

Design & Fabrication of Automatic Universal Three Axis Rotating Trailor Mechanism

K. M. Eazhil, S. Rajaganapathi

Abstract: This project work titled "Design & Fabrication of Automatic Universal Three Axis Rotating Trailor Mechanism" has been conceived having studied the difficulty in unloading the materials. Our survey in theregard in several areas revealed the facts that mostly some difficult methods were adopted in unloading the materials from the trailer. Now the project has mainly concentrated on this difficulty, and hence a suitable arrangement has been designed.

1. Introduction

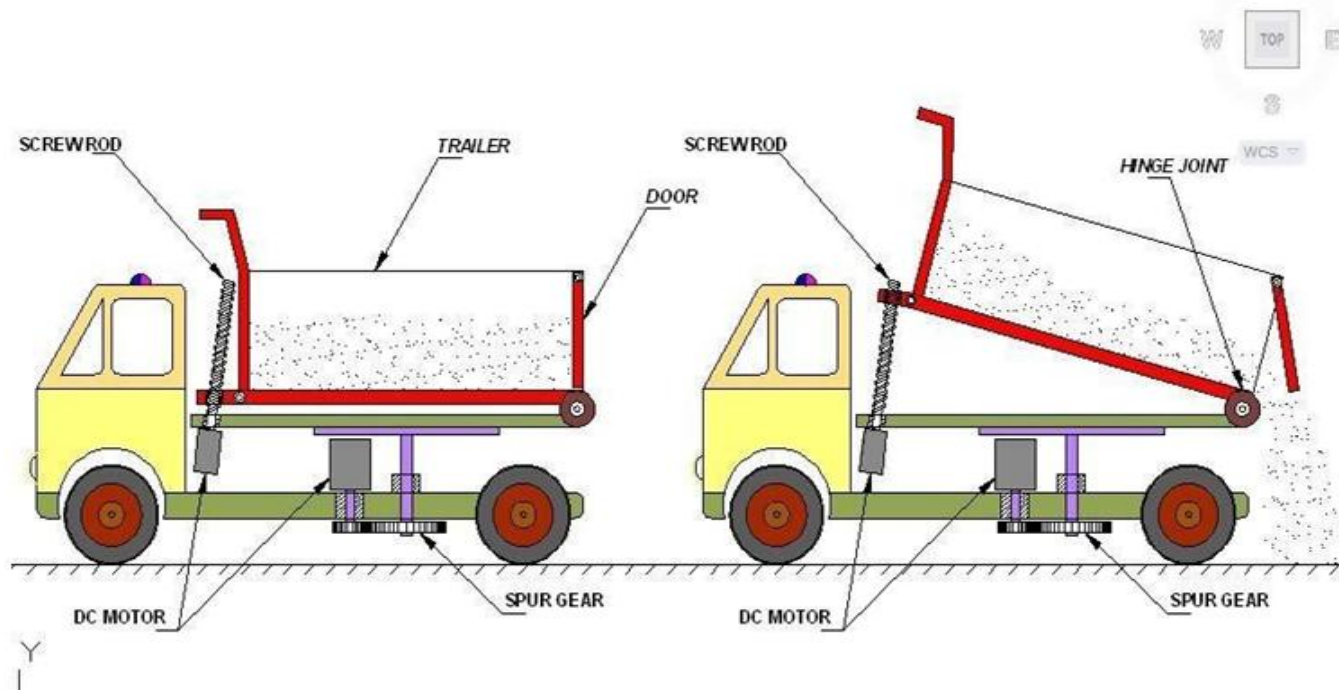
Automation can be achieved through computers, hydraulics, robotics, etc., of these sources, hydraulics form an attractive medium. Automation plays an important role in automobile. Nowadays almost all the automobile vehicle is being atomized in order to product the human being. The automobile vehicle is being atomized for the following reasons.

- To achieve high safety
- To reduce man power
- To increase the efficiency of the vehicle
- To reduce the work load
- To reduce the fatigue of workers
- To high responsibility
- Less Maintenance cost

2. Literature Survey

Ganesh Shinde, Prachi Taweale and Laukik Raut et. Al. Three way tipper can unload materials in all three sides. Also we require special types of hinge joints in this case. It will be having three hydraulics piston cylinder one on cabin side (as in existing system). One each on lateral sides, six hinge two on each side to give degree of motion on that side. The framing will be rigid enough to sustain the reactive forces generated, refer the attached picture of three way tipper. N. Eswara Prasath, S. Shanmugan, C. Mathalai Sundaram studied the three way lifting mechanism by observing the difficulties in unloading the material from trailer. In an existing system tipper can unload only in one side by using conveyor mechanism. They mainly focus on the difficulties. Hence suitable arrangement for unloading the materials in different direction is developed. In their system they uses single hydraulic cylinder for lifting the trolley.

Drawing for fabrication of universal three axisrotating trailor mechanism



3. Working Principle

The setup consists of a screw rod, motor, and a tray for lifting purpose. The movable tray consists of dc motor for rotating the trailer. A spur gear arrangement is used with

motor for rotating purpose. The screw rod is attached with the lifting plate. When the screw is actuated by the motor, the tray is lifted to a certain height. This can be done by the battery power. The 360 degree rotatable wheel is used to turn to the required direction. The motor is used to turn the whole trailer. The motor can be stopped after certain rotation with

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the help of the keypad provided. The above operations are controlled by the microcontroller.

4. Merits

- It requires simple maintenance
- Checking and cleaning is easy because the main parts are screwed
- Handling is easy
- Replacement of parts is easy

5. Applications

- 3-Directional dumper can be helpful for rocket transport, heavy material, farmers, site construction, garbage collector as well for dumping gravel, sand etc.
- Truck, tipper, dump truck are used to transport loose material from one place to another place at construction site in mines or in dump yards to accomplish the actual site requirement.
- In a nutshell, in order to execute low scale engineering and mechanical tasks, pneumatic dumpers would be the best suited and a viable alternative over conventional hydraulic dumpers.
- Packing: packing is that puts goods into boxes to protect them and to make them easier to carry while in transit.
- In this the required quantity of the material is loaded in trailer and can be unloaded at required direction. Loading: In this, any bulk and unit load can be loaded, transported and unloaded at required place and required direction.
- Dispensing: dispensing is distributed or weighted out in carefully determined portions. In which material is distributed at any three directional places.
- Palletizing: In this the material is filled in pallets and these pallets are carried or supported by trailer and transported to required place by using forklift.
- Material dropdown: the finished products on machine is dropdown by using pneumatic trailer Pick & place: pick up and placement of all types of materials at required place.

6. Conclusion

The project carried out by us made an impressive task in the field of automobile department.

This project has also reduced the cost involved in the concern. Project has been designed to perform the entire requirement task which has also been provided.

Author Profile



Mr. K. M. Eazhil, Assistant Professor, Department of Mechanical Engineering, SNSCE



Mr. S. Rajaganapathi, Student, B.E Mechanical Engineering, SNSCE