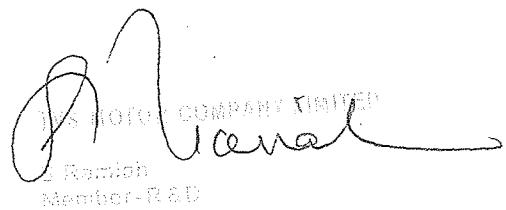


## ABSTRACT

The present subject matter discloses a side cover subassembly **45** comprising at least one side cover **70** and at least one rear indication lamp **75** connected to the at least one side cover **70**. The side cover **70** further comprises of a positioning means **206** fixedly connected to and integrally formed with the side cover **70** and a flexible clamping means **207** for receiving and supporting a wiring harness **210**. The wiring harness thus is assembled with the side cover subassembly and hence is not dependent on any frame member.

[Abstract to be published with FIG. 4]



J. Remond  
Member-R&D

We claim:

1. A saddle type vehicle having a wiring harness support structure (205) comprising:
  - a positioning means (206) fixedly connected to, and integrally formed with a side cover (201) of the vehicle;
  - 5 a clamping means (207) connected to the positioning means (206) for receiving and supporting a wiring harness (210);
  - wherein the wiring harness (210) extends along the length of the side cover (201) from at least one rear vehicle lamp positioned toward a rear end of the side cover to at least one coupler positioned toward a front end 10 of the side cover and connected to a vehicle battery.
2. The wiring harness support structure (205) as claimed in claim 1, wherein the clamping means (207) is removably attachable to the positioning means (206).
- 15 3. The wiring harness support structure (205) as claimed in claim 1, wherein a one end of the clamping means (207) is secured to the positioning means (206) through a fastener (209), and a one other end forms a curved portion (208).
4. The wiring harness support structure (205) as claimed in claim 1, wherein 20 the positioning means is a mounting boss.
5. The wiring harness support structure (205) as claimed in claim 1, wherein the clamping means (207) is a flexible hose clamp.

6. The wiring harness support structure (205) as claimed in claim 5, wherein  
the hose clamp is openable and closable.

7. The wiring harness support structure (205) as claimed in claim 5, wherein  
the hose clamp is made of a metal strip sandwiched between plastic resin  
5 cover.

8. The wiring harness support structure (205) as claimed in claim 1, wherein  
the wiring harness (210) is separately assembled with the side cover (201)  
and the at least one rear vehicle lamp to form a side cover sub-assembly.

9. A side cover subassembly (45) for a scooter type motorcycle comprising:

10 at least one side cover (70);

at least one rear vehicle lamp (75) connected to the at least one side  
cover (70);

15 a wiring harness (210) extending along the length of the at least  
one side cover (70) from the at least one rear vehicle lamp (75) positioned  
toward a rear end of the at least one side cover to at least one coupler (211)  
positioned toward a front end of the at least one side cover and connected  
to a vehicle battery;

wherein the at least one side cover (70) further comprises:

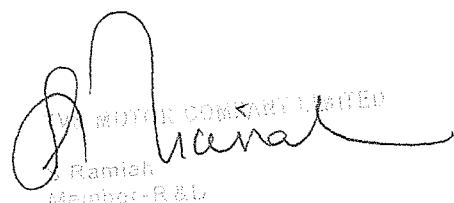
20 a positioning means (206) fixedly connected to, and  
integgrally formed with the at least one side cover (70);

a removably attachable clamping means (207) supported on the positioning means (206) for receiving and supporting the wiring harness (210).

10. The side cover subassembly (45) as claimed in claim 9, wherein the  
5 positioning means (206) is a mounting boss and the clamping means (207) is an openable and closable flexible hose clamp.

1-4 MAR 2015

Dated this                    day of                    20

  
S. Ramachandran  
Mitsubishi Electric  
Manufacturing R&D

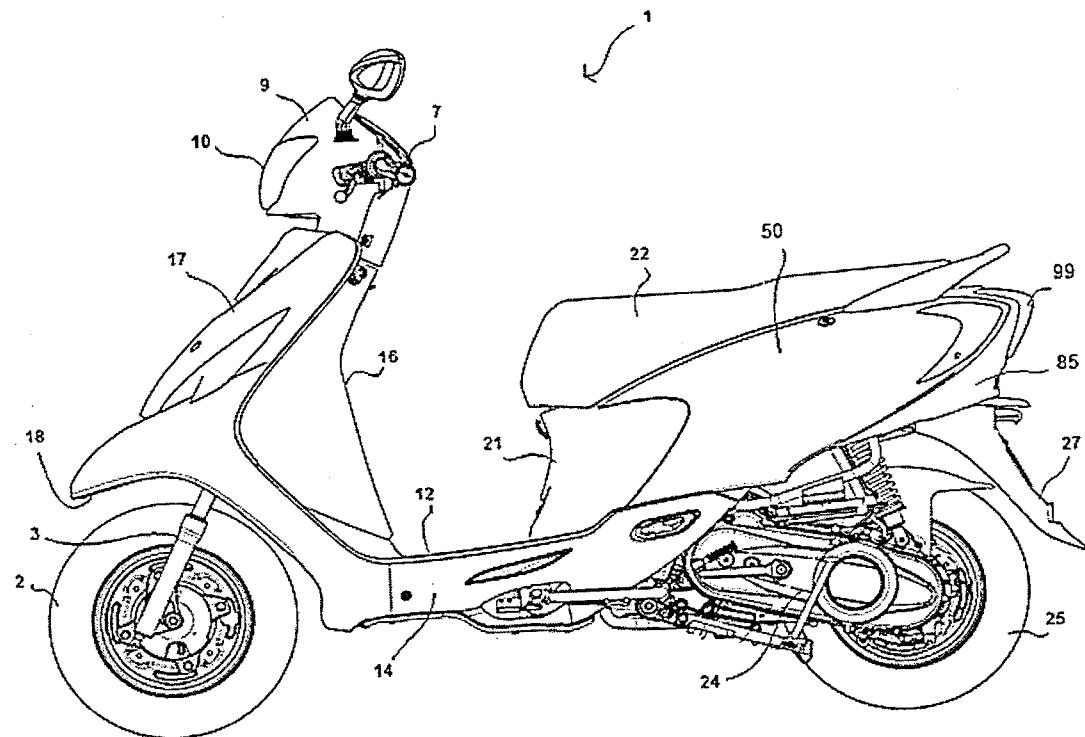


FIG. 1

*[Handwritten signature]*  
TVS MOTOR COMPANY LIMITED  
S. Ramiah  
Member - R&D

ORIGINAL - 4 MAK LIA

1261 CHE 2014

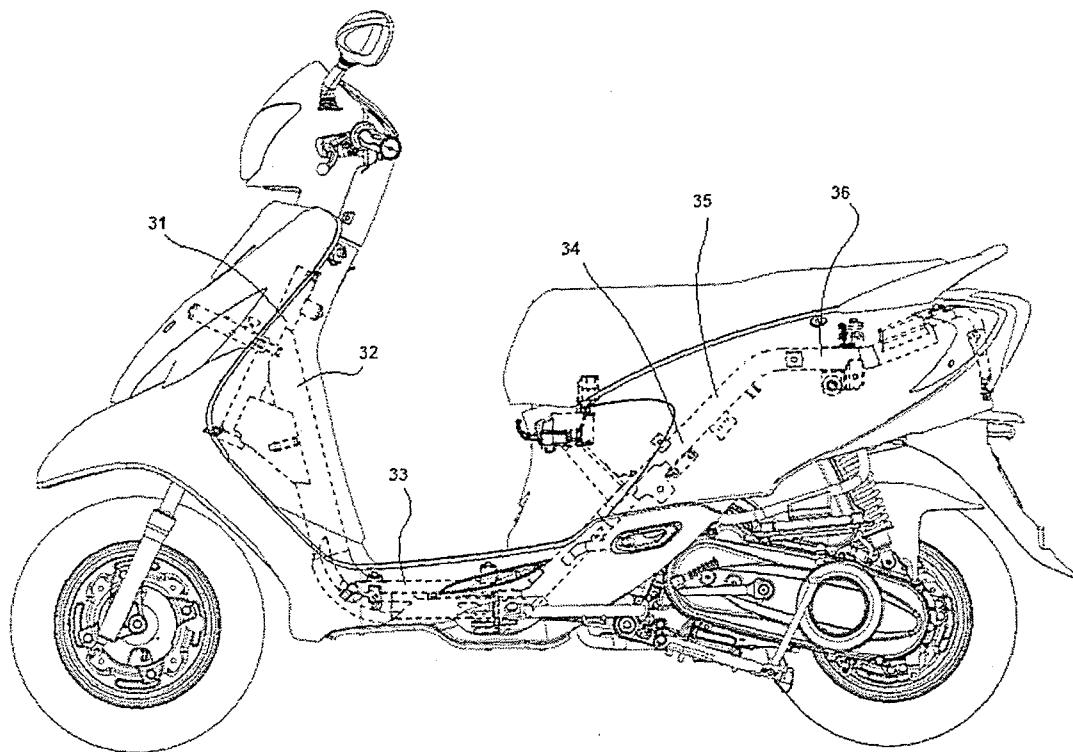


FIG. 2

*Ranajit*  
Ranajit  
TVS MOTOR COMPANY LIMITED  
Ranajit  
Manager-R&D

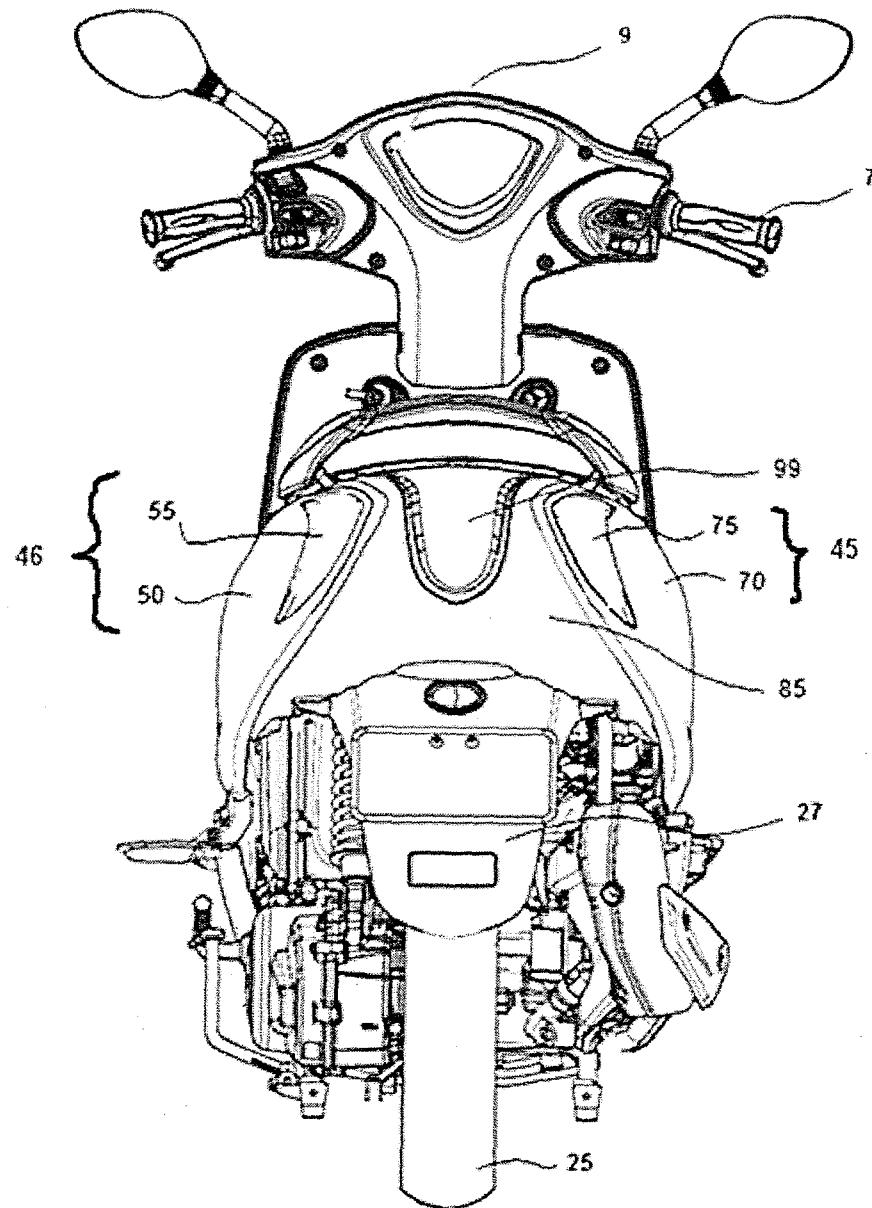


FIG. 3

TVS MOTOR COMPANY LIMITED  
S. Ramach  
Member - R&D

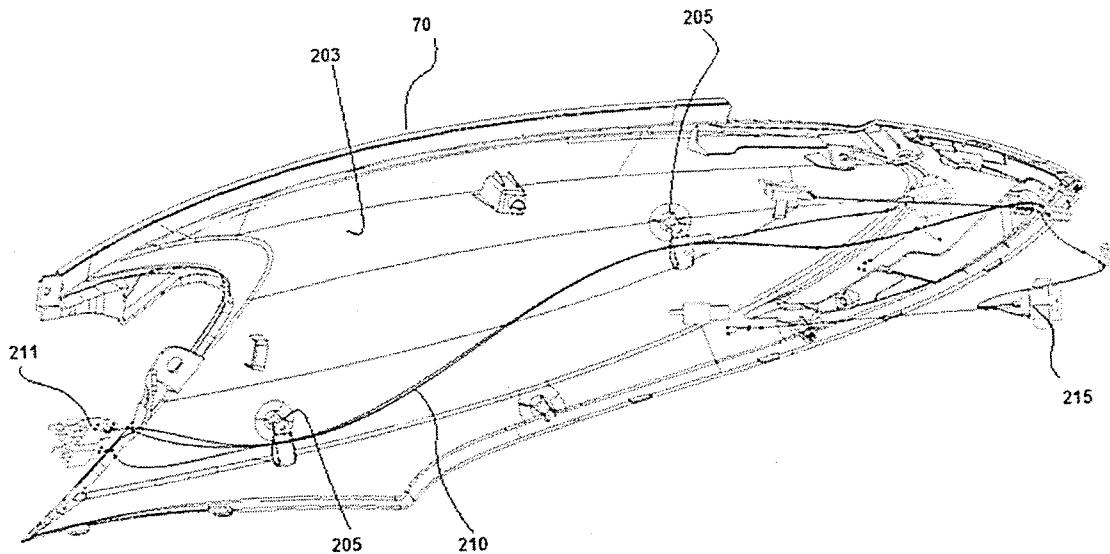


FIG. 4

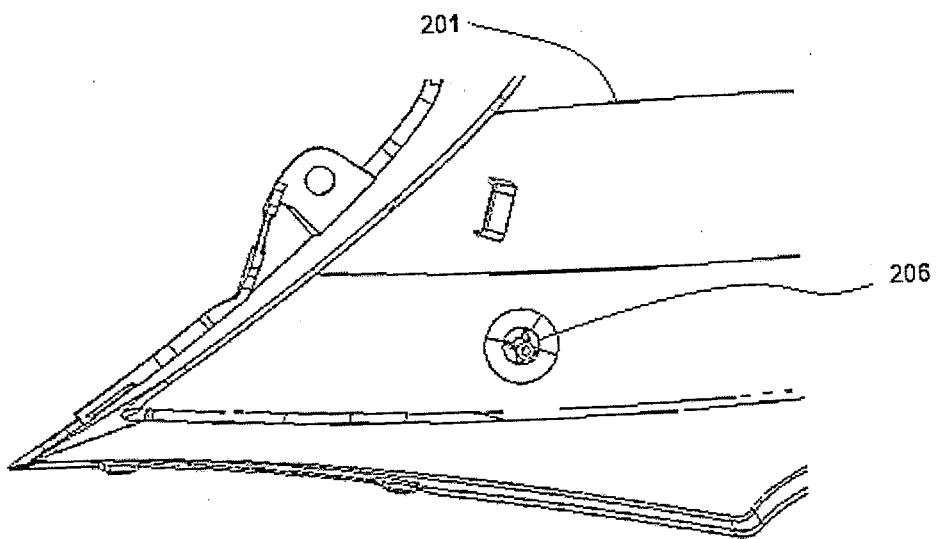


FIG. 5

TVS MOTOR COMPANY LIMITED  
A Chennai  
Member - R & D

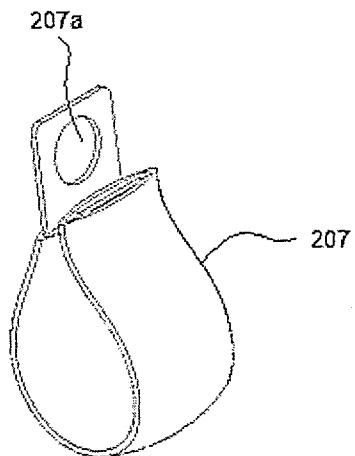


FIG. 6

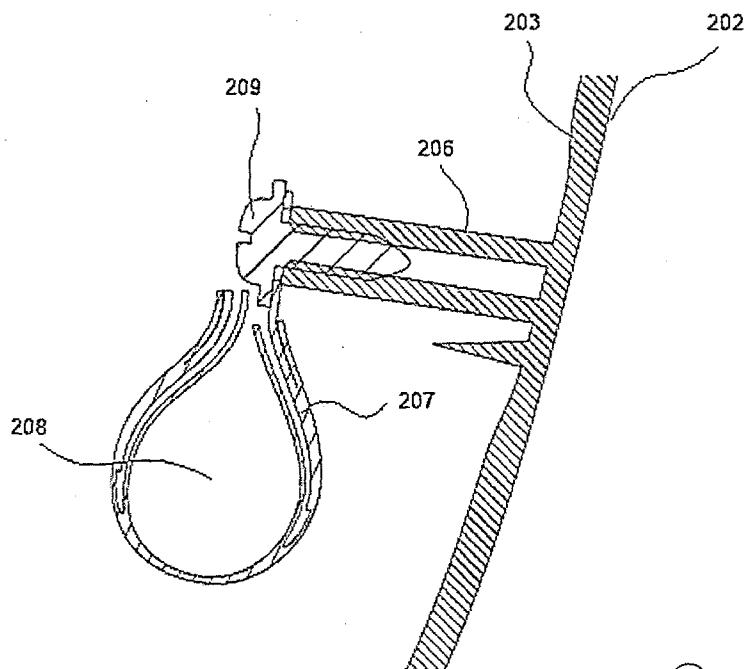


FIG. 7

 TVS MOTOR COMPANY LIMITED  
S. Vamshi  
Member - R & D

## **WIRING HARNESS SUPPORT STRUCTURE FOR A SADDLE TYPE VEHICLE**

### **FIELD OF THE INVENTION**

[0001] The present invention relates generally to a wiring harness for an 5 automotive vehicle, and more particularly, but not exclusively, to a wiring harness support structure for a saddle type vehicle.

### **BACKGROUND OF THE INVENTION**

[0002] The extreme rear portion of a conventional saddle type vehicle with a swinging power unit is provided with a unitary tail light unit having a plurality of 10 lamps. The unitary tail light unit is made integrally with three portions to have a left indication lamp towards the left side of the vehicle longitudinal plane, a right indication lamp towards the right side of the vehicle longitudinal plane and a tail lamp along the vehicle longitudinal axis. The unitary tail light unit receives power for illumination from a battery connected to the unitary tail light unit through a 15 wiring harness which includes a plurality of wires. During vehicle assembly, after the mounting of the unitary light unit, the wiring harness is first routed along and takes support on a frame member, connected to the battery through a coupler and thereafter covered by a side cover mounted on the vehicle laterally and covering a lower rear portion of the vehicle frame. Thus, the frame member along with the 20 wiring harness is invisible to an onlooker as it is covered on both sides of the vehicle longitudinal plane by side covers, and a tail cover located below the unitary tail light unit.

[0003] The serviceability of wiring harness in such case is difficult as different wires supported on the frame member cannot be distinguished easily. During the assembly of the vehicle on an assembly line, the positioning as well as routing of wires on the frame member is difficult due to lack of space between the respective 5 side cover and the frame member. This causes increase in the assembly time and increases the man hours of the vehicle assembly.

[0004] Further, in another saddle type vehicle where both side covers, tail cover, tail lamp and indication lamps form a separate sub-assembly and mounted to the rear portion of the vehicle as a whole, the positioning and routing of wiring 10 harness on the frame member would be difficult and time consuming.

[0005] The present invention intends to alleviate all or any of the above problems in the prior art. It is therefore an object of the present invention to provide a wiring harness support structure to support the wiring harness and facilitate its better handling in a rear portion of a saddle type vehicle, where the 15 side covers together with a tail cover form a separate side cover sub-assembly and mounted to the rear portion of the vehicle as a whole. It is another object of the present invention to provide a side cover of a saddle type vehicle with a wiring harness support structure to enable easy assembly of the wiring harness along with the side cover sub-assembly.

## 20 BRIEF DESCRIPTION OF THE DRAWINGS

[0006] The present invention will now be briefly described with reference to the accompanying drawings in which:

FIG. 1 shows a vehicle facing surface of the side cover of the vehicle having a wiring harness support structure.

FIG. 2 shows a frontward end of the side cover having a wiring harness support structure.

5 FIG. 3 shows a clamping means according to the present invention.

FIG. 4 shows a rear sectional view of the wiring harness support structure connected to the side cover.

#### **BRIEF DESCRIPTION OF THE INVENTION**

[0007] The present invention discloses a wiring harness support structure for a 10 saddle type vehicle. The wiring harness support structure is connected to a side cover of the vehicle. It is to be noted that in the ensuing description, the present invention is exemplified with a saddle type vehicle in the form of a scooter type motorcycle for better illustration. A longitudinal axis, except otherwise mentioned, refers to a front to rear axis relative to the said motorcycle, while a 15 lateral axis, except otherwise mentioned, refers generally to a side to side, or left to right axis relative to the said motorcycle. Various other features and embodiments of the present invention will be discernible from the following further description thereof, set out hereunder. The detailed explanation of the constitution of parts other than the subject matter which constitutes an essential 20 part has been omitted at suitable places.

[0008] The vehicle comprises of a side cover 201 which forms a part of a side cover sub-assembly. The side cover sub-assembly comprises of a left side cover with a left indication lamp, a right side cover with a right indication lamp, and a

tail cover with a tail light. The side cover **201** has a vehicle facing surface **203** and a vehicle opposing surface **202**. A wiring harness **210** connects the rear vehicle lamps (combined referred to by numeral **215**) in the side cover sub-assembly to a vehicle battery. The rear vehicle lamps **215** include a tail light, a left indication lamp and a right indication lamp which may be either be integrated as one light unit or may be separately mounted. However, the wiring harness **210** carries power to each of them through a plurality of wires. For example, there can be provided separate wires for tail light, left indication lamp and right indication lamp but collectively they are referred to as wiring harness **210**. The wires are connected to the vehicle battery at one end and to the rear vehicle lamps at the other end by means of couplers **211**.

[0009] A portion of the wiring harness **210** is supported on a wiring harness support structure **205** provided on the vehicle facing surface **203** of the side cover **201**. A plurality of wiring harness support structures may be provided along the length of the side cover **201**. However, for the sake of brevity, only one of them is described in detail.

[00010] The wiring harness support structure comprises of a positioning means **206** fixedly connected to and integrally formed with the side cover **201**. A flexible clamping means **207** is removably attachable to the positioning means **206** for receiving and supporting a portion of the wiring harness **210**. One end of the clamping means **207** has a positioning hole **207a** through which it may be secured to the threaded positioning means **206** through a fastener **209**. The other end is flexibly openable and closable for supporting the wiring harness **210** on the

clamping means **207**. When manually closed, the other end forms a curved portion **208** to house the wiring harness **210**. According to an aspect, the curved portion can be curved towards the ground or opposite to the ground.

[00011] The clamping means **207** is rotatable about its other end which helps it 5 to adjust itself according to the sliding movement of the wiring harness **210** (if any). During the side cover sub-assembly, first the clamping means **207** is opened at its other end, the wiring harness **210** is routed within the clamping means **207** such that the wiring harness touches the surface of the clamping means and then closing the other end of the clamping means **207** by curving manually to form the 10 curved portion **208** around the suspended portion of the wiring harness **210** such that the wiring harness **210** does not slip out of the curved portion **208**. The same procedure is repeated for all the wiring harness support structures provided along the length of the side cover **201**.

[00012] According to an embodiment of the present invention, the positioning 15 means **206** may be a threaded mounting boss fixedly enmoulded with the side cover **201** and the clamping means **207** may be a flexible hose clamp removably fastened to the mounting boss. According to an embodiment, the clamping means **207** is made of a metal strip sandwiched between a plastic resin cover.

[00013] According to another aspect, the wiring harness support structure **205** 20 may be present in either of the side cover of the side cover sub-assembly. However, according to a preferred embodiment, the wiring harness support structure is present only on the side cover **201** mounted towards the right side of the vehicle longitudinal plane. The wiring harness **210** is separately assembled

with the side cover 201, tail cover and the rear vehicle lamps 215 to form the side cover sub-assembly. However, wiring harness support structure 205 can also be provided in a saddle type vehicle where the side cover is separately assembled.

**[00014]** From the foregoing description, it will be appreciated that the present invention offers many advantages including those described above. The wiring harness support structure provides the flexibility of opening and closing clamping means for routing the wires of the wiring harness in the side cover subassembly thus increasing its serviceability and ease of assembly during the assembly of the vehicle. The movement of the wiring harness is minimized because the side cover subassembly does not move up and down with respect to the vehicle body thereby enhancing durability of the wiring harness. The wiring harness according to the present invention does not take support on the frame which eases the dismounting of the side cover while servicing of the vehicle.

**[00015]** The present invention is thus briefly described. It will be obvious that the same may be varied in many ways. Such variations are not to be regarded as a departure from the spirit and scope of the present invention, and all such modifications as would be obvious to one skilled in the art are intended to be included within the scope of the present invention.

  
G. Venkatesh  
Member - R&D  
TVS MOTOR COMPANY LIMITED