CLAIMS

1. Variable-diameter wheel (1) comprising:

- at least one rim or hub (11) having a predefined diameter, to which at least one drive axle (14) of the wheel (1) is connected;
- at least one outer surface, external to the hub (11), having a diameter greater than the diameter of said hub (11);

characterized in that it comprises at least one diameter variation mechanism (3) secured to said axle (14) and adapted to vary the actual diameter of said wheel (1) according to the torque applied to the drive axle (14) by at least one propulsion system.

2. Wheel according to claim 1, wherein the diameter variation mechanism (3) is passive and can take at least two operating configurations:

- an idle configuration, in which said diameter-variation mechanism (3) is substantially incorporated within the outer diameter of the outer surface of the wheel (1);
- an active configuration, in which said mechanism (3) increases the actual diameter of the wheel (1) by bringing at least a portion of the same mechanism (3) beyond the outer diameter of the outer surface of the wheel (1).

3. Wheel according to claim 2, wherein said wheel (1) is applied to a vehicle in which the outer diameter of the outer surface of said wheel is defined by at least one tread (12) of at least one tyre (10) mounted on said hub (11).

4. Wheel according to claim 3, wherein the variation in the torque applied to the axle (14) due to the wheel (1) being obstructed or blocked by an obstacle (O) brings the diameter-variation mechanism (3) into the active operating configuration.

5. Wheel according to claim 4, wherein said diameter-variation mechanism (3) comprises:

- one or more contact portions (31) adapted to come in contact with the ground where the vehicle is placed by protruding from the diameter of the tread (12) of the tyre (10) when the diameter-variation mechanism (3) switches to the active operating configuration;
- one or more sliding rods (32) adapted to slide radially from the wheel (1), each connected to at least one contact portion (31);
- at least one actuation device (33), comprised inside the hub (11) and connected to the axle (14) of the wheel (1), adapted to slide said rods (32) by acting upon one or more kinematic devices (22), each connected to at least one rod (32);
- at least one control element adapted to control the actuation of said diameter-variation mechanism (3) by allowing it to switch to the active configuration when the drive torque applied to the axle (14) by the propulsion system exceeds a predefined limit threshold (T1).

6. Wheel according to claim 5, wherein the rim (11) comprises at least one hollow structure (110) into which the diameter-variation mechanism (3) is substantially incorporated.

7. Wheel according to claim 6, wherein inside of said hollow structure at least one guide insert (21) is included which comprises at least one first threaded portion (211) and which is adapted to guide the actuation device (33) as the diameter-variation mechanism (3) switches between the various operating configurations.

8. Wheel according to claim 5, wherein said contact portions (31), which are at least partially incorporated within the tread (12) of the tyre (10), have a rectangular shape, and their width is at most equal to the width of the tread (12), with such an inclination as to generate a step with a following contact portion (31').

9. Wheel according to claim 5, wherein:

- the kinematic device (22) is a wheel with a very small diameter connected to the sliding rod (32);
- the centrifugal motion of each sliding rod (32), which crosses both the hub (11) and the tyre (10), is countered by at least one elastic means, which prevents said rods (32) from sliding during the normal rotation of the wheel (1).

10. Wheel according to claim 5, wherein said actuation device (33) comprises:

- a second threaded portion (331), which can be coupled to the first threaded portion (211) through threads following the main direction of rotation of the rotary axle (14);
- at least one tapered portion (332), which is acted upon by the kinematic device (22);

- at least one fixing portion (333), to which the control element is connected.

11. Wheel according to claim 10, wherein said control element is an elastic element with an elastic constant defined according to the threshold (T1) and to the power of the propulsion system.

CLAIMS

1. Variable-diameter wheel (1) comprising:

- at least one rim or hub (11) having a predefined diameter, to which at least one drive axle (14) of the wheel (1) is connected;
- at least one outer surface, external to the hub (11), having a diameter greater than the diameter of said hub (11);

characterized in that it comprises at least one diameter variation mechanism (3) secured to said axle (14) and adapted to vary the actual diameter of said wheel (1) according to the torque applied to the drive axle (14) by at least one propulsion system.

2. Wheel according to claim 1, wherein the diameter variation mechanism (3) is passive and can take at least two operating configurations:

- an idle configuration, in which said diameter-variation mechanism (3) is substantially incorporated within the outer diameter of the outer surface of the wheel (1);
- an active configuration, in which said mechanism (3) increases the actual diameter of the wheel (1) by bringing at least a portion of the same mechanism (3) beyond the outer diameter of the outer surface of the wheel (1).

3. Wheel according to claim 2, wherein said wheel (1) is applied to a vehicle in which the outer diameter of the outer surface of said wheel is defined by at least one tread (12) of at least one tyre (10) mounted on said hub (11).

4. Wheel according to claim 3, wherein the variation in the torque applied to the axle (14) due to the wheel (1) being obstructed or blocked by an obstacle (O) brings the diameter-variation mechanism (3) into the active operating configuration.

5. Wheel according to claim 4, wherein said diameter-variation mechanism (3) comprises:

- one or more contact portions (31) adapted to come in contact with the ground where the vehicle is placed by protruding from the diameter of the tread (12) of the tyre (10) when the diameter-variation mechanism (3) switches to the active operating configuration;
- one or more sliding rods (32) adapted to slide radially from the wheel (1), each connected to at least one contact portion (31);
- at least one actuation device (33), comprised inside the hub (11) and connected to the axle (14) of the wheel (1), adapted to slide said rods (32) by acting upon one or more kinematic devices (22), each connected to at least one rod (32);
- at least one control element adapted to control the actuation of said diameter-variation mechanism (3) by allowing it to switch to the active configuration when the drive torque applied to the axle (14) by the propulsion system exceeds a predefined limit threshold (T1).

6. Wheel according to claim 5, wherein the rim (11) comprises at least one hollow structure (110) into which the diameter-variation mechanism (3) is substantially incorporated.

7. Wheel according to claim 6, wherein inside of said hollow structure at least one guide insert (21) is included which comprises at least one first threaded portion (211) and which is adapted to guide the actuation device (33) as the diameter-variation mechanism (3) switches between the various operating configurations.

8. Wheel according to claim 5, wherein said contact portions (31), which are at least partially incorporated within the tread (12) of the tyre (10), have a rectangular shape, and their width is at most equal to the width of the tread (12), with such an inclination as to generate a step with a following contact portion (31').

9. Wheel according to claim 5, wherein:

- the kinematic device (22) is a wheel with a very small diameter connected to the sliding rod (32);
- the centrifugal motion of each sliding rod (32), which crosses both the hub (11) and the tyre (10), is countered by at least one elastic means, which prevents said rods (32) from sliding during the normal rotation of the wheel (1).

10. Wheel according to claim 5, wherein said actuation device (33) comprises:

- a second threaded portion (331), which can be coupled to the first threaded portion (211) through threads following the main direction of rotation of the rotary axle (14);
- at least one tapered portion (332), which is acted upon by the kinematic device (22);

- at least one fixing portion (333), to which the control element is connected.

11. Wheel according to claim 10, wherein said control element is an elastic element with an elastic constant defined according to the threshold (T1) and to the power of the propulsion system.