ENSTA BRETAGNE

SELF-ADAPTING WHEELS

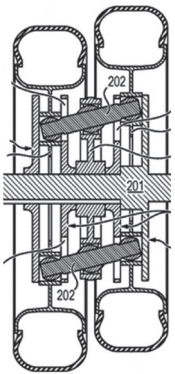
for heavy vehicles

Patent pending,
application no. FR2111969 - EP22206198.8

CONTEXT

A conventional dual-wheel system rigidly interconnects the wheels mounted in parallel, on the same axis of rotation. It decreases the contact pressure with the ground on even terrains. On uneven, rough or obstructed terrains, not all the wheels in a dual-wheel system are in contact with the terrain, resulting in a high contact pressure, which limits the usability of the dual-wheel system.

THE INVENTION



The wheels of the dual system can move relative to each other. When one wheel passes over an obstacle, the second wheel remains in contact with the ground. The load and the transmitted power are thus equally distributed on both wheels, and the vertical displacement of the vehicle chassis is reduced by half.
A device providing stiffness and damping realigns the wheels after obstacle clearance.

APPLICATION

Heavy vehicle

USE

The self-adjusting wheels allow improvement of the operation of the dual-wheel system for heavy vehicles. Depending on the user's expectations, they can replace the use of extra-large or low pressure wheels. They may also be the solution to consider before using caterpillar tracks.

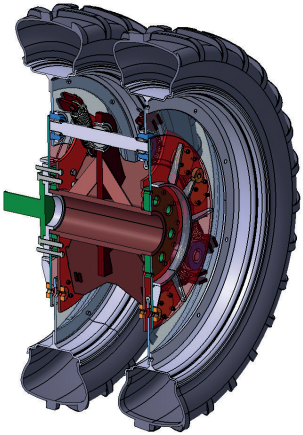
PROTOTYPE'S CHARACTERISTICS

Self-adapting wheels can be fitted to any type of heavy vehicle: **work site, agricultural, mining, forestry and military machinery**. In the test phase, the prototype was installed on a 155 hp agricultural tractor.

- The prototype was fitted in place of the existing wheels
- Wheel diameter: 1.8 m
- Tire references: 340/85R48
- Obstacle clearance ability with both wheels kept in contact with the ground: 18 cm (generally speaking, about 10% of the wheel diameter)
- Total width of the dual-wheel system: 835 mm
- Simple, robust design using standard components and materials
- Mechanically welded, easily industrialized construction

6 GENERIC ADVANTAGES

1. Increases the load capacity and the torque able to be transmitted to the wheel.
2. Uses standard and economical tires and rims.
3. Increases the life of tires and limits the associated pollution.
4. Improves obstacle clearance capability.
5. Limits soil compaction and preserves soil fertilization.
6. Increases vehicle stability and comfort.



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CONTACTS

Yannick ARGOUARC'H
Co-inventor, professor
yannick.argouarc_h@ensta-bretagne.fr
Tel. : +33 (0)2.98.34.88.38

Caroline PENGAM
Head of Legal Affairs and Valuation
caroline.pengam@ensta-bretagne.fr
Tel. : +33 (0)2.98.34.87.99

PATENTS

Patent pending, application
no. FR2111969 - EP22206198.8
• Applicant: ÉCOLE NATIONALE SUPÉRIEURE DE TECHNIQUES AVANCÉES DE BRETAGNE
• Inventors: Yannick Argouarc'h and Hervé Trebaol

Refer to the dedicated web page

ENSTA Bretagne
2 rue François Verny
29806 Brest Cedex 9
www.ensta-bretagne.fr