



The All-Purpose Bicycle

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Abstract-

Because of its classic but distinctive design, a multi-work tricycle will dominate the cycling industry in the years to come. Tricycles, often called trikes, are used for short trips in both urban and rural settings. The cost is lower, and it's also more comfortable. Typically, it is mammals that take the wheel. Also, using antiquated tricycles for loading and unloading goods is a viable option. One idea that the designers have come up with is both lightweight and space-efficient. You may also think about pedalling the back wheel. A Deltarike, with a single front wheel and two rear wheels, was the first concept for a tricycle. Turning at high speeds was a challenge for this design. Thanks to its low centre of gravity and lack of care, it is quite stable. Because it values economy and space, this tricycle system is strong and durable. First things first: check that the tricycle can support the riders and is large enough to avoid accidents. The roadways are not designed to accommodate motorcycles with very huge frames. Tyre slippage and rollover incidents are more likely to occur on standard tricycles and autos because of how unsteady they are in bends. Adding a lowering mechanism to three-wheel vehicles might potentially decrease the number of accidents caused by the slip-and-roll phenomena. Enhanced directional and dynamic stability, superior braking performance, and a more pleasant ride are all benefits of the tilting technology. A tricycle featuring a steering mechanism and a coil spring suspension system was constructed by our team. Our goal in designing the tilting mechanism in Solid works was to make it as simple, efficient, and scalable as possible. Attaching the tilting mechanism to the tricycle's mainframe is a breeze. We have included a coil spring suspension system into our concept

to improve traction, brake performance, passenger comfort, and safety without overly complicating the designs.

Keywords-Transit, Bicycle, Growth, and Stopping Power

INTRODUCTION

Two Frenchmen came up with the idea for the tricycle in 1789. It was a pedal-powered vehicle with three wheels. When it comes to social and economic infrastructure, most emerging countries rely on transportation. As a city grows in size and population, meeting the demands for passenger and commodities movement becomes more complex and difficult. Make a fresh design for a tricycle.

You won't find a more efficient tricycle than this one. A multiwork tricycle has several potential uses, one of which is carrying goods and passengers. The purpose of a tricycle dictates the optimal size for it. Its construction is based on mild steel. Commute, exercise, and retail therapy are all possible uses. The name "tadpole trike" describes this kind of tricycle, which has a front wheel and a rear wheel. First, you may make additional space by expanding the tricycle's backshaft; second, you can lighten your load by removing the front wheels. Helpful and simple to use, it is great. The power for the tricycle project comes entirely from the riders' own muscles. It is incredibly sturdy and easy to use, and I adore it. Modern engineering allows for an integrated lock basket to hold up to 60 kg. Its stability, low centre of gravity, and minimal maintenance requirements set it apart from competing tricycles.



Fig-1 multiwork trike

1.1 NORMAL TRIKE

It has three wheels and resembles a keatadpole or delta; the configuration may be one front wheel and two rear wheels, or one front wheel and one rear. The delta trike differs from the tadpole trike in that it has three wheels instead of two, as seen in Figure. Compared to tadpole turbines, delta

turbines are more easier to manoeuvre due to their enormous turning radius. The turning radius is proportional to the wheelbase. Tadpoles, because to their bigger centres of gravity, are better equipped to weather trade strikes. Building a tadpole tricycle is also more easier than a delta trike.



Fig-2 Deltatrike & Tadpole trike

1.2 TILTING TRIKE

A tricycle is a three-wheeled vehicle that can tilt like a motorbike or moped, which is a great manoeuvre for corners. The tilting feature offers superior stability compared to a regular tricycle. Alewis-bone suspension

system with a joint-shaft base at an angle is similar in construction to the tilting mechanism. It simplifies construction, makes the ride more pleasant on tyres, and improves braking performance owing to more wheels on the front side.



Fig-3 Tilting trike



2. PROBLEMANALYSIS

2.1 MORESPACE

In the available tricycle the space is not more to transport extra luggage and goods.

Then make a different type of tricycle for more spacing and more stable.



Fig-4 Morespace

2.2 LARGERTURNINGRADIUS

The centrifugal force and the vehicle's tilting system increase the inner wheel and the vehicle's chances of rolling out of control while the vehicle is

turning at a speed of 30 kmph. Larger turning radius is necessary to prevent this issue, however it is restricted to the set speed limit for this tricycle.

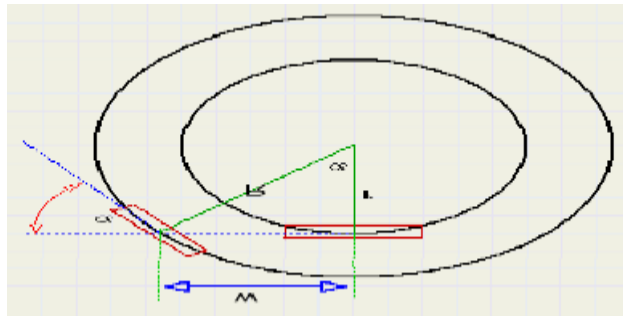


Fig-5 Turning radius with or without tilting

3. METHODOLOGY

The rear wheel of a tricycle may expand thanks to the two sets of gears that are mounted on one axle. Out of the three, this is the one.

For stability, the centre of gravity's height shouldn't exceed half of the track width

and less than the distance to the front axle.

3. With the centre of gravity located at the front, the vehicle will be the most stable at all speeds and have the maximum turning radius.



4. DESIGN

The tilting trike's mechanism has been designed with the tadpole type in mind due to its simplicity, larger cargo capacity, and superior stability compared to the delta type. The first stage in building a tricycle is to determine the track width, wheelbase, and chain system for shifting the back wheel. Because of the 1230 mm wheelbase, the tilting

mechanism on the motorbike was misaligned. At the tail end of 2017, inspiration for the multiwork tricycle emerged from the crossover bike concept. The goal of these investigations is to find a sustainable transportation alternative to cars. Suspension tricycles and convertible bikes are available as accessories for several bike types.



Fig-6 Designing

5. MACHINING OPERATIONS Milling
Turning and Phasing Drilling,
Boring. Welding (MIG). Screw
Thread cutting.

6. OBJECTIVE

The main objective of this project is to design a tricycle that can be used for transportation. The tricycle will have improved stability, comfort, braking, and performance, and it will work faithfully under completely different operating conditions. The goal is to decrease the value of the tricycle and make it easier to ride by using double gears. The main purpose of this tricycle is to provide more spacing.

7. WORKING PROCESS

A common propulsion mechanism used by tricycles consists of a pedalonacrank that drives a crank gear connected to sprockets by a chain, which in turn drives the rear wheel of the bike.

- With just one easy motion and no tools at all, you can fold the rear wheel of the multiwork trike and store it outdoors.
 - It frees up room below the saddle for baggage loads.
 - And thus, depending on the application, separates the front and rear wheels.
- There is no better way to go about than the multiwork trike. Lifecycle of software components
- 8.1.1 MANAGEMENT



An element of the machine that reduces friction and relative motion between the shafts is the appearing. Many bearings facilitate the required motion to an extreme degree by, for instance, decreasing friction due to relative motion. When classifying bearings generally, factors such as the direction of the assessment, the kind of operation, and the allowable emotions must be considered.

8.1.1 TYPES OF BEARINGS • Ball bearing, roller bearing, jewel bearing, fluid bearing, magnetic bearing, flexure bearing... 8.1.1 Different forms of bearing 8.2. Suspension System

Shock absorbers and dampers are standard components of most conventional suspensions, used to reduce the force of shocks and passively absorb impacts. A mechanical device called a coil spring is often used to store energy and maintain a force between two surfaces that come into contact with one another. The supple material may be stretched into a helix shape and then compressed back to its original length when not in use.

Cycling tire 8.3 A certain kind of tire may be mounted on a bicycle's wheel. Not only that, any vehicle may utilise them. The tyres of a bicycle provide most of the forces needed for riding, including the friction and suspension forces, the lateral forces for turning and reconciliation, and the longitudinal forces for going ahead and stopping.

- Conveniently portable.
 - Small in stature. Easy to understand and add on to.
 - Mechanically simple chains and gears.
- A tricycle offers more stability than a

standard bike with two wheels. My firm is called Ithas Morespace. The due-to-tilting mechanism ensures that it is safe to turn. Area 10: Implementation • It's used in the field for everyday people to drive, for pavement driving around campus. For transporting small boxes weighing about 60 kg, it is the most practical option. It has potential for regular transportation, meeting people's basic requirements, and transporting commodities that don't need fuel.

11. Important Safety Information • Must be handled with extreme caution. One possible danger is to utilise your muscles too much. The basket should hold sixty kilogrammes.

Keep your speed up to around 20 km/h.

CONCLUSION

We used chain and gear systems to run this tricycle, making it the most practical and cost-effective solution for our project. You can get the materials needed to build this tricycle just about anywhere. Getting about town is when this trike really shines. Stylish, uncomplicated, and wonderfully cozy—that is what it is. These tricycles are great since they don't need a lot of physical effort to ride. In comparison to other bicycle options, the tricycle is more budget-friendly. That being said, more research into the most comfortable and functional hand cycle designs for different types of riders is necessary. Not only should the interior space be optimised to assure excellent mobility, but users' overall work capacity should be maximised and vehicle



mechanical loss should be further reduced. The current uptick in manufacturing of crank-propelled cycles in industrialised countries has the potential to assist a wide range of individuals, not limited to young and athletic tricycle riders.

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