



Five Wheeled Car Student Award First

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Background

Two young innovators, cousins Harimohan and Manoj Saini, have designed a car having five wheels with a fifth wheel in the centre on the rear axle. Power from the engine is directly transferred to the fifth central wheel while other four wheels are free. This reduces power loss and eliminates the differential on driving axle.

Harimohan Saini

Harimohan (21 years) is from Weir town, Bharatpur district of Rajasthan. He is the oldest of four siblings and lives with his parents, grandparents, his wife and an infant daughter. His father works in Jal Sansthan (Water supply department); one of his younger brothers works as an electrician in Jaipur while the other attends to their Public Call Office (PCO) for telephone, which they started in 2001.

Harimohan left school four years ago after completing class 12. He had a keen interest in electronics, cycles and motorcycles. Like many other innovators, he had the habit of taking things apart to figure out their working principle and then

reassembling them. Despite his parents' displeasure, he went ahead undeterred with the support of his equally inquisitive brothers.

Manoj Saini

Manoj (18 years) is a first year student of Saint Margarete College of Engineering in Alwar. He is the third eldest among four siblings. His father is as an electrician in a private healthcare company at Dharuheda. Right from childhood, he was interested in reading books with a special liking for electronics and computers books. He even did a course of engineering drawing using AUTOCAD a couple of years ago and had been teaching AUTOCAD in his brother's computer centre (at Bhiwadi) before joining engineering college.

Genesis

Both young boys had heard and read about different companies trying to introduce cheap cars in the market, affordable for middle and lower class. Once in the summer of 2003 when Manoj visited Harimohan, two of them got into discussing the possibility of making something new and concluded

that a low cost car affordable to all is what they would like to make. They wanted to develop this car, which should not be more than four feet wide so that it could travel alongside other vehicles moving in the narrow 10-12 feet wide rural roads.

They had a spare engine of a moped, which they decided to utilize it as the engine in the car. Using scrap material to develop rest of their machine, they had a car ready and running soon.

The vehicle developed by the innovators is designed to be a bare bone model with low cost of ownership and operation. It is a narrow but long model hugging the ground, with seats for four people.

Innovation

The chassis is made of commercially available polished nickel pipes. Wheels are taken from a scooter while engine is of a moped. The steering gear is made with simple mechanical linkages and mechanical brakes with accelerator, similar to jeeps and other vehicles, have also been provided.

The innovativeness lies in the fact that the front



Due to its low component count and innovativeness, projected cost for final car with all features should be within Rs 55,000-60,000. The final version would have a maximum speed 60-70 kms/h with average fuel consumption in the range of 45-50 kms/liter, against 12-18 kms/litre in the available cars.

one place to another in large factories, to lugging agricultural goods and people in rural areas and many more.

¹ US patent 4596534-June 1986

and rear wheels are free wheels, while the rear central wheel (the fifth wheel) is the only driven wheel. Power from engine is transmitted directly to the fifth wheel. This technique eliminates the differential on driving axle and also reduces power losses. Current model of the car does not have gears. Positions of wheels and driving mechanism is different from a five-wheeled toy car¹, the only example found during prior art search for any such car in market or patent database.

multiple utilities, ranging from giving fun rides in amusement parks, to transportation of people from

The prototype has been tested and driven in the village with four passengers riding on it. The innovators plan to use a more powerful engine (100 or 150 cc bike engine) and also to incorporate a gearbox in it. They plan to provide a jack system with spring at center to be able to lift the rear portion of the car.

