

Airless wheels for mountain bikes may ditch patches and pumps (w/ Video)

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(Phys.org)—A Colorado company sees the future of tires on mountain bikes, and they are puncture-proof and airless. Britek Tire and Rubber also envisions mountain-bike riders as being in a far happier mood when they learn they can leave their patch kits and pumps at home. For several years the company has focused its prototyping efforts toward airless tires

for automobiles but it is now turning its attention to working on airless tires for mountain bikes. Company founder and designer Brian Russell has several patents and more pending for his dream project, the Energy Return Wheel (ERW). In addition to not having to worry about punctures, he says people will find that ERW can deliver better efficiency.

"The ERW is not a competitor to hybrid, electric, hydrogen, ethanol, biodiesel and other fuel saving technologies," according to the company. "Quite the contrary, because it will only make vehicles using these technologies more efficient."

The company has been around since 2002 with a goal "to reinvent the wheel." Russell explained why he calls his concept "Energy Return Wheel." He said that the physics behind the ERW is like that of a garage door.

"Even though a garage door weighs several hundred pounds, when it is sprung by the use of springs, it becomes de-weighted. So when you lift it, it only feels like it weighs a few pounds. In summary, an object that is sprung requires dramatically less energy to move than an unsprung object. In addition to the use of springs, an object can be sprung by stretching rubber. Scientists call this "Elastic Potential Energy."

At the center of the ERW is a layer of rubber. Via rods that are adjustable, the rubber is stretched, which stores elastic potential energy in the [wheel](#). He said the ERW thereby is turned into "a 360-degree slingshot that retains energy."

When the ERW is attached to an object, that object becomes sprung. "Just like a garage door that is sprung, the attached object becomes de-weighted and requires dramatically less energy to move than an unsprung object. Less [energy](#) to move means an increase in fuel efficiency."

A car riding on his wheels would be "like riding on four slingshots," according to the designer. The Slingshot Effect could improve acceleration, and since the wheels could de-weight the car, he said, the rider would also see improvements in braking performance.

He also promoted the ERW's inner elastic layer construct, which provides the cushioning that air provides in traditional tires. He said that initial tests show that the elastic layer takes away vibration.

According to the company site, Britek Tire and Rubber is looking for sponsors and companies wanting to license its product in the United States.

More information: www.energyreturnwheel.com/Home.aspx

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