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(71) Applicant(s): L&T TECHNOLOGY SERVICES LIMITED

(72) Inventor(s): THOMSON, DEEPAK A.S

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(54) Title: ARRANGEMENT FOR CLEANING DASHBOARD OF A VEHICLE

(57) Abstract: An arrangement 100 for cleaning a dashboard 10 of a vehicle is disclosed. The arrangement 100 may include a first linear actuator 102 having a fixed first end 104 and a second end 106. The arrangement 100 may further include a second linear actuator 108 having a first end 110 and a second end 112. The first end 110 of the second linear actuator may be pivotally connected to the second end 106 of the first linear actuator 102. A replaceable cleaning member 114 may be attached to the second end 112 of the second linear actuator 108. The arrangement of the first linear actuator 102, the second linear actuator 08 and the replaceable cleaning member 114 may be such that the first linear actuator 102, the second linear actuator 108 and the replaceable cleaning member 114 stow inside the dashboard 10 during an inactive state.

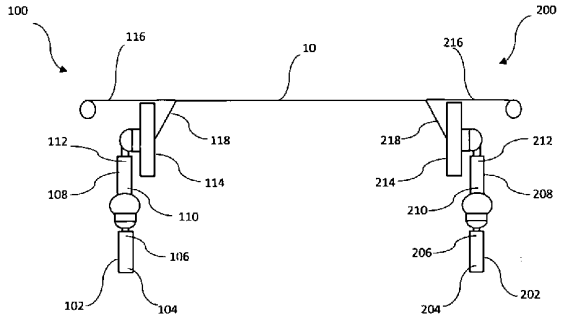
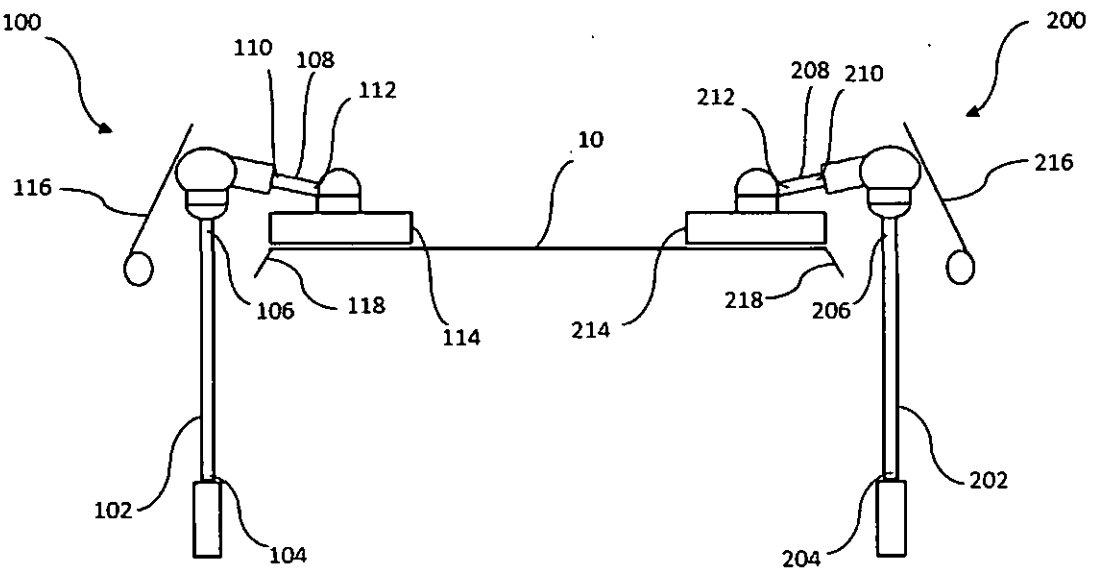


Figure 1

ABSTRACT

Arrangement for cleaning dashboard of a vehicle

An arrangement 100 for cleaning a dashboard 10 of a vehicle is disclosed. The arrangement 100 may include a first linear actuator 102 having a fixed first end 104 and a second end 106. The arrangement 100 may further include a second linear actuator 108 having a first end 110 and a second end 112. The first end 110 of the second linear actuator may be pivotally connected to the second end 106 of the first linear actuator 102. A replaceable cleaning member 114 may be attached to the second end 112 of the second linear actuator 108. The arrangement of the first linear actuator 102, the second linear actuator 08 and the replaceable cleaning member 114 may be such that the first linear actuator 102, the second linear actuator 108 and the replaceable cleaning member 114 stow inside the dashboard 10 during an inactive state.



We claim:

1. An arrangement 100 for cleaning a dashboard 10 of a vehicle, the arrangement 100 comprising:

a first linear actuator 102 having a first end 104 and a second end 106, the first end 104 being fixed under the dashboard 10;

a second linear actuator 108 having a first end 110 and a second end 112, the first end 108 being pivotally connected to the second end 106 of the first linear actuator 102;

a replaceable cleaning member 114 attached to the second end 112 of the second linear actuator 108, wherein the first linear actuator 102, the second linear actuator 108 and the replaceable cleaning member 114 stow under the dashboard 10 during an inactive state.

2. The arrangement 100 for cleaning the dashboard 10 of the vehicle as claimed in claim 1, further comprising a hinged door 116 provided on an end 12 of the dashboard 10 wherein the first linear actuator 102 extends out of the hinged door 116, followed by the extension of the second linear actuator 108 along with the replaceable cleaning member 114 on the dashboard 10.

3. The arrangement 100 for cleaning the dashboard 10 of the vehicle as claimed in claim 1, wherein the cleaning member 114 includes a liquid ejection arrangement.

4. The arrangement 100 for cleaning the dashboard 10 of the vehicle as claimed in claim 1, wherein the arrangement 100 further includes a guide 118 to direct movement of the cleaning member 114 on the dashboard 10.

5. The arrangement 100 for cleaning the dashboard 10 of the vehicle as claimed in claim 1, wherein the arrangement 100 for cleaning the dashboard 10 further includes a sensor to detect dust on the dashboard 10 of the vehicle.

6. A dashboard 10 having a plurality of arrangements 100, 200 for cleaning the dashboard 10.

7. The dashboard 10 as claimed in claim 6, wherein at least one arrangement 100, 200 is provided at each end, such that the arrangement 100, 200 operate from each end 12, 22 of the dashboard 10 to the center of the dashboard 10.

Dated this 23rd day of November 2017,

Mohammed Faisal (INPA No: 1941)
Head, IPR Dept.
L&T Technology Services Limited
DLF 3rd Block, 2nd Floor,
Manapakkam, Chennai – 600089

FIELD OF INVENTION

The invention generally relates to vehicle cleaning and more particularly to a cleaning arrangement integrated within the vehicle.

BACKGROUND

Vehicle dashboards are often prone to films of dust, stickiness and grime over it. Such dashboards not only make the vehicle interior unappealing but also turn the driving experience quite unpleasant. Conventionally, the dashboard of vehicles, such as a car, is cleaned either by using a household vacuum cleaner with related attachments or by manually wiping the dashboard with a piece of cloth. These cleaning techniques require a person to put in manual effort in cleaning the dashboard. The use of vacuum cleaner requires a person to manually move the vacuum nozzle over the dashboard to remove the collected dust. The vacuum cleaner further employs long and cumbersome extension cords to reach remote electrical sockets. These cleaning operations are most easily performed in garages, or near homes having convenient sources of electrical power. However, in many cases, connecting to electric sources may not be convenient and hence individuals must resort to either manual cleaning by hand or must pay to have the vacuum cleaning done. The issue with cleaning manually using a cloth is that the dust ends up sticking on the palms making the process of cleaning quite messy.

Hence there is a need for an improved arrangement for cleaning the dashboard of the vehicle.

SUMMARY OF THE INVENTION

According to an exemplary embodiment of the invention, an arrangement for cleaning a dashboard of a vehicle is disclosed. The arrangement may include a first linear actuator having a first end and a second end. The first end of the first linear actuator may be fixed under the dashboard. The arrangement for cleaning the dashboard of the vehicle may further include a second linear actuator. The second linear actuator may have a first end and a second end. The first end of the second linear actuator may be pivotally connected to the second end of the first linear actuator. The arrangement may further include a replaceable cleaning member. The replaceable cleaning member may be attached to the second end of the second linear actuator. The arrangement for cleaning the dashboard of the vehicle may be arranged in such a way that the first linear actuator, the second linear actuator and the replaceable cleaning member may stow under the dashboard during an inactive state.

BRIEF DESCRIPTION OF DRAWINGS

Other objects, features, and advantages of the invention will be apparent from the following description when read with reference to the accompanying drawings. In the drawings, wherein like reference numerals denote corresponding parts throughout the several views:

Figure 1 illustrates a front view of a dashboard having two arrangements for cleaning a dashboard of a vehicle in a stowed position according to an exemplary embodiment of the invention.

Figure 2 illustrates a top view of the dashboard having two arrangements for cleaning the dashboard of the vehicle in the stowed position according to an exemplary embodiment of the invention.

Figure 3 illustrates a front view of the dashboard having two arrangements for cleaning the dashboard of the vehicle in a partially extended position according to an exemplary embodiment of the invention.

Figure 4 illustrates a top view of the dashboard having two arrangements for cleaning the dashboard of the vehicle in the partially extended position according to an exemplary embodiment of the invention.

Figure 5 illustrates a front view of the dashboard having two arrangements for cleaning the dashboard of the vehicle in a fully extended position according to an exemplary embodiment of the invention.

Figure 6 illustrates a top view of the dashboard having two arrangements for cleaning the dashboard of the vehicle in the fully extended position according to an exemplary embodiment of the invention.

Figure 7 illustrates a side view of a cleaning member according to an exemplary embodiment of the invention.

DETAILED DESCRIPTION OF DRAWINGS

The following description with reference to the accompanying drawings is provided to assist in a comprehensive understanding of exemplary embodiments. It includes various specific details to assist in that understanding but these are to be regarded as merely exemplary. Accordingly, those of ordinary skilled in the art will recognize that various changes and modifications of the embodiments described herein can be made without departing from the scope and spirit of the invention. In addition, descriptions of well-known functions and constructions are omitted for clarity and conciseness.

Figure 1-6 illustrates an arrangement 100 for cleaning a dashboard 10 of a vehicle from a stowed position to a fully extended position according to an exemplary embodiment of the invention. The arrangement 100 may be employed in a vehicle such as a car, a bus, a truck, etc.to clean the dust and grime settled on the dashboard 10 over a certain period of time. The arrangement 100 may include a first linear actuator 102. According to an embodiment, the first linear actuator 102 may be actuated by an electrical system. According to another embodiment, the first linear actuator 102 may be actuated by any system such as, but not limited to, a mechanical system, a pneumatic system, a hydraulic system etc. The first linear actuator 102 may have a first end 104. The first end 104 of the first linear actuator 102 may be fixed under the dashboard 10 of the vehicle. According to an embodiment, the first end 104 of the first linear actuator 102 may be fixed by means of bolting. According to another embodiment, the first end 104 of the first linear actuator 102 may be fixed by any known techniques capable of holding the first linear actuator 102 in a fixed position. The first linear actuator 102 may further have a second end 106. The second end 106 may be movable along with the extension and retraction of the first linear actuator 102. The first linear actuator 102 may be arranged in a

vertical position under the dashboard 10. The position of the first linear actuator 102 may be in proximity to an end 12 of the dashboard 10. The arrangement 100 of the first linear actuator 102 may be such that the second end 106 of the first linear actuator 102 may move outside the dashboard 10 on full extension of the first linear actuator 102. It will be apparent to a person skilled in the art that the first linear actuator 102 is not limited to the depicted implementation and other extending and retracting means known in the art may also be employed

The arrangement 100 for cleaning the dashboard 10 of the vehicle may further include a second linear actuator 108. The second linear actuator 108 may have a first end 110 and a second end 112. According to an embodiment, the second linear actuator 108 may be actuated by an electrical system. According to another embodiment, the second linear actuator 108 may be actuated by any system such as, but not limited to, a mechanical system, a pneumatic system, a hydraulic system etc. According to an embodiment, the first end 110 of the second linear actuator 108 may be pivotally connected to the second end 106 of the first linear actuator 102. The pivotal connection may enable the second linear actuator 108 to move in plurality of directions. According to another embodiment, the first end 110 of the second linear actuator 108 may be hinged to the second end 106 of the first linear actuator 102. The first linear actuator 102 and the second linear actuator 108 may be so arranged that when the arrangement 100 is activated, the first linear actuator 102 may fully extend out of the dashboard followed by the extension of the second linear actuator 108. When the arrangement 100 is in an inactive state, the second linear actuator 108 may be in a vertical position along with the first linear actuator 102. When the arrangement 100 is activated, the second linear actuator 108 may convert from the vertical position into a substantially horizontal position.

The arrangement 100 for cleaning the dashboard 10 of the vehicle may further include a replaceable cleaning member 114. Figure 7 illustrates a side view of the cleaning member 114

according to an exemplary embodiment of the invention. The cleaning member 114 may be attached to the second end 112 of the second linear actuator 108. According to an embodiment, the cleaning member 114 may be a sponge. According to another embodiment, the cleaning member 114 may be a microfiber cloth. According to yet another embodiment, the cleaning member 114 may be any soft material capable of cleaning dust from a surface. According to an embodiment, the cleaning member 114 may be attached to the second end 112 of the second linear actuator 108 by a cleaning member holder 120. According to another embodiment, the cleaning member 114 may be directly attached to the second end 112 of the second linear actuator 108. The cleaning member 114 may be detachable from the second end 112 of the second linear actuator 108. The cleaning member 114 may be replaceable when a user feels the cleaning is not being properly performed. According to an embodiment, the shape of the cleaning member 114 may depend on the shape of the dashboard so as to clean the top surface as well as front surface of the dashboard 10 together. According to another embodiment, the cleaning member holder 120 may have an arrangement to hold the cleaning member 114 in a bended position. According to yet another embodiment, the cleaning member holder 120 may have an arrangement to hold multiple cleaning members 114 at different planes. According to an embodiment, the cleaning member 114 may include a liquid ejection arrangement. The liquid ejection arrangement may be a spray nozzle that may eject a dashboard cleaning liquid. The arrangement 100 for cleaning the dashboard 10 of the vehicle is such that during the inactive state, the first linear actuator 102, the second linear actuator 108 and the replaceable cleaning member 114 stow inside the dashboard 10 in a retracted position.

According to an embodiment, the dashboard 10 of the vehicle may include a hinged door 116 at the end 12 of the dashboard 10. According to another embodiment, the dashboard 10 may include a sliding door 116 at the end 12 of the dashboard. According to yet another

embodiment, the dashboard 10 may include an uncovered opening at the end 12 of the dashboard. The door 116 may be provided on the top surface of the dashboard 10 and may open above the dashboard 10 top surface. The door 116 protects the opening for the first linear actuator 102, the second linear actuator 108 and the cleaning member 114 to move in and out of the dashboard 10. The arrangement 100 for cleaning the dashboard 10 of the vehicle may further include a guide 118. The guide 118 may be a slant surface in connection to the dashboard 10. The guide 118 may be provided in the interior part of the dashboard 10 for directing the movement of the cleaning member 114 on the dashboard 10 of the vehicle. The dashboard may be of any vehicle such as, but not limited to, a car, van, bus, truck etc.

According to another embodiment, a dashboard 10 having a plurality of arrangements 100, 200 for cleaning the dashboard 10 is disclosed. The dashboard 10 may include at least one arrangement 100, 200 provided at each end. The arrangement 100, 200 may operate from each end 12, 22 of the dashboard 10 to the center of the dashboard 10. The arrangement 200 may be symmetrical to the arrangement 100. The arrangement 100, 200 may include two first linear actuators 102, 202 having a first end 104, 204 and a second end 106, 206. The first end 104, 204 of the first linear actuators 102, 202 may be fixed under the dashboard 10 of the vehicle. The second end 106, 206 of the first linear actuators 102, 202 may be movable along with the extension and retraction of the first linear actuator 102, 202. The first linear actuators 102, 202 may be arranged in a vertical position within the dashboard 10. The position of each of the first linear actuators 102, 202 may be in proximity to each end 12, 22 of the dashboard 10. The arrangement 100, 200 of the first linear actuator 102, 202 may be such that the second end 106, 206 of the first linear actuator 102, 202 may move outside the dashboard 10 on full extension of the first linear actuator102, 202. The arrangement 100, 200 for cleaning the dashboard 10 of the vehicle may further include two second linear actuators 108, 208. The second linear

actuators 108, 208 may have a first end 110, 210 and a second end 112, 212. According to an embodiment, the first end 110, 210 of the second linear actuators 108, 208 may be pivotally connected to the second end 106, 206 of the first linear actuators 102, 202. The pivotal connection may enable the second linear actuators 108, 208 to move in plurality of directions on the dashboard 10. According to another embodiment, the first end 110, 210 of the second linear actuator 108, 208 may be hinged to the second end 106, 206 of the first linear actuators 102, 202. The arrangement 100, 200 may further include two replaceable cleaning members 114, 214, each attached to each end 112, 212 of the second linear actuators 18, 208. The arrangement 100, 200 for cleaning the dashboard 10 of the vehicle may be such that during the inactive state, each set of arrangement 100, 200 including the first linear actuator 102, 202, the second linear actuator 108, 208 and the replaceable cleaning member 114, 214 stow at each end 12, 22 within the dashboard 10. The dashboard 10 of the vehicle may include a hinged door 116, 216 at each end 12, 22 of the dashboard 10 and a guide 118, 218 to direct each of the cleaning members 114, 214 on the dashboard 10.

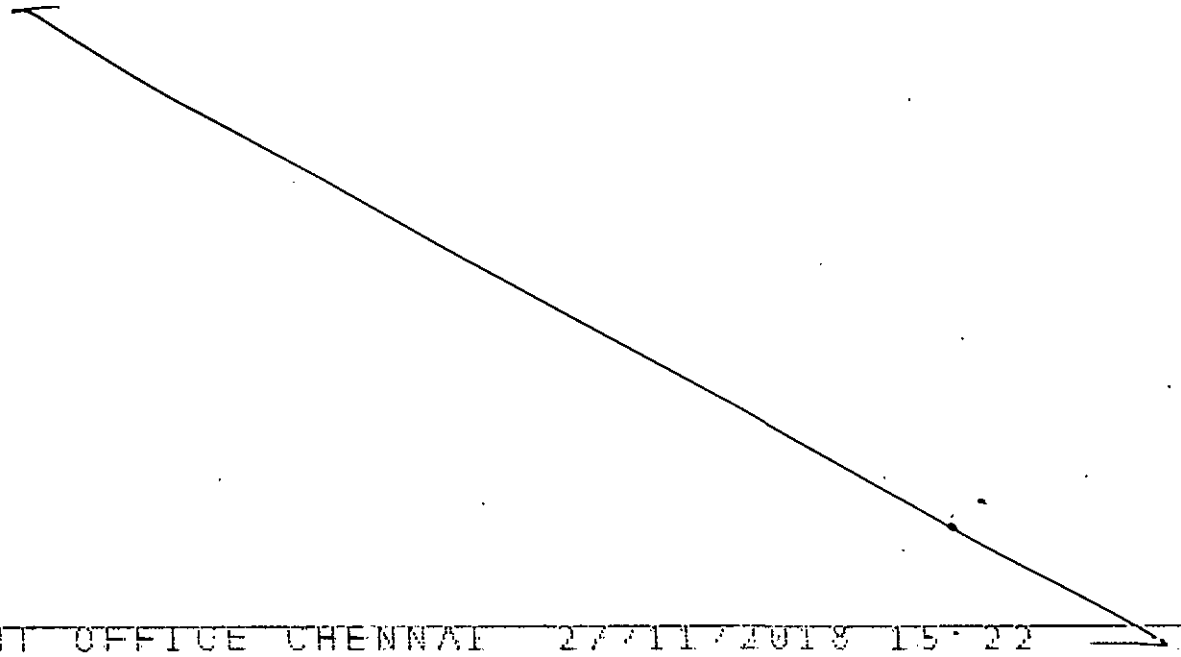
Figure 1 and figure 2 illustrates a front view and a top view respectively of a dashboard having two arrangements 100, 200 for cleaning the dashboard 10 of the vehicle in a stowed position according to an exemplary embodiment of the invention. Figure 1 and figure 2 shows the arrangements 100, 200 in the inactive state having the first linear actuators 102, 202 and the second linear actuators 108, 208 in a retracted position. The arrangements 100, 200 for cleaning the dashboard 10 of the vehicle may be such that the first linear actuators 102, 202, the second linear actuators 108, 208 and the cleaning members 114, 214 stow within the dashboard 10 during the inactive state. In the inactive state, the arrangements 100, 200 may be enclosed and protected by a hinged door 116, 216 at each end 12, 22 of the dashboard 10. The doors 116, 216 may prevent the dust to enter inside the dashboard 10.

Figure 3 and figure 4 illustrates a front view and a top view respectively of the dashboard having two arrangements 100, 200 for cleaning the dashboard 10 of the vehicle in a partially extended position according to an exemplary embodiment of the invention. Figure 3 and figure 4 shows the arrangements 100, 200 in an active state having the first linear actuators 102, 202 in fully extended position. According to an embodiment, the arrangements 100, 200 may activate automatically. The automatic activation system of the arrangements 100, 200 may include a sensor (not shown) to detect the presence of dust on the dashboard 10. On detection of dust, the arrangements 100, 200 may activate. According to another embodiment, the arrangements 100, 200 may be activated manually. The manual activation may be controlled by the user with a button/knob in the vehicle. On activation of the arrangements 100, 200 the first linear actuators 102, 202 may extend to its full capacity in an upward direction. The extension of the first linear actuators 102, 202 moves the second linear actuators 108, 208 and the cleaning members 114, 214 out of the dashboard 10. The upward movement of the second linear actuators 108, 208 may push and open the hinged doors 116, 216. The arrangement of the hinged doors 116, 216 and the guides 118, 218 on the dashboard 10 may further convert the position of the second linear actuators 108, 208 from the vertical position to substantially horizontal position. The guides 118, 218 provided on the dashboard 10 directs the movement of the cleaning member 114, 214 to a horizontal plane.

Figure 5 and figure 6 illustrates a front view and a top view respectively of the dashboard having two arrangements 100, 200 for cleaning the dashboard 10 of the vehicle in the fully extended position according to an exemplary embodiment of the invention. Figure 4 and figure 5 shows the arrangements 100, 200 in an active state having the first linear actuators 102, 202 and the second linear actuators 108, 208 in fully extended position. The extension of the second

linear actuators 108, 208 initiates after the full extension of the first linear actuators 102, 202. After the first linear actuators 102, 202 are fully extended, the second linear actuators 108, 208 initiate a reciprocating motion in a substantially horizontal plane. The cleaning members 114, 214 attached to the second end 112, 212 of the second linear actuators 108, 208 may also reciprocate along with the second end 112, 212 of the second linear actuators 108, 208. The reciprocation of the cleaning members 114, 214 on the dashboard 10 cleans the dashboard 10 of the vehicle.

It is understood that the above description is intended to be illustrative, and not restrictive. It is intended to cover all alternatives, modifications and equivalents as may be included within the spirit and scope of the invention as defined in the appended claims. Many other embodiments will be apparent to those of skill in the art upon reviewing the above description. The scope of the invention should, therefore, be determined with reference to the appended claims, along with the full scope of equivalents to which such claims are entitled. In the appended claims, the terms "including" and "in which" are used as the plain-English equivalents of the respective terms "comprising" and "wherein," respectively.



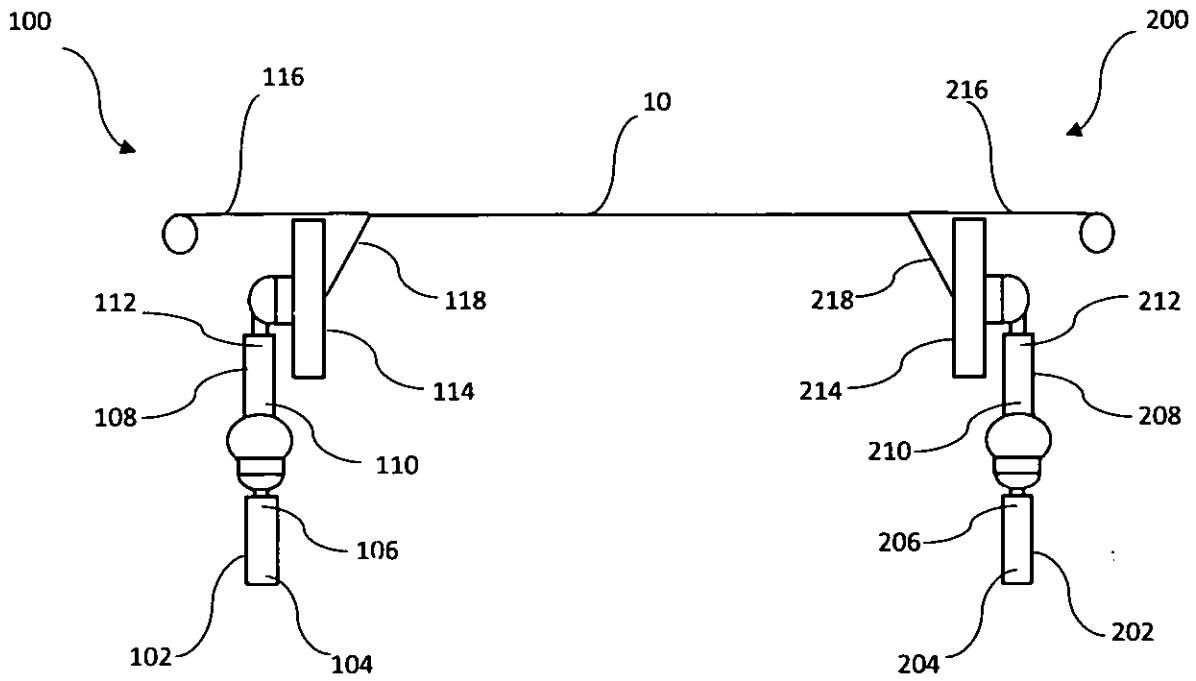


Figure 1

Mohammed Faisal (INPA No: 1941)
Head, IPR Dept.
L&T Technology Services Limited
DLF 3rd Block, 2nd Floor,
Manapakkam, Chennai – 600089

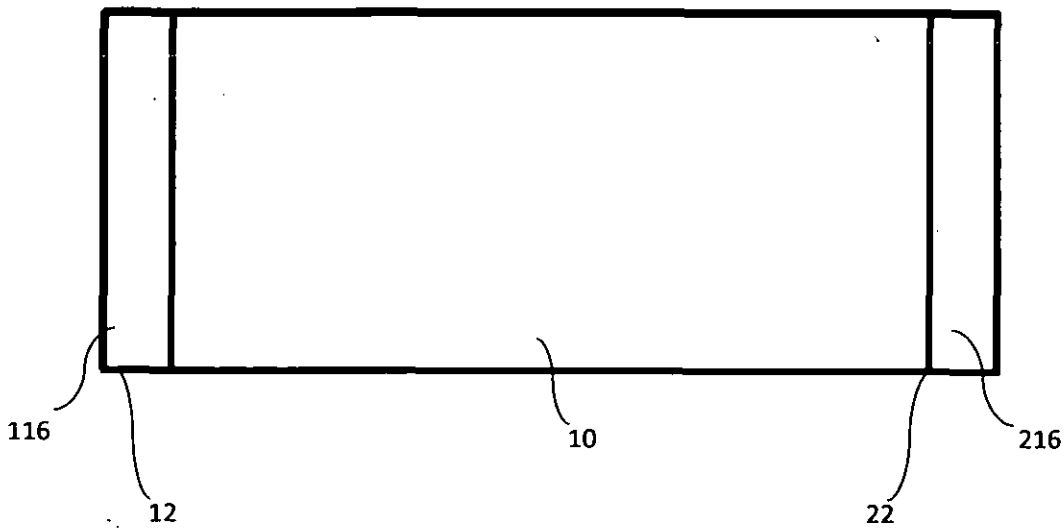


Figure 2

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Head, IPR Dept.
L&T Technology Services Limited
DLF 3rd Block, 2nd Floor,
Manapakkam, Chennai – 600089

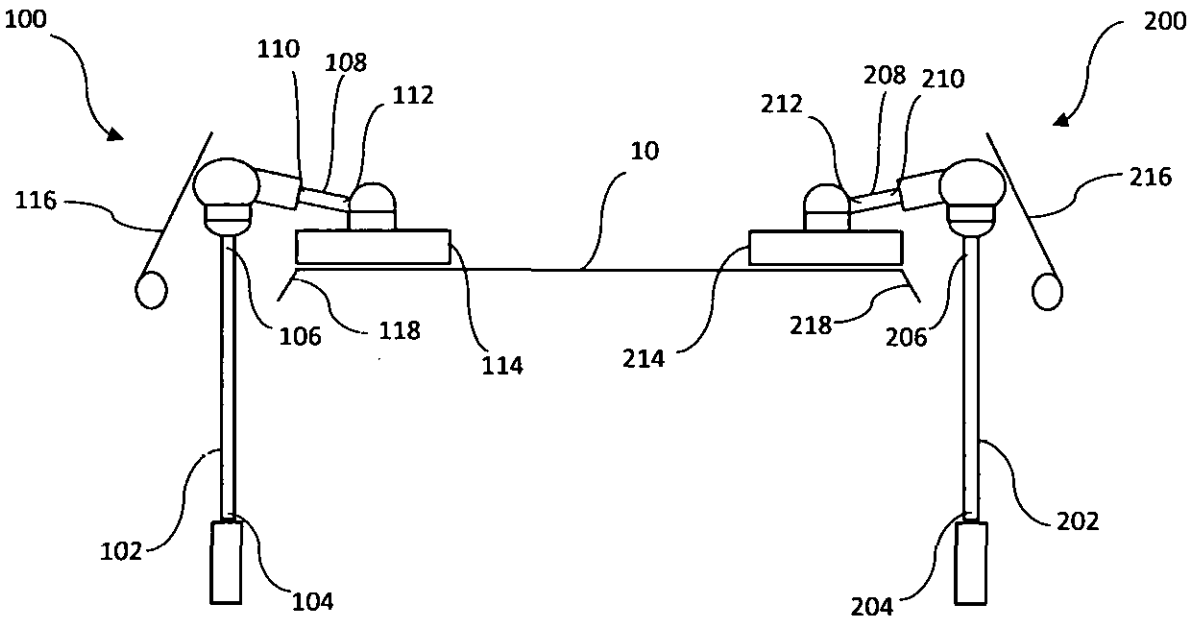

Figure 3

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Head, IPR Dept.
L&T Technology Services Limited
DLF 3rd Block, 2nd Floor,
Manapakkam, Chennai – 600089

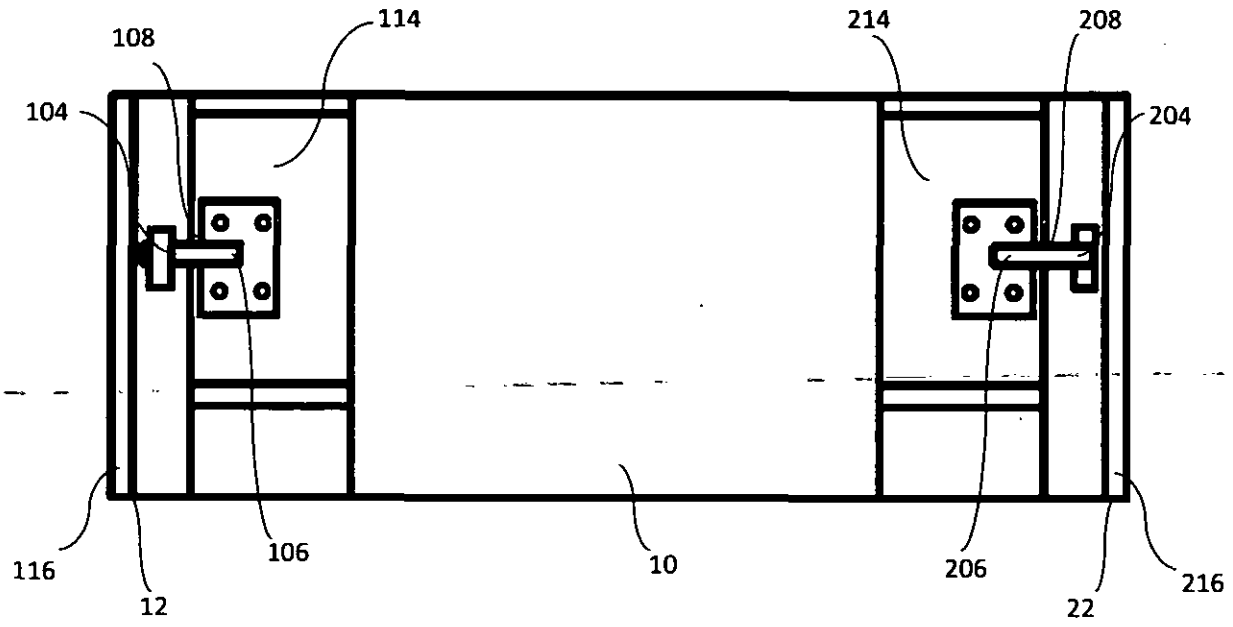

Figure 4

Mohammed Faisal (INPA No: 1941)
Head, IPR Dept.
L&T Technology Services Limited
DLF 3rd Block, 2nd Floor,
Manapakkam, Chennai – 600089

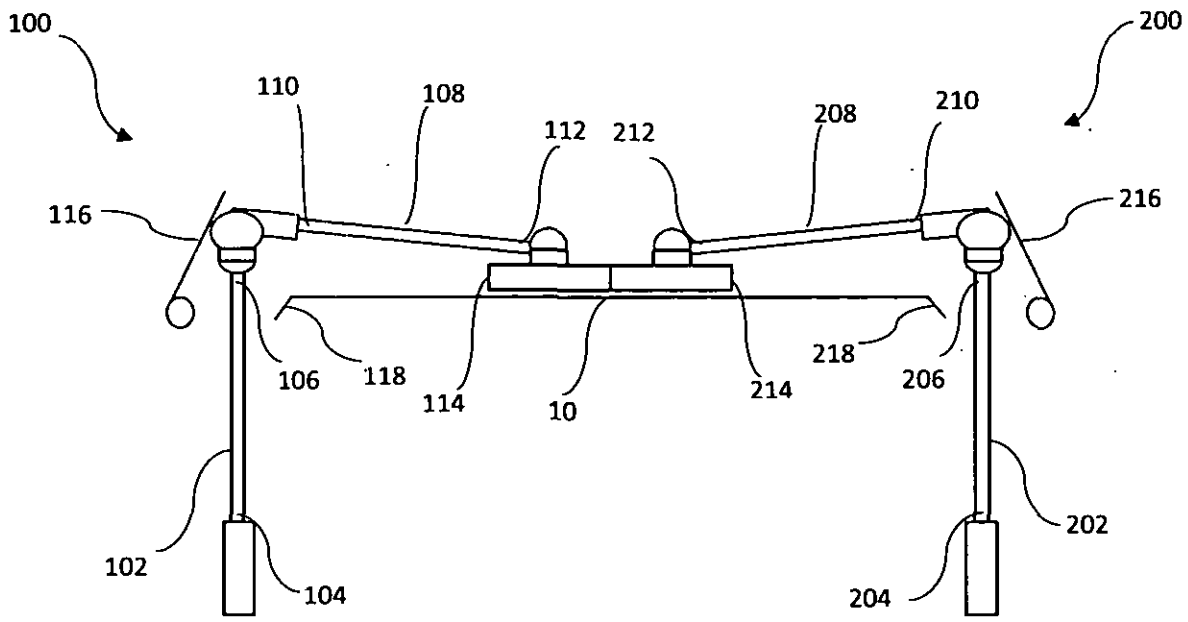

Figure 5

Mohammed Faisal (INPA No: 1941)
Head, IPR Dept.
L&T Technology Services Limited
DLF 3rd Block, 2nd Floor,
Manapakkam, Chennai – 600089

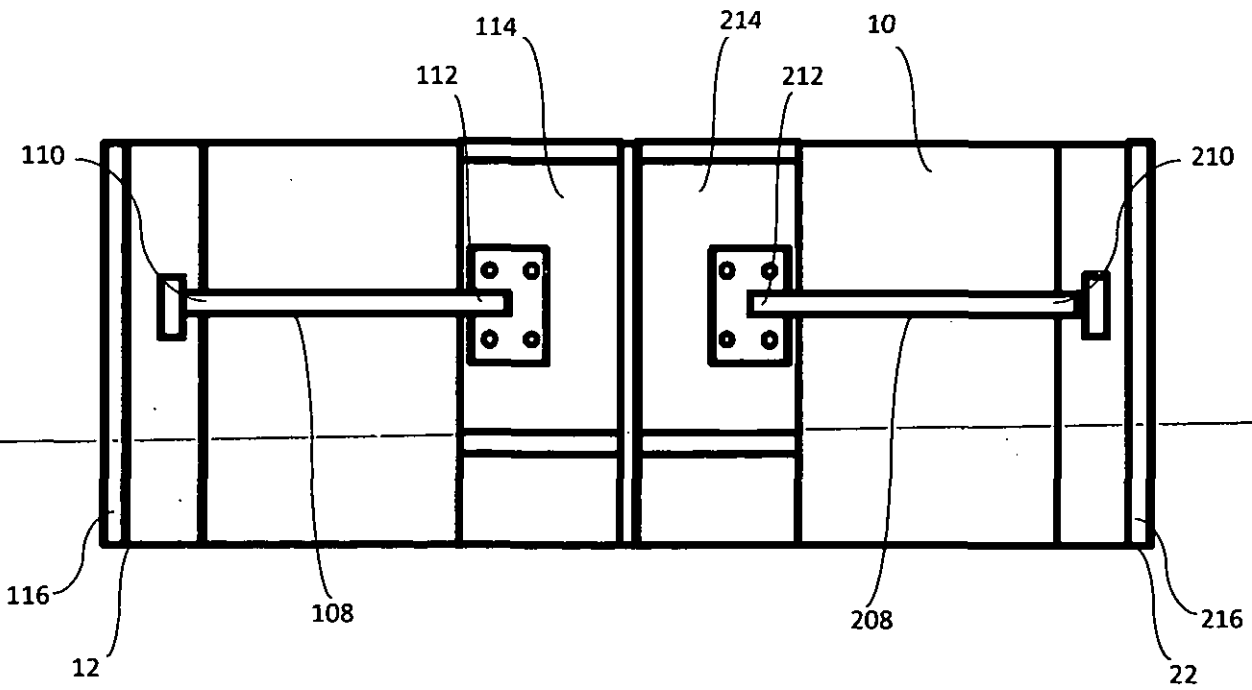

Figure 6

Mohammed Faisal (INPA No: 1941)
Head, IPR Dept.
L&T Technology Services Limited
DLF 3rd Block, 2nd Floor,
Manapakkam, Chennai – 600089

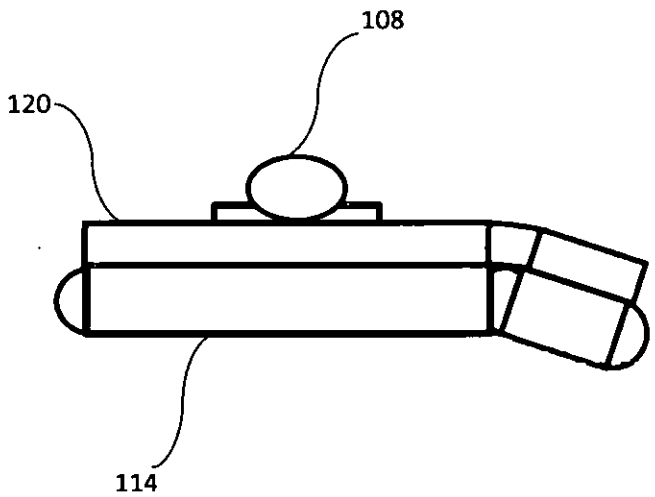

Figure 7

Mohammed Faisal (INPA No: 1941)
Head, IPR Dept.
L&T Technology Services Limited
DLF 3rd Block, 2nd Floor,
Manapakkam, Chennai – 600089