



Developing a Carrying Capacity Governing Device

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Introduction:

The Carrying Capacity Governing Device, which uses a simple working method based on strength of materials, is meant to eliminate overloading of vehicles.

This is done by the overloaded vehicle sending a signal to the authority (police force) and the vehicle starter failing to ignite.

Method:

Materials:

A piece of timber 20×50cm, 4 umbrella springs, iron plate 4×4cm, electromagnet, red, green and yellow bulbs, integrated circuit, aerial, diodes, SIM card reader, connecting wires, iron nails and screws, alarms, hard papers, a piece of ceiling board and glue.

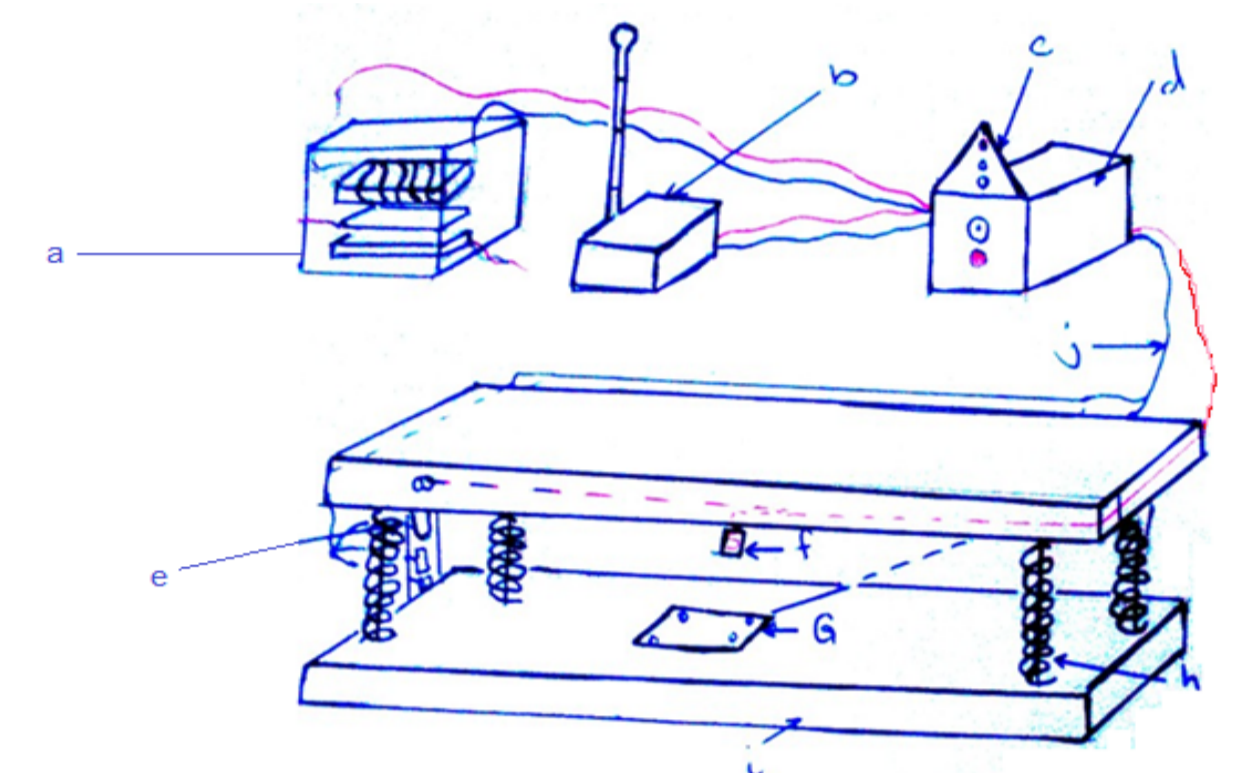
Methodology:

Body construction.

The construction of the structure seen below involved the use of 2 pieces of timber, 4 springs and iron nails which were placed in between the springs so that they should not bend during compression.

Timbers were cut into dimensions of 20 cm width and 50 cm length and then smoothed by using the sand paper. Holes were drilled in the timber so that the springs would be fit in them. Springs were fixed in the holes and nails were placed as a core for each spring so that they may not bend when compressed. The other timber was put on top of the other, with springs fitting in the holes.

After that, the iron plate and the conducting screw were placed ready for the wiring of the device.



KEY:

- a = ignition key lock.
- b = control room signal transmitter.
- c = warning lights.
- d = control box.
- e = Weight detector.
- f = conducting screw.
- h = springs.
- i = timber.

Results:

Aim: - Showing that a loaded vehicle needs strong application of force to stop.

Method:

A toy car is placed on the rollers which are on an inclined plane. The angle of the plane is increased till the toy car starts moving down the plane. The angle is noted.

The car is then loaded and the same procedures as done for the unloaded car is followed:

Results:

The loaded toy car starts moving down the inclined plane at a lower angle of the plane.

From:

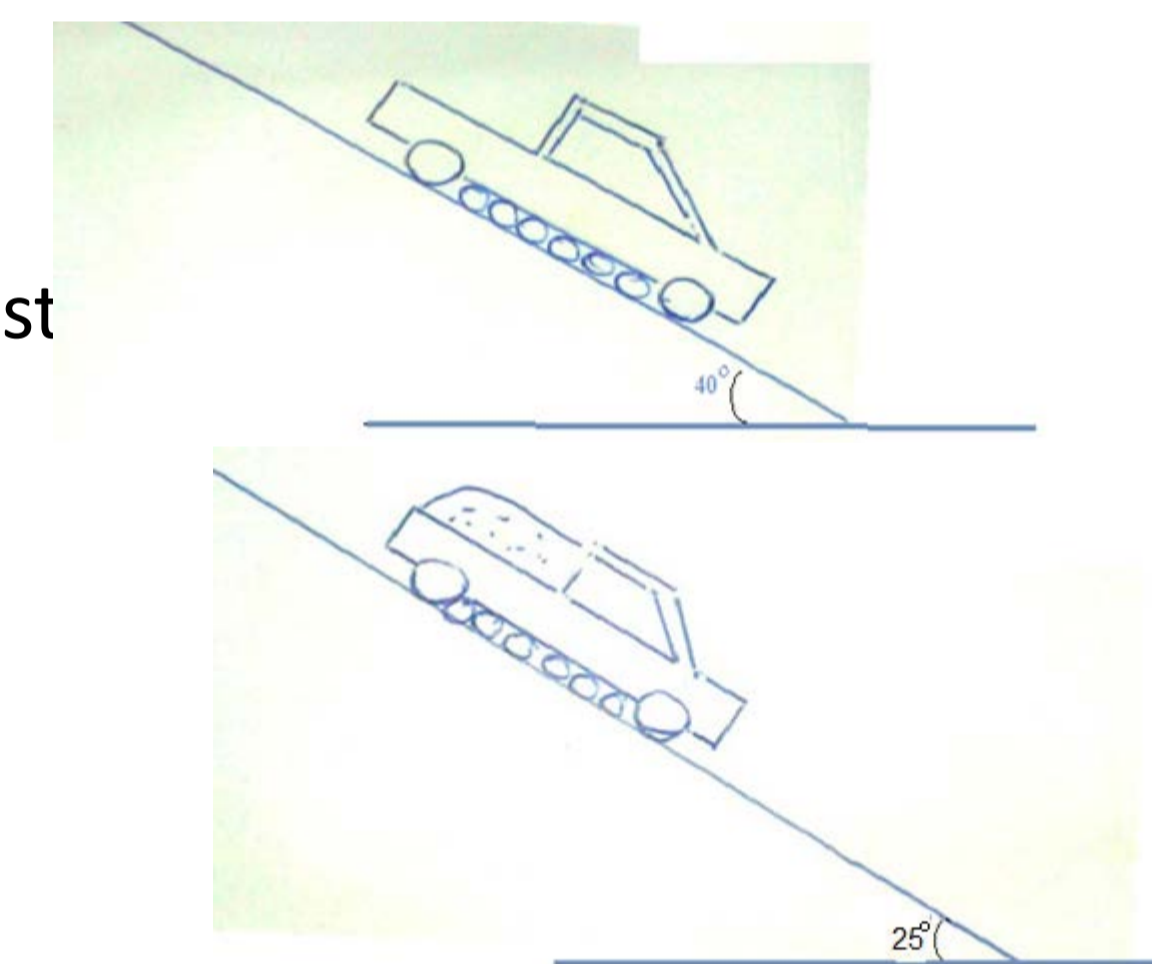
$F = \mu R$ where F is the frictional force and μ is the coefficient of friction.

So, when a reasonable (not heavy) load is placed on the carrying capacity governing works when the positive charge on the screw gets into contact with the negative charge on the green light's terminal.

Thereafter when a heavier load is placed on the CACAGODE due to the compression of the springs it leads the positive charge on the screw to get into contact with a negative charge on the yellow light's terminal. This means that the vehicle is almost overloading, so, the driver should stop loading his/her vehicle. The connecting is as in the green light.

After that when a very heavy load is placed on the CACAGODE it leads to the terminals getting into contact and leading to the lighting of red light, which means that the vehicle has been overloaded.

When the vehicle overloads it leads to conducting screw and the iron plate which have charges to get into contact hence completing the circuit for the overload alarm, ignition key lock and control room, signal transmitter which sends the information to the police about that overloaded vehicle. In its mechanism the last phone number to be called is the one that will be receiving the information, so the phone number that the information may be sent to will be the police. The information in the control room which is to be at the police station will receive a message in form of a call on which the car's number (plate number) and the name of the vehicle's user will be seen by the person operating in the control room and the vehicle will be found and fined. The ignition key lock's work is to make the vehicle not to ignite by blocking the passage of current to the starting motor of the engine.



Conclusions

The carrying capacity governing device having the ability to send a signal to the authority concerned e.g. police force, TRA, and others, is very effective because no driver or any vehicle user may overlook it. It sounds an alarm, it sends a signal to the authority and moreover it disconnects the vehicle's ignition system preventing the vehicle from moving.

References

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