



Chain tension monitoring system

Motorcycle drive chain kit real-time detection for failures



Universidad Tecnológica de Pereira

Target Markets / Potential Applications

- Motorcycle manufacturers
- Circulating chain vehicles
- Chain machinery industry

IP Status

Patent Pending (CO)

Offer: Worldwide exclusive license to all potential application

Systems for detecting the tension in drive chain motorcycles and guiding the user for maintenance.

Inventors at *Universidad Tecnológica de Pereira* (UTP) have developed a system for detecting motorcycles' tension in the drive chain. The system informs the user when chain tension must be fixed. The tension chain must be well configured to reduce the crash risk common in motorcycle users.

Potential Benefits



Higher security



Higher reliability



Reduce maintenance and reparation cost



Accident prevention



The need

Mechanical transmission vehicles have a chain or circulating belt that lacks tension due to lifetime use, broken parts of the drive kit, or simple parts misadjustment. Loss of drive chain tension is a top casualty for motorcycle drivers. When the chain loses contact with the sprocket, it can cause the chain to come off the sprocket teeth and therefore, the rear wheel will lose traction. This issue can cause the loss of control of the motorcycle by the user and, consequently, an accident.

The amateur driver cannot easily detect the drive chain tension. No systems were found in the literature to sense the drive chain tension in real-time. Furthermore, with a system informing the user of the drive chain tension losses in order to the user can make adjustments themselves.

The solution

UTP inventors address the need to develop a motorcycle chain tension sensor which comprises a support fixedly connected to the rear swingarm of a motorcycle. The support includes an angular position sensor that detects tension in a chain through a lever connected at the other end to a bearing support arranged by a bearing that comes into contact with the chain. A torsion spring in the bracket actuates the pivoted single lever so that the bearing is permanently connected to the chain.

When the tension in the chain decreases, the lever actuates the angular position sensor. A processor detects the change in the signal output from the angular position sensor and sends a signal to an indicator when the angle of rotation of the angular position sensor exceeds a set value.

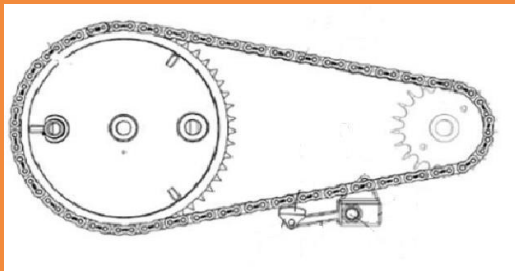


Fig. 1

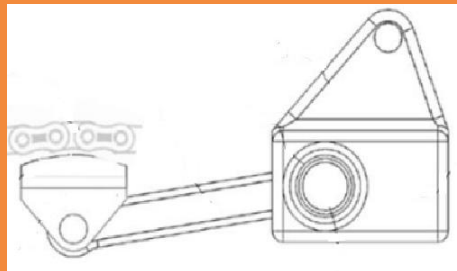


Fig. 2

Fig. 1 illustrates the tension sensor system of a motorcycle chain, including the final drive system with two sprockets and a chain.

Fig. 2 illustrates the tension sensor system of a motorcycle chain.

Inventors



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Mechanical Engineer, and Master's Degree in Aeronautical Engineering with experience in mechanical and aeronautical design and assembly, corrosion and metal coatings, thermal and photovoltaic solar energy

Invention Readiness Level™ (IRL)

TRL 5 - Uncontrolled Prototype Level

A full-scale prototype of the technology has been fabricated.

CRL 1 - Level of the first business hypotheses raised

A preliminary business model hypothesis has been proposed.

IPRL 3 - Patent filing for developed markets

Learn more about IRL

Other relevant information



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