The present invention disclosed a canister mounting structure 10 for a motorcycle 100 comprising: a storage box 16 mounted under a seat 109 of the motorcycle; a canister 12 mounted in the said storage box 16, said canister is communicably connected to a fuel tank 156 and an engine intake system 112 via a first connecting tube 24 and a second connecting tube 28; a one-way valve disposed on the said second connecting tube; a battery 14 mounted inside the said storage box 16; and a battery cover 18, 29 installed inside the said storage box 16 and is configured to cover both the canister 14 and the battery 14 mounted inside the said storage box 16; said canister 14 is mounted side by side to the battery 14 in the said storage box 16, and the said storage box 16 and the said battery cover 18, 29 is configured to compartmentalized and separate the canister 12 from the battery 14.
TITLE OF THE INVENTION
CANISTER MOUNTING STRUCTURE FOR A MOTORCYCLE

FIELD OF THE INVENTION
The present invention relates to a canister mounting structure for a motorcycle.

BACKGROUND OF THE INVENTION
Various arrangements of a canister for a two-wheeler vehicle such as a motorcycle or a scooter are known. US Patent Publication No. 2010/0163328 A1 disclosed a saddle-ride type vehicle of which includes a storage box (35) under the seat (36) with a bulging portion (34), and engine, a fuel tank and a canister (44) arranged therein. The storage box (35) includes a recessed portion (65) disposed on a lower surface of the storage box. The canister (44) is arranged along the recessed portion (65) and is secured thereto with elastic mounting members (68) in manner to direct the longitudinal side of canister to side direction of motorcycle.

As the prior art, it causes the decreasing of capacity and complicated shape in storage box. If a battery will be stored in the storage box, it causes "a dead space" around the battery in bottom portion of storage box. Further, it is even more difficult to utilize the arrangement in smaller or slimmer models of a motorcycles of which the both the fuel tank and the storage box are placed under the seat due to limited space.

Therefore, a new and improve canister mounting structure for a motorcycle is desirable.

SUMMARY OF THE INVENTION
The present invention aims to provide an alternative canister mounting structure for a motorcycle which efficiently mounts the canister inside a storage box while maintaining optimum space for storing battery and without making the storage box and the body cover widen to the side of the motorcycle.

The canister mounting structure for a motorcycle according to the present invention comprising a storage box supported on a vehicle frame, a canister communicably connected to a fuel tank and an engine intake system. The storage box
is configured to store both a battery and the canister therein and comprising a partitioning member and a cover configured to compartmentalize or separate the battery from the canister. The fuel tank which stores fuel to be supplied to an engine, positions to the rear of the motorcycle and behind the storage box. The canister receives fuel vapor from the fuel tank and is connected to the fuel tank via a first connecting tube, and connected to a carburetor via second connecting tube to collect and deliver fuel vapor to the engine intake system.

In an embodiment of the invention disclosed in claims 1, the canister mounting structure comprising a storage box configured to store both the battery and the canister therein and comprising a partitioning member and a cover configured to compartmentalize the battery from the canister. The battery and the canister are stored side by side next to each other and the said canister is mounted inside the said storage box. Accordingly, there is no need to make storage box with complicated shape because the canister is stored in the storage box and the storage box can protect said canister. Further, utilization of the "dead space" around the battery effectively is possible because said canister is close to the battery and without requiring any special cover because the battery cover can cover said canister.

Furthermore, as disclosed in claim 2, it is possible to separate the battery and canister space because battery cover are configured to compartmentalized and separate the canister from the battery.

As disclosed in claim 3, the height of the battery and the canister including piping tube is almost equal because the axis of canister is in a front to rear manner, then it is easier to cover both the battery and the canister.

In an embodiment of the invention disclosed in claims 4-7, the canister mounting structure comprising a storage box configured to store both the battery and the canister therein and comprising a partitioning member and a battery cover configured to compartmentalize the battery from the canister. The partitioning member comprising a plurality of spaced-apart ribs distributed along the length of the said ribs are configured to abut the canister against a side wall of the storage box. The battery cover is prepared to comprise a pair of guide ribs for guiding piping of the second connecting tube connected to the canister. The storage box comprising a guide means for guiding
wiring of the first connecting tube through to the fuel tank. As a result, providing any guide means for the canister piping is not essential.

In an embodiment of the invention disclosed in claims 8-9, the battery and the canister are stored side by side next to each other and the said canister is mounted in a vertical manner inside the said storage box. Accordingly, it's possible to use the space of up and down direction effectively. And also the canister mounting structure comprising a storage box configured to store both the battery and the canister therein and comprising a partitioning member and a battery cover configured to compartmentalize the battery from the canister.

In an embodiment of the invention disclosed in claims 10, the canister mounting structure comprising a securing means configured to secure the second connecting tubes connected to the upper end of the canister to the wall of the storage box. Accordingly, since the canister is secured by such tube cramping to the storage box, there is no need for the canister to have additional tight mounting means.

In an embodiment of the invention disclosed in claim 11, the canister mounting structure comprising a storage box of which configured to comprises shoulders configured to engage with edges of the battery cover and/or the canister and battery cover and support the battery cover and the canister and battery cover thereon.

**BRIEF DESCRIPTION OF DRAWINGS**

The principle of the present invention and its advantages will become apparent in the following description taking in conjunction with the accompanying drawings in which:

FIG. 1 shows a front side view of a motorcycle comprising an embodiment of a canister mounting structure according to the principle of the present invention;

FIG. 2 shows the embodiment of a canister mounting structure of FIG. 1 with detail illustration of the rear structure of a motorcycle;

FIG. 3 show a top plane view the embodiment of a canister mounting structure of FIG. 1 inside a storage box according to the principle of the present invention in which the canister is mounted in a front to rear manner inside the storage box;

FIG. 4 shows a front view of a storage box with the embodiment of a canister mounting structure of FIG. 3;
FIG. 5 shows a partial top perspective view of the embodiment of a canister mounting structure of FIG. 4, together with a top perspective view of an embodiment of a battery cover;

FIG. 6 shows a top view of an embodiment of a partitioning member of a storage box and its arrangement with a canister according to the embodiment of FIG 5;

FIG. 7 shows a front side view of an embodiment of a canister mounting structure according to the present invention and its arrangement with a fuel tank;

FIG. 8 shows a side view of an embodiment of a canister mounting structure according to the principle of the present invention with detail illustration of the rear structure of a motorcycle;

FIG. 9 shows a top plane view of the embodiment of the canister mounting structure of FIG 8;

FIG. 10 shows a top plane view of the embodiment of the canister mounting structure of FIG. 9

FIG. 11 shows an A-A sectional view of the embodiment of the canister mounting structure of FIG. 10;

FIG. 12 shows a partial top perspective view of an embodiment of a canister mounting structure according the principle of the invention of which the one-way valve is positioned on top and paralleled to the canister; and

FIG. 13 shows a top view of the canister of FIG. 12.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

The present invention disclose a canister mounting structure 10 for a motorcycle 100 which efficiently mounts a canister 12 and a battery 14 inside a storage box 16 while maintaining optimum storage space of the storage box 16 so as not to make the storage box 16 and a body cover widen to the side of the motorcycle 100.

FIG. 1 shows an embodiment of the canister mounting structure 10 for a motorcycle 100 according to the principle of the present invention. The motorcycle 100 is constituted of a handle 105 steerably mounted on a head pipe 106 connected to the motorcycle main pipe 107; a combination of a headlight 110 and a pair of winker lights 111 are assembled to a front section of the head section of the motorcycle 100 and are covered by, front handle cover 120 and rear handle cover 125; a front cover 130
immediately placed adjacent to the head section, the head pipe 106, and at its lower section, is connected to a pair of front fork 135 supporting rotation of a front wheel 140 at a front axle 145; the front wheel 140 is equipped with a front tire 150, and a drum brake 155 whereby applying a brake allows controlling of rotation of the front wheel 140; a front fender 161 is provided with both front forks 135 on just above the front wheel 140 and is configured to cover upper part of the front wheel 140 to block dirt or debris pick up by the rotation of the front wheel 140; a vehicle body cover including a main pipe cover 160 extend from about underneath the rear handle cover 125 along the main pipe 107 and toward the mid-section of the motorcycle 100; a pair of front cover 130 covering an engine intake system 112; a pair of front side cover 162 is mounted on both sides of the main pipe cover 160 and continued to a pair of leg-shield portion 165 provided also to the left and right sides of the motorcycle 100 to provide cover to the lower leg of a rider sitting on a seat 109 having his foot rest on a step 214 disposed on each side of the motorcycle 100; continuous with the body cover are a pair of seat side covers 170 and a pair of rear side covers 175 extend toward the rear of the motorcycle 100 and designed to cover both sides of the motorcycle 100; a combination of tail & stop lamps and rear winker lamps 180 is disposed at the rear end of the motorcycle 100; a pair of rear suspensions 185 support a pair of swing arm 205 on the rear of the motorcycle 100 and are assembled to a rear wheel 190, having a rear tire 191 assembled thereto, at a rear axle 195; an upper and lower chain cases 200, 200" attaching the left swing arm 205, are designed to cover the chain which pulls the rear wheel 190, swing arm pivot 210 makes the swing arms 205 swing to rotate and a passenger step holder 215 are disposed behind and above the engine; the engine system suspended at about a mid-section of the motorcycle 100 and under the main pipe 107 with a pair of engine hunger portion 220a of a pair of pivot plate 220 welded to the main pipe 107 and a pair of swing arm pivot portion 220b of the pivot plate 220 support the swing arm 205 at the swing arm pivot 210; a pair of rear frame 68 extending from the main pipe 107 near the engine hunger portion 220 to backward horizontally and under the canister 14, extending upwardly, then at the side of a fuel tank 156, extending to backward; the engine of the motorcycle is a four cycle type, comprising a cylinder 225, a cylinder head 230, a crank case 235, a drive axle 240 making the rear wheel 190 rotate, lies substantially along the crank axle 250, and a starting motor 255 as generally
known by a skilled person; the engine connected to an engine intake system 112 of which including the intake manihold 265 connecting the cylinder 230, the carburetor 270 and the air cleaner 275, an exhaust system also connected to the cylinder head 230 and includes an exhaust pipe leading to a muffler 280 directing toward the rear of the motorcycle 100; a fuel tank 156 position to the rear of the vehicle and stores fuel for the engine system; a seat 109 mounting in the upper portion of motorcycle 100 behind the handle 105 and is supported by the storage box 16 wherein the battery 14 stored for providing an electrical power supply to the motorcycle.

FIGs. 1-7, show a first embodiment of the canister mounting structure 10 according to the principle of the present invention in which in this embodiment, the canister 12 is mounted in a front to rear manner. In this embodiment, the canister mounting structure 10 comprising the storage box 16 mounting on a motorcycle frame, the canister 12 and the battery 14 with a battery cover 18 stored inside the storage box 16. The canister 12 communicably connected to the fuel tank 156 and the engine intake system 112 of the motorcycle 100. The fuel tank 156 includes a fuel receiving inlet with fuel cap 17 which receives fuel into the fuel tank 156, and stores fuel to be supplied to the engine, via a fuel line 19, positions to the rear of the motorcycle 100 and behind the storage box 16. The fuel tank 156 has a fuel sensor unit 71 in front of the fuel cap 17 for detecting the fuel amount and indicating it in a fuel meter.

The storage box 16 is configured to accommodate and store both the canister 12 and the battery 14 in a side by side arrangement at the bottom of the storage box 16, reducing the dead space at the bottom of the storage box 16 around the battery 14. The canister 12 is mounted in a front to rear manner. The battery cover 18 are configured to cover both the canister 12 and the battery 14 to separate the storage box 16 from the upper portion of the storage box 16 of which intended to store other items as well as to protect both the canister 12 and the battery 14 from the weight of the items store in the upper portion of the storage box 16.

As shown, the canister 14 is positioned in a front to rear manner inside the storage box 16 and alongside the battery 14 in order to make the arrangement between the canister 12 and the battery 14 more compact so as to reduce the space taken up by the arrangement and maintain optimum storage capacity of the storage box 16. Further, by positioning the canister 12 in a front to rear manner, it is possible to fit the entire
length of the canister 12 along the front-to-rear direction of the storage box 16, hence the arrangement taken less space and hence it is possible to achieve a motorcycle with a slimmer body.

It is possible to position the battery 14 lengthwise in a front-to-rear direction of the storage box 10 to minimize the side length to be taken by the battery 14, hence maintaining a slim body of the motorcycle; and such that the battery 14 is positioned, in relative to the canister 12, such that the battery's (+) terminals 21a and (-) terminal 21b are positioned opposing to and away from the canister 12, i.e. the battery's side of which the terminals 21a, 21b are located is positioned opposite to the side of the battery adjacent to the canister 12. However, in the embodiment as shown in FIGs 6 and 7 the canister 12 and the battery 14 are compartmentalize or separated by the configuration of the battery cover 18 together with a partitioning member 20 prepared on the storage box 16, the detail of which will be further discussed. Therefore, it is possible to also position the battery 14 in any directions including a widthwise direction as shown this invention. If the battery 14 was positioned in widthwise direction, it's possible to keep the depth capacity of the storage box 16 in front of the battery 14 as shown FIG 3. Also, it's good layout that the positive terminal 21a of the battery 14 is projected away from the canister 12.

The canister 12, at its rear end, is connected to the fuel tank 16 and the engine intake system 112 via a first connecting tube 24 and a second connecting tube 28. The canister 12 receives fuel vapor from the fuel tank 156, via the first connecting tube 24 of which connects the canister 12 to a fuel separator 26 for dividing liquid and vapor, located at the fuel tank 156. Positioning of both the first connecting tube 24 and the second connecting tube 28 to the rear end of the canister 12 provides better visual access to their connections and easy access thereto during assembly or maintenance. The first connecting tube 24 runs right direction at first, and turn around the back and left side outline shape of the fuel tank 156 and is secured to the external surface of the fuel tank 156 at desired locations. As any motorcycles often have a side stand at the left side of the vehicle and the right side is higher than left during side stand situation, it is so effective for vapor flow to deliver the connecting line from right to left. Further, to ensure a secured connection of the first connecting tube 24 to the canister 12 and the
fuel tank 156, the first connecting tube 24 is wired to guide by a guide means 30 prepared on the rear of the storage box 16.

In one embodiment as shown FIG 3, the guide means 30 comprising a guide hole 32 and a guide groove 34 (as also shown in FIG 7) prepared on the side of the rear portion of the storage box 16 (FIG. 5) to facilitate securing of the first connecting tube 24 leading toward the fuel tank 156. The guide hole 32 realized as an opening integrally prepared on a rear wall of the storage box 16 and is connected to the guide groove 34 opened backwardly on the external of a back surface of the storage box 16, of which receives and guides the first connecting tube 24 through said guide hole 32.

By directing or guiding the positioning of the first connecting tube 24 using the guide means 30, the first connecting tube 24 is secured to the fuel tank 156, the storage box 16 and the canister 12 with less or minimized stress despite the fact that the fuel tank 156 is positioned higher than the canister 12 and curving of the first connecting tube 24.

As shown in FIGs 1 and 2, the canister 12 is also connected, at its rear end, to the engine intake system 112 via a second connecting tube 28. The second connecting tube 28 is secured to the storage box 16 as well as to the main pipe 107 of the vehicle as the second connecting tube 28 runs along the main pipe to the engine intake system 112. A one-way valve 36 is disposed on the second connecting tube 28 to regulate dispensing of the filtered fuel vapor to the engine intake system 112 as well as to avoid returning of fuel vapor and re-entering the canister 12, see FIG. 1.

As mentioned earlier that in one embodiment of the canister mounting structure 10 according the principle of the present invention comprising a storage box 16 of which is configured to store both the battery 14 and the canister 12 therein and that the said storage box 16 comprising the partitioning member 20, and the battery cover 18 configured to compartmentalize the canister 12 from the battery 14, the detail of which now be described below.

FIGs 4, 5 show an embodiment of the storage box 16 of which is configured to store both the canister 12 and the battery 14 inside the said storage box 16, and in which the canister 12 lies flat or reclining in front to rear manner inside the said storage box 16. In this embodiment, the storage box 16 is substantially a U-shape box. The
canister 12 and the battery 14 are arranged side by side on the bottom of the storage box 16. The bottom of the storage box includes a partitioning member 20 upwardly extended from the bottom of the storage box 16. The partitioning member 20 extended perpendicularly to about a half of the height of the battery 14, higher is also possible. The partitioning member 20 separates the canister 12 from the battery 14. In this embodiment, as shown in FIG. 4, the canister 12 lies in a compartment between the partitioning member 20 and a side wall of the storage box 16. Preferably, the compartment between the partitioning member 20 and the side wall of the storage box 16 should be sufficiently large to arrange the canister 12 therebetween. However, the said compartment must not be too large such that it allows the possibility of rocking from side to side of the canister 12 while the vehicle is in motion. In order to restrict movement of the canister 12, the partitioning member 20 is configured to include a plurality of ribs 31 distributed along the length of the partitioning member 20 and are projecting from the said partitioning member 20 toward the canister 12 (see also FIG. 6) such that the said ribs 31 abuts or push against the canister 12 to the side wall of the storage box 16 thereby limiting movement of the canister 12. Further, it is also possible to provide further securing means to secure the canister 12 to the wall of storage box 16.

Also shown in FIGs 4 and 5 is an embodiment of the battery cover 18 according to the invention. In this exemplary example, the battery cover 18 is configured to be fitted within the storage box 16 such that it can cover both the canister 12 and the battery 14 so as compartmentalized the storage box 16 from the upper portion of the storage box 16 so that the upper portion of the storage box 16 can be utilized for storing other items as well as to protect the canister 12 and the battery 14 from the weight of the items stored in the storage box 16. The battery cover 18, on its underside is prepared with a partitioning wall 21 extending downward toward the partitioning member 20 such that in an assembled state, the partitioning wall 21 of the battery cover 18 meets with the top of the partitioning member 20 forming a complete wall separating the canister 12 from the battery 14. It is preferred that both the partitioning member 20 and the partitioning wall 21 are prepared with sufficient thickness so as to enhance rigidity as well as to be able to also support the weight of the articles stored on top. Further, as also shown, the battery cover 18 also includes a pair of spaced-apart
guide ribs 22 prepared also on the underside of the battery cover 18. The guide ribs 22 extend downward, at a position corresponding to the position of the canister 12 such that the said pair of the guide ribs 22 lies just above the canister 12 such that the second connecting tube 28 of the canister 12 lies between the said pair of the guide ribs 22 such that it guides and direct piping of the said section of the second connecting tube 28 to ensure secure connection of the second connecting tube 28 and without the need for additional securing means to secure the said section of the second connecting tube (28).

The battery cover 18 should be prepared with sufficient thickness such that it is sufficiently strong to support reasonable amount of weight of items store on top. Further, the battery cover 18 should be configured such that it can easily and conveniently be installed inside the storage box 16 or remove therefrom (for inspection and maintenance of the canister 12 and the battery 14) without requiring much effort or many tools.

As also shown in FIG. 5, the battery cover 18 may be prepared with a screw hole 23 for securing the battery cover 18 with a wall of the storage box 16 using a screw or other possible forms of fastening members.

The storage box 16 is prepared with shoulders 25(as shown FIG 4) projected from side walls of the storage box 16 at corresponding positions at which the edges of the battery cover 18 meet with the side walls of the storage box 16 such that the said edges of the battery cover 18 are rested or supported on such shoulders 25.

FIG. 7 show a closer front side view an arrangement of the canister 12, the battery 14 inside the storage box, in which the canister is mounted in a front to rear reclining manner. The arrangement of the canister 12, the battery 14, and the battery cover 18 inside the storage box 16 is the same as with earlier described. And also the first connecting tube 24 has a grommet 39 disposed onto the connecting 24 at an opening of which the first connecting tube 24 exits the storage box 16 and enter the guide means 30. The grommet 39 prohibits invading water from entering the storage box 16.

Referring now to FIGs. 8-10 and 11, the figures show a second embodiment of the canister mounting structure 10 according to the principle of the present invention. In this embodiment, the canister 12 and the battery 14 are also mounted inside the
storage box 16 in a similar fashion as described in the earlier embodiments, and that the canister 12 communicably connected to the fuel tank 156 and the engine intake system 112 of the motorcycle 100 as with the earlier described embodiment. However, in this embodiment, the canister 12 is mounted vertically inside the said storage box 16. The detail configuration of this embodiment is as shown in FIG. 11 which will now be described in detail below.

FIG. 11 shows an A-A sectional view of the embodiment as illustrated in FIG. 10. In this embodiment, the storage box 16 is configured to be narrower in the bottom portion than the upper portion and includes designated spaces for storing the canister 12 and the battery 14. The bottom wall of the storage box 16 also includes the partitioning member 20, and the battery cover 29 also includes the partitioning wall 21 which together form a complete wall which separates the canister 12 from the battery 14 as earlier described. However, in this embodiment, the partitioning member 20 is without ribs and the battery cover is without the guide ribs as the canister 12 in this embodiment is mounted vertically and such elements are not essential. As the battery cover 29 is designed to cover both the canister 12 and the battery 14, the fact that there are second connecting tube 28, especially the curve portion thereof, protruding from the upper end of the canister 12, the battery cover 29, therefore, must be configured to allow connection of said second connecting tube 28 to the upper end of the canister while the battery cover 29 remains close.

As another embodiment (not shown), it may be provided inner battery cover under the battery cover 29, which comprises an opening, with a size corresponding to the diameter of the second connecting tube 28, on the inner battery cover at a position corresponding to the position to which the second connecting tube 28 is protruding from the canister 12. Since the second connecting tube 28, more specifically, the curve portion of which protruded from the upper end of the canister 12 is exposed above the inner battery cover, it is necessary to protect the said portion of the second connecting tube 28 from weight or impact from the items to be stored inside the storage box 16. Therefore, in this another embodiment a second cover, i.e. a canister and battery cover 29 is provided to cover both the canister 12 and the battery 14, including the curved portion of the second connecting tube 28.
In FIG 11, the canister and battery cover 29 is installed inside the storage box 16, and above the curved portion of the second connecting tube 28. The canister 12 and battery cover 29 is configured to engage to the walls of the storage box 16. As an example, it may be secured to the side walls of the storage box via securing means or shoulder 25 (not shown).

Further, as also shown in FIG. 11, in this embodiment, a securing means 38 for securing the second connecting tube 28 to the wall of the storage box 16 is also provided to enhance securing of the second connecting tube 28 and the arrangement of the canister 12 as a whole to the storage box 16. The securing means 38 is positioned proximity to the upper end of the canister 12 or immediately after the curved section of the second connecting tube 28. The securing means 38 comprising a holding wall 42 and a fixed screw 43 rotatably fixing a retaining plate 44 designed to engage with the holding wall 42 to restrain movement of the second connecting tube 28, especially the portion of the second connecting tube 28 between the section behind the one-way vale 36 and the curved section. As an exemplary example, as shown, the holding wall 42 is a two tongues holding wall comprising an upper section 41, a middle section 45 forming two libs, and a bottom section 47 and is integrally constructed onto the wall of the storage box 16 during molding of the storage box 10. Post molding assembling of the securing means 38 to the wall of the storage box 16 is also possible. The upper section 41 is prepared with a screw thread for receiving engagement of the fixed screw 43 rotatably fixing the retaining plate 44 to the screw hole 49 of the holding wall 42. The middle section 45 of the holding wall 42 separates the upper section 41 from the bottom section 47 of the holding wall 42 and is positioned inward toward, give rise to a space having a width corresponding to the circumference of the second connecting tube 28 and able to accommodate the designated section of the second connecting tube 28 therein. The bottom section 47 of the holding wall 42 is further comprising a first tongue 46 and a second tongue 48. The height of first tongue 46 is longer than the height of the second tongue 48 such that the rotatable retaining plate 44 in a closed position abuts against the extended section of the first tongue enclosing the designated section of the second connection tube 28 within the space between the upper section 41 and the bottom section 47 as illustrated. Other forms of securing means for securing
the second connecting tube to the wall of the storage box 16 are also possible. In this embodiment, the one-way valve 36 is located outside the storage box 16.

FIGs 12 and 13 show alternative arrangement of the canister mounting structure 10 according to the principle of the present invention. In the earlier described embodiment, for example, as illustrated in FIG. 1, the one-way valve 36 of the canister mounting structure 10 is disposed on the second connecting tube 28 outside of the storage box 16. In the embodiment as depicted in FIG. 12 and 13, the one-way valve is disposed within the storage box 16, and right on top of the canister 12.

As shown, as the second connecting tube 28 is connected to the rear of the canister 12, it is curved backward (from back-to-front) toward the front of the vehicle, especially toward the engine intake system 12 such that a portion of the second connecting tube 28 which run along the length of the canister 12 is aligned to be paralleled and close to the canister 12. That is, an axis of the said section of the second connecting tube 28 is paralleled to the canister 12 longitudinal axis and hence the second connecting tube 28 is essentially lies parallel and above the canister 12. The one-way valve 36 is positioned in the said section of the second connecting tube 28 and thereby the one-way valve 36 also lies parallel and close above the canister 12. By arranging the second connecting tube 28 and the one-way valve in such manner in relation to the canister 12, both the seconding connecting tube (28) and the one-way valve are protected by the guide rib 22 disposed on the battery cover 18. With the assistance of the guide rib 22, complicate guide means for securing the second connecting tube 28 is no longer essential. Further, it also makes the arrangement more compacted and hence both the canister 14 and the second connecting tube 28 can be easily fitted under the battery cover 18 in the storage box 16 and minimizing the space taken by them, which in turn results in more available space in the storage box 16 and slim body of the motorcycle 100. Further, by placing the one-way valve 36 above the canister 12, it is not only to avoid a gravitational impact (due to the weight of the canister, and hence a more secured connection), it also provides easy access and confirmation for the engineer during assembly and inspection of the arrangement at the assembly line and or during maintenance services.
As it is apparent from the above teaching, by providing alternative canister mounting structures according to the principle of the present invention and its various embodiments, it is possible to efficiently and effectively mounts the canister inside the storage box while maintaining maximum storage space of the storage box and without making the storage box complicated shape and the body cover widen to the side of the motorcycle as well as reduce dead space around the batter, as set out in the objective of the invention described above. Arranging the canister inside the storage box also helps to protect the canister from any external force or impacts as well other elements, thus prolong use of the canister.

Although specific embodiments of the invention have been disclosed and described as well as illustrated in the companying drawings, it is simply for the purpose of better understanding of the principle of the present invention and it is not as a limitation of the scope and spirit of the teaching of the present invention. Adaption and modification to various embodiments are possible and apparent to a skilled person without departing from the scope of the present invention which is to be determined by the claims.

List of references:
10 canister mounting structure
12 canister
14 battery
16 storage box
17 fuel receiving inlet
18 battery cover
19 fuel line
20 partitioning member
21 partitioning wall
21a, 21b battery terminals
22 guide ribs
23 screw hole
24 first connecting tube
25 shoulder
26 fuel separator
28 second connecting tube
29 battery cover
30 guide means
31 ribs of partitioning member
32 guide hole (of guide means)
34 guide grove (of guide means)
36 one-way valve
38 securing means
39 grommet
41 upper section of holding wall
42 holding wall
43 fixed screw
44 retaining plate
45 middle section of holding wall
46 first tongue
47 bottom section of holding wall
48 second tongue
49 screw hole
68 rear frame
71 fuel sensor unit
100 motorcycle
105 handle
106 head pipe
107 main pipe
109 seat
110 head light
111 winker lights
112 engine intake system
115 head light cover
120 front handle cover
125 rear handle cover
130 front cover
135 front fork
140 front wheel
145 front axle
5 150 front tire
155 drum brake
156 fuel tank
160 main pipe cover
161 front fender
10 162 front side cover
165 leg shield
170 seat sides cover
175 rear sides cover
180 combination of tail light
15 185 rear suspension
190 rear wheel
191 rear tire
195 rear axle
200, 200" chain case
20 205 swing arm
210 swing arm pivot portion
214 step for rider
215 passenger step holder
220 pivot plate
25 220a engine hunger portion
220b swing arm pivot portion (of the pivot plate)
225 engine cylinder
230 cylinder head
235 crank case
30 240 drive axle
250 crank axle
255 starting motor
280 muffler
CLAIMS

We claim:

1. A canister mounting structure (10) for a motorcycle (100) comprising:
   a storage box (16) mounting under a seat (109) of the motorcycle;
   a canister (12) mounted in the motorcycle (100) a battery (14) mounted inside the said storage box (16);
   characterized in that;
   said canister (12) is mounted side by side to the battery (14) in the said storage box (16); and
   a battery cover (18, 29) installed inside the said storage box (16) and is configured to cover both the canister (12) and the battery (14) mounted inside the said storage box (16).

2. The canister mounting structure (10) according to claim 1, wherein said battery cover (18, 29) is configured to compartmentalized and separates the canister (12) from the battery (14).

3. The canister mounting structure (10) according to claim 1, wherein said canister (12) is mounted in the storage box (16) in a front to rear manner.

4. The canister mounting structure (10) according to any one of claims 1-3, wherein the storage box (16) comprising a partitioning member (20) upwardly extend from a bottom of the said storage box (16); and the battery cover (18, 29) comprising a partitioning wall (21) extending downward toward said partitioning member (20) and meet with the top of said partitioning member forming a complete wall separating the canister (12) from the battery (14).

5. The canister mounting structure (10) according to claim 4, wherein the partitioning member (20) of the battery cover (18) comprising a plurality of spaced-apart ribs (31) distributed along the length of the said partitioning member (20); said ribs (31) projected toward the canister (12) and are configured to abuts the canister (14) against a side wall of the storage box (16).

6. The canister mounting structure (10) according to claim 4, wherein the battery cover (18) comprising a pair of spaced-apart guide ribs (22) prepared on the underside of said batter cover (18) and extend downward at a position corresponding to
the front to rear direction of the canister (12) whereby a section of a second connecting
tube (28) connected to the said canister (12) lies between the said pair of guide ribs
(22).

7. The canister mounting structure (10) according to claim 4, wherein the storage
box (16) comprising a guide means (30) comprising a guide hole (32) and a guide
groove (34) prepared on the side of the rear portion of said storage box (10); wherein
said guide hole (32) is opened on the upper surface of said storage box(10) and said
guide groove (34) is opened on rear surface of said storage box(10), so as to receive
said first connecting tube(24) inserted there through.

8. The canister mounting structure (10) according to claim 1, wherein said
canister (12) is mounted inside said storage box (16) in a vertical manner.

9. The canister mounting structure (10) according to claim 8, wherein the
storage box (16) comprising a partitioning member (20) upwardly extend from a
bottom of the said storage box (16); and the battery cover (29) comprising a
partitioning wall (21) extending downward toward said partitioning member (20) and
meet with the top of said partitioning member (20) forming a complete wall separating
the canister (12) from the battery (14).

10. The canister mounting structure (10) according to claims 9, wherein a
curved portion of a second connecting tube (28) of which connected to the upper end of
the canister (12) is secured to inner wall of said storage box (16) via a securing means
(38).

11. The canister mounting structure (10) according to claim 1, wherein the
storage box (16) comprising shoulders (25) projected from side walls of the said
storage box (16), said shoulders are configured to engage with edges of the battery
cover (18, 29) and support the battery cover (18, 29) thereon.

12. The canister mounting structure (10) according to claim 6, comprising a
one-way valve (36) disposed on the second connecting tube (28) at the above of the
canister (12); and wherein said one-way valve 36 lies between the said pair of guide
ribs (22).
FIG. 2
### INTERNATIONAL SEARCH REPORT

**International application No.**

PCT/TH2013/000013

#### A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl. B62 J 37/00 (2006.01)i, B62 J 9/00 (2006.01)i, B62 J 99/00 (2009.01)i

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)

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>JP 04-353087 A (HONDA MOTOR CO., LTD.) 1992.12.08, full text, all drawings (No Family)</td>
<td>1-12</td>
</tr>
<tr>
<td>A</td>
<td>JP 10-324281 A (HONDA MOTOR CO., LTD) 1998.12.08, full text, all drawings (No Family)</td>
<td>1-12</td>
</tr>
</tbody>
</table>

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

#### C. DOCUMENTS CONSIDERED TO BE RELEVANT

- **A** special categories of cited documents:
  - “A” document defining the general state of the art which is not considered to be of particular relevance
  - “E” earlier application or patent but published on or after the international filing date
  - “L” document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
  - “O” document referring to an oral disclosure, use, exhibition or other means
  - “P” document published prior to the international filing date but later than the priority date claimed
  - “T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
  - “X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
  - “Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
  - “&” document member of the same patent family

**Date of the actual completion of the international search**

31.05.2013

**Date of mailing of the international search report**

11.06.2013

**Name and mailing address of the ISA/JP**

Japan Patent Office

3-4-3, Kasumigaseki, Chiyoda-ku, Tokyo 100-8915, Japan

**Authorized officer**

Shinshu kato

Authorized officer

Telephone No. +81-3-3581-1 101 Ext. 3341

Form PCT/ISA/210 (second sheet) (July 2009)