Design and Development of Remote Operated Car Towing Machine

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Abstract— When the vehicle stop working in a middle of the road it can cause many problems like traffic or accident. In order to shift the vehicle aside of the road or carry to repair station we need to call the towing van/truck. By using Remote operated car towing machine we can shift the car to the side of the road without any use of towing vehicle and it require less effort. The main purpose of our project is to design and develop car towing machine, which is used to shift the car from one place to another place.

Keywords: Scissor Jack, E-Bike motor, Wiper motor, Chain sprocket etc.

I. INTRODUCTION

Towing is coupling two or more objects together so that they may be pulled by a designated power source or sources. The towing source may be a motorized land vehicle, vessel, animal, or human, the load anything that can be pulled. These may be joined by a chain, rope, bar, hitch, three-point, fifth wheel, coupling, drawbar, integrated platform, or other means of keeping the objects together while in motion.

Towing may be as simple as a tractor pulling a tree stump. The most familiar form is the transport of disabled or otherwise indisposed vehicles by a tow truck or "wrecker." Other familiar forms are the tractor-trailer combination, and cargo or leisure vehicles coupled via ball or pintle and gudgeon trailer-hitches to smaller trucks and cars. In the opposite extreme are extremely heavy duty tank recovery vehicles, and enormous ballast tractors involved in heavy hauling towing loads stretching into the millions of pounds.

Necessarily, government and industry standards have been developed for carriers, lighting, and coupling to ensure safety and interoperability of towing equipment.

Historically, barges were hauled along rivers or canals using tow ropes drawn by men or draught animals walking along towpaths on the banks. Later came chain boats. Today, tug boats are used to maneuver larger vessels and barges. Over thousands of years the maritime industry has refined towing to a science.

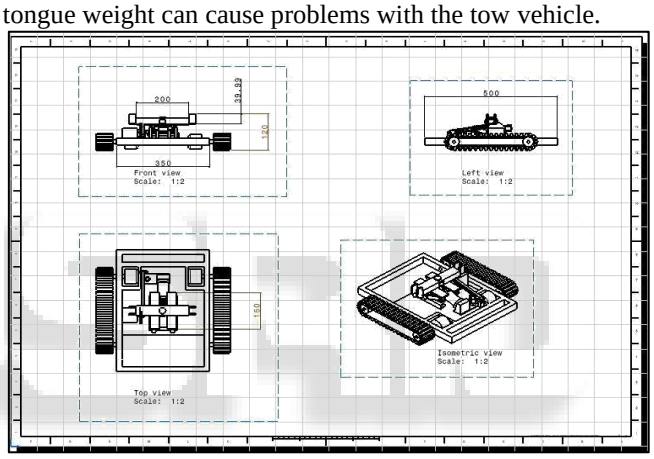
Aircraft tow one-another as well. Troop and cargo carrying gliders are towed behind powered aircraft, which remains a popular means of getting modern leisure gliders aloft.

There are many safety considerations to properly towing a caravan or trailer / travel trailer starting with vehicle towing capacity and ranging through equalizer hitches to properly and legally connecting the safety chains.

According to the United States National Highway Traffic Safety Association, more than 65,000 crashes involving passenger vehicles towing trailers occurred in 2004 in the US, jumping nearly 20 percent from the previous year.

In 2006, Master Lock did their annual study on towing safety to see how many Americans tow their cargo correctly. The study, Towing Troubles included responses from trailer owners across the country and found that while the majority of trailer owners believe they know what they're doing when it comes to towing, most were lacking the proper education. Master Lock reported that 70 percent of trailer owners did not fully know the correct way to tow their cargo.

An important factor in towing safety is tongue weight, the weight with which the trailer presses down on the tow vehicle's hitch. Insufficient tongue weight can cause the trailer to sway back and forth when towed. Too much tongue weight can cause problems with the tow vehicle.



II. MOTIVATION OF WORK

Towing of cars and trucks is a unique in industry. Tow truck vehicles are most often to use in industry these days.

The main aim of our project is to design and develop car towing machine which is helpful shift the car from one place to another place.

Regular jack can only lift the car in same position but remote operated car towing machine can not only lift the vehicle but also it can shift the vehicle from one place to another place.

III. OBJECTIVES OF WORK

1) To reduce the efforts.
2) To move the vehicle easily from one place to another place.
3) Avoid traffic jam.

IV. SYSTEM REQUIREMENT:

Sr. No.	Component Details	Photo of purchased product
1	E-Bike Motor DC Motor 24V Speed 3300 rpm	

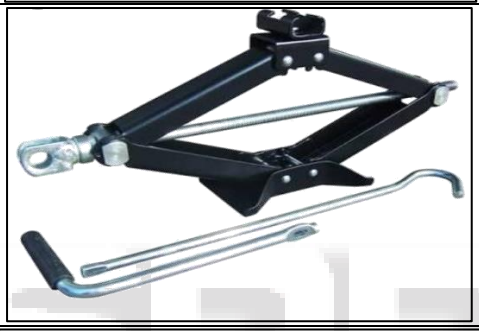
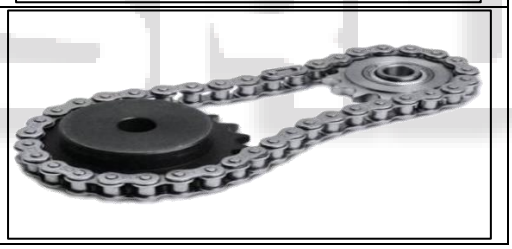
		
2	Wiper Motor 12V 30Nm	
3	Scissor Jack 2 Ton Capacity	
4	Chain and Sprocket	

Table 1: Specifications of the components used

V. CONCLUSION

The hydraulic scissor lift was simple in use. It can also lift heavier loads. Material handling and providing comfort to the operator was our main motivation behind the developing this lift. With such design of scissor lift, the complexities in a design and fabrication time was reduced. But the limitation of this lift is high initial cost. The analysis on ANSYS has also shown that the design was safe under certain accepted parameters. In this paper we carried out detailed analysis of scissor mechanism links against bending and buckling failure and also focused on various design aspects. In this, lift was only capable of lifting the weight up to 2000kg at elevation 2m with minimum effort.

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