de combustible (200) según la reivindicación 1, en el que la carcasa (230) se proporciona en una periferia exterior del tubo de entrada de combustible (224).
11. El sistema de control de emisiones de vapor de combustible (200) según la reivindicación 1, en el que la carcasa (230) se proporciona en el tubo de entrada de combustible (224) de tal manera que la carcasa (230) y el tubo de entrada de combustible (224) comparten un plano vertical común (A-A').
12. El sistema de control de emisiones de vapor de combustible (200) según la reivindicación 1 o 11, en el que la entrada (232) y la salida (234) están dispuestas una al lado de la otra, extendiéndose a lo largo del plano vertical común (A-A') de la carcasa (230) y el tubo de entrada de combustible (224).

13. El sistema de control de emisiones de vapor de combustible (200) según la reivindicación 5 o 11, en el que la abertura de ventilación (242) está a lo largo del plano vertical común (A-A').
14. El sistema de control de emisiones de vapor de combustible (200) según la reivindicación 6 o 10, en el que la carcasa (230) comprende un miembro de sujeción (260) que se extiende hacia afuera desde la periferia exterior de la carcasa (230), para montar la válvula de control de purga (250).
15. Un vehículo tipo silla de montar (10), que comprende;
- un tubo colector (105A);
 - un bastidor principal (105B) que se extiende hacia atrás y hacia abajo del tubo colector (105A);
 - un panel frontal (160A) dispuesto por delante del tubo colector (105A) en la dirección delantera-trasera del vehículo;
 - un panel trasero (160E) dispuesto por detrás del tubo colector (105B) en la dirección delantera-trasera del vehículo, el panel trasero (160E) configurado para definir un espacio entre ellos con el panel frontal (160A); y
 - un sistema de control de emisiones de vapor de combustible (200) que tiene una abertura de entrada de combustible (222) para proporcionar combustible a un tanque de combustible (210); un tubo de entrada de combustible (224) para conectar la abertura de entrada de combustible (224) al tanque de combustible (210); una carcasa (230) provista en el tubo de entrada de combustible (224), la carcasa (230) que tiene una entrada (232) para recibir

vapores de combustible del tanque de combustible (210), partículas adsorbentes de vapor de combustible (236), y una salida (234) que permite la salida de los vapores de combustible adsorbidos; y un miembro de cubierta que se puede abrir (240) para cubrir un extremo de la carcasa (230), el sistema de control de emisiones de vapor de combustible (200) dispuesto en el espacio definido por el panel frontal (160A) y el panel trasero (160E) entre ellos.

16. El vehículo tipo silla de montar (10) según la reivindicación 15, donde el sistema de control de emisiones de vapor de combustible (200) está dispuesto en el espacio definido por el panel frontal (160A) y el panel trasero (160E), a la izquierda. -lado lateral del bastidor principal (105B) en una vista frontal del vehículo.
17. El vehículo tipo silla de montar (10) según la reivindicación 15, donde el sistema de control de emisiones de vapor de combustible (200) está dispuesto en el espacio definido por el panel frontal (160A) y el panel trasero (160E), en el lado derecho del bastidor principal (105B) en la vista frontal del vehículo.
18. El vehículo tipo silla de montar (10) según la reivindicación 15, en el que la carcasa (230) se extiende entre un primer extremo (230A) que tiene la entrada (232) y la salida (234), y un segundo extremo (230B) configurado para recibir el miembro de cubierta (240).
19. El vehículo tipo de silla de montar (10) según la reivindicación 15, en el que la carcasa (230) está dispuesta sustancialmente vertical de manera que la altura del primer extremo (230A) de la carcasa (230) desde el nivel del suelo es mayor que una altura del segundo extremo (230B) de la carcasa (230) desde el nivel del suelo.
20. El vehículo tipo silla de montar (10) según la reivindicación 15 ó 18, en el que el miembro de cubierta (240) comprende una abertura de ventilación (242) que mira hacia el suelo, lo

que permite que el combustible líquido acumulado en la carcasa (230) ser descargado del vehículo (10) en el suelo.

21. Una estructura de entrada de combustible integrada (300), que comprende:

una abertura de entrada de combustible (222) para proporcionar combustible a un tanque de combustible (210);

un tubo de entrada de combustible (224) para conectar la abertura de entrada de combustible (222) al tanque de combustible (210);

una carcasa (230) provista en el tubo de entrada de combustible (224), la carcasa (230) que tiene una entrada (232) para recibir vapores de combustible del tanque de combustible (210), partículas adsorbentes de vapor de combustible (236), y una salida (234) que permite la salida de los vapores de combustible adsorbidos; y

un miembro de cubierta que se puede abrir (240) para cubrir un extremo de la carcasa (230).

22. La estructura de entrada de combustible integrada (300) según la reivindicación 21, en la que la carcasa (230) comprende un miembro de sujeción (260) que se extiende hacia afuera desde una periferia exterior de la carcasa (230), para montar una válvula de control de purga (250).

23. La estructura de entrada de combustible integrada (300) según la reivindicación 21, en la que la carcasa (230) se proporciona en el tubo de entrada de combustible (224) de manera que la carcasa (230) y el tubo de entrada de combustible (224) comparten un mismo plano vertical (A-A').

24. La estructura de entrada de combustible integrada (300) como se reivindica en la reivindicación 21 o 23, en donde la entrada (232) y la salida (234) están dispuestas juntas, extendiéndose a lo largo del plano vertical común (A-A') de la carcasa (230) y el tubo de entrada de combustible (224).