

6.3 Clutching Mechanism

- The clutch mechanism is obtained at the fully depressed condition of the C.A. pedal.
- At this position a small linkage from the pedal opens a lock. Now when lock opens the pedal is jammed and hence it is not allowed to retract back.
- The lock is nothing but a small arrangement made to stop the movement of clutch rod.
- Now with the lock opened, force applied to the pedal moves the clutch rod in a linear direction.
- This movement is used in operating the clutch.
- When the clutch is to be released, force on the pedal is gradually decreased and by fulcrum action the clutch rod retracts automatically.
- When the clutch rod is fully retracted it hits a linkage mechanism which closes the lock and opens up the C.A. pedal.

7. Market Overview

- The targeted market is the Automobile Sector which is the leading sector in any part of the world.
- Hence we have a very large scope wherein the automobile sector would want to employ this design modification for the many advantage which our mechanism possesses.
- The Indian automotive industry has already attained a turnover of **Rs. 1,65,000 crore (34 billion USD)** and has provided direct and indirect employment to 1.31 crore people in the country.

8. Cost Analysis

As it is a modification design we can either modify it on conventional cars or start it at the factory level. Modification of existing cars can prove very costly and complicated since the ECU is already pre-programmed with normal actions. Change of these setup will be very complicated and time consuming. Hence the suggestion would be to manufacture new set of vehicles with all these design modifications.

For modification:

Pedal : Rs. 2,000

APS : Rs. 9,500

ECU : Rs. 12,000

Gear position sensor : Rs. 3,000

Manufacturing and assembly: Rs. 2,500

Total : Rs. 29,000

9. Future Plans and Benefits

- By further research and modification this new design should be brought into reality.
- Modification to be found to eliminate the clutch and accelerator ratio so as to drive with ease in hilly regions.
- If we are able to reduce accidents by a distinctive amount through our technology, then in near future we will see all the cars utilizing our design, which will be nothing short of a revolution.

Advantages:

- Specific kind of accidents can be reduced
- No matter which pedal the driver presses in panic, the vehicle will slow down

Disadvantage:

- Driver may find it difficult to adapt to a new mechanism
- Foot cannot be taken off the pedal while the car is in motion

10. Conclusion

Hence the idea of design modification of clutch and accelerator assembly can greatly reduce the amount of accidents that happen out of panic. If employed correctly then proper gear-speed relationship can be obtained which will increase the fuel efficiency.

References

- [1] http://en.wikipedia.org/wiki/Sudden_unintended_acceleration
- [2] A Report on "Pedal Application Errors" by Kathy H. Lococo, Loren Staplin, Carol A. Martell, and Kathy J. Sifrit for NHTSA (USA)
- [3] <http://www.nissan-global.com/EN/TECHNOLOGY/OVERVIEW/pedal.html>
- [4] "Automobile Engineering- vol 1" by Dr. Kirpal Singh 2012 13th edition.

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