



# Review Paper on Kinetic Energy Storage Mechanism in Bicycle

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**Abstract:** In our daily life we observed various mechanism, techniques or assemblies which cater our need that helps us in reducing the effort and the time consumed for performing that operation.

Today's world is of the fast and rapid process. Time has become as anything else. Every wants to save time and effort by investing some newer techniques mechanisms etc. and implement them in the daily life.

In our paper we have tried to focus on the minimization of human effort and energy with single stroke of lever.

Keyword: Mechanism, Stroke

## I. INTRODUCTION

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Today's world is of the fast and rapid process. Time has become as anything else. Everybody want to save time and effort by inventing some newer techniques mechanism etc. and implement them in the daily life.

In our project we have tried to focus on the minimization of human effort and energy with a single stroke of lever.

We are working on project "ENERGY STORAGE MECHANISM IN BICYCLE" which is based on rack and pinion mechanism which stores the potential energy in spring with the help of lever. The potential energy stored in the spring is converted into kinetic energy when the lever is released.

The main aim of this project is to store the unused energy, while pedalling in reverse direction and this unused energy can be use when more effort are required to drive the bicycle. This mechanism based on rack and pinion arrangement bicycle. It is attached to rear wheel bicycle. In this mechanism clutch arrangement is use for engage and disengaging spring use for to store energy.



Fig1: Kinetic Energy Storage Mechanism In Bicycle

## II. LITERATURE SURVEY

[1] During the study of our project name "Design Of Energy Storage Mechanism In Bicycle", we studied about various energy storage mechanism.

[2] The bike uses a spinning flywheel to recover energy lost during breaking so it can be later reclaimed to boost speed. A flywheel can temporarily store the kinetic energy from the bicycle when the rider need to slow down, according to von stein. The energy store in the flywheel can be used to bring the cyclist backup to cruising speed. In this way the cyclist recovers the energy normally lost during breaking. In addition to increased energy efficiency,

the flywheel-equipped bicycle is more fun to ride since the rider has the ability to boost speed, he adds.

[3] The flywheel is driven through a continuously variable transmission in the rear wheel. During charge, the transmission is shifted to increase the ratio of flywheel speed to bike speed. During boost, it's shifted to decrease the ratio of flywheel speed to bike speed. The rider can charge the flywheel when slowing or descending a hill and boost the bike when accelerating or climbing a hill. The flywheel increases maximum acceleration and nets 10 percent pedal energy savings during a ride where speed are between 20 and 24 km/hr

[4] The car uses a coil spring to recover the energy lost during braking so it can be later reclaimed to take initial boost speed. The coil spring temporarily store the kinetic energy from the car when the driver needs to slowdown. The energy stored in the coil spring can be used to bring the drive back up to driving speed .In addition to increased energy efficiency, the coil spring equipped car is more fun to ride since the driver has the ability to boost speed.

[5] When the clutch is released the coil spring is unwound which release the kinetic energy store in it to the wheel of the car and gives the starting torque to the car.

### III. OBJECTIVES OF THE PRESENT DESIGN

- This mechanism save the human effort while cycling on the hill reduced the time for performing operation.
- Simple in construction hence easy in maintenance
- It required less space Number of working part is less.
- Therefore cost of cycle is less.
- This mechanism is fully eco-friendly.

### III. WORKING PRINCIPLE

While riding the bicycle, we pedal in reverse direction that energy to pedal in reverse direction is lost in normal bicycle.

In our mechanism that energy is store with the help of spring placed in the cylinder with rack mounted on the cylinder.

The spur gear is mounted on the same shaft of that pinion. When the pinion moves the rack in downward direction, the springs placed in the cylinder get compressed. This energy the form of potential energy

in the spring. This energy is locked with the help of a lever engaged with the pinion.

### V. CONCLUSION

Energy storage mechanism will store the potential energy of human efforts pedalling in reverse direction. When we ride on the inclined road we required more efforts to the bicycle than that or normal or plane road. At that condition when the lever is disengaged, the stored potential energy is released which get converted into kinetic energy and supplied to the rear wheel with the help of chain drive transmission where the linear motion of the spring is converted into rotary motion by the rack and pinion.

The potential energy stored in the spring is first transmitted to the rack and pinion, where the spur gear mounted parallel to the pinion on the same shaft that of the pinion also rotate with the same pinion. The spur gear is connected to the free wheel of the bicycle by a chain arrangement. This spur gear is rotates the free wheel which transmits the energy to the rear wheel sprocket. Then the energy is finally supplied to the wheel which rotates in the forward motion as that of the bicycle is moving.

Thus the energy stored in the spring is supplied and the bicycle is displaced from one position to another position.

In steady position or give boost when the bicycle is in motion.

### IV. DISCUSSION

Proper selection of spring and proper selection of gear ratio for increasing the storage of energy is possible.

Reduction in mechanism weight is possible by alternate use of material. There is any another mechanism where the energy is saved in forward motion also the weight carrying capacity can be increased and increase in efficiency of bicycle is possible.

The efforts required to pedal is same as the required will pedaling normally. Thus, it is recommended that the energy storage mechanism will prove very much beneficial for worker, common people using bicycle as there transport vehicle

### REFERENCES

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