A traction device (5), e.g. an elastomer shroud or casing, having moulded treads or ribs (20). The device (5) encapsulates a wheel or tyre (110) of a vehicle and is fixed in place by metal locking hooks (125a, 125b) mounted on hinge pin (130a) and engageable with pin (130b). Tension and grip is applied to the traction device (5) by inflating a bladder (131) positioned between the device (5) and wheel/tyre (110). Air is introduced via an air valve (80) through a communication duct (60). The traction device (5) essentially becomes an integral member with the vehicle wheel or tyre, enhancing the traction of the drive wheels.
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TRACTION DEVICE FOR VEHICLE TYRE

This invention relates to a traction device for wheel driven vehicles.

Wheel driven vehicles suffer major problems due to lack of traction from the drive wheels when snow, ice, and/or mud conditions are encountered. Even four wheel drive vehicles have difficulty handling slippery conditions, particularly with low profile treaded tyres.

It is an object of the present invention to obviate or mitigate the aforementioned disadvantages in the prior art.

According to the first aspect of the present invention there is provided a traction device comprising a body capable of being placed in intimate contact with an outer surface of a wheel or tyre and being retained thereupon by retaining means.

The body may comprise a flexible strip having first and second ends.

The retaining means may be provided at or near the first and second ends so as to retain the ends in association with one another.

The retaining means may comprise at least one hinged hook retained at one of the ends. The/each hook may be engageable with at least one pin.

An inflatable bladder may be carried on an inner surface of the body.

The bladder may be retained at or near one of the ends of the body.

An outer surface of the device may carry tread and/or studs.

The body may be substantially formed from an elastomer/rubber.

The body may be reinforced with textile threads and/or metal strips/wires.

The body may also provide longitudinal wall portion(s), which, in use, intimately contacts wall(s) of the tyre/wheel.
According to a second aspect of the present invention there is provided a wheel/tyre having a traction device according to the first aspect fitted thereto.

According to a third aspect of the present invention there is provided a method of providing additional traction to a wheel/tyre of a vehicle comprising the steps of:

- providing a traction device according to the first aspect;
- positioning said traction device adjacent said wheel;
- driving said vehicle onto said device;
- retaining said device around said wheel by means of said retaining means; and
- optionally inflating said bladder (when provided).

A traction device may be so fitted to each wheel/tyre of the vehicle.

Alternatively a traction device may be so fitted to each driven wheel of the vehicle.

According to a fourth aspect of the present invention there is provided a moulded elastomer shroud that encapsulates a vehicle drive wheel, or tyre, providing a greatly enhanced gripping profile that will provide far superior traction in slippery driving conditions.

The shroud consists of an elastomer member that is shaped to follow the approximate contour of the vehicle tyre or wheel.

The two ends of the shroud over-lap and are fastened together by way of hinged metal hooks.

The shroud is tightened by means of an inflatable bladder incorporated between the shroud and the tyre or wheel.

The bladder is inflated by way of an air valve integrated in one of the hinge pins that support the metal lock hooks.
The bladder can be inflated by means of an air pump, air bottle, or a jumper hose that will permit air to be transferred from the vehicle's air inflated tyre, as only a small volume is required for full inflation to be achieved.

The tread or traction rib can be moulded in various shapes to give the most advantageous performance, i.e. 'V' shaped, square shaped, and can also include metal studs particularly for dealing with icy surfaces.

The inner surface of the shroud, (i.e. that coming into contact with tyre or wheel), may be provided with a ribbed, or rough surface to prevent slippage between the two surfaces.

The shroud can be made to fit any type or size of tyre or wheel.

Installation of the shroud is accomplished by simply driving onto the shroud, position the incorporated bladder beneath the overlap, and fold down the locking hooks over the lock bar.

Inflating the bladder with pressurized air, puts the locking hooks in tension and fixes the shroud to the tyre or wheel to provide a high traction surface.

An embodiment of the invention will now be described by way of example with reference to the accompanying drawings, in which:

- Figure 1 shows a side view of a traction device according to an embodiment of the present invention mounted on a typical motor tyre;

- Figure 2 shows a partial cross sectional end view of the traction device of Figure 1 mounted on the motor tyre;

- Figure 3 shows an end view to an enlarged scale of a locking mechanism and inflatable bladder arrangement comprising part of the traction device of Figure 1;

- Figure 4 shows a top view to an enlarged scale of
the locking mechanism and an air valve
arrangement of the traction device of
Figure 1; and

Figure 5 shows a side view of the traction device
of Figure 1 prior to attachment to a
vehicle wheel or tyre.

Referring to Figures 1 to 5, there is illustrated a
traction device, generally designated 5, according to an
embodiment of the present invention.

The traction device 5 comprises a body 100 capable
of being placed in intimate contact with an outer
surface 105 of a wheel or tyre 110 and being retained
thereupon by retaining means. The body 100 comprises a
flexible strip having first and second ends 115, 120.

The retaining means are provided at the first and
second ends 115, 120 so as to retain the ends 115, 120
in association with one another. The retaining means
comprise two hinged hooks 125a, 125b retained at one of
the ends 115 and pivotable about a pin 130a. The/each
hook 125a, 125b is releasably engageable with a pin
130b.

An inflatable bladder 131 is carried on an inner
surface of the body 13. The bladder 131 is retained at
or near one of the ends 115, 120 of the body 100.

An outer surface of the device 5 carries tread 135
and/or studs 140.

The body 100, 13 is substantially formed from an
eLASTOMER/RUBBER and may be reinforced with textile
threads and/or metal strips/wires.

In this embodiment the body 100, 13 is provided
with longitudinal wall portions 145, which, in use,
intimately contacts side walls of the tyre/wheel 110.

Figure 1 shows the traction device 5 fitted to a
wheel or tyre 110 by means of a locking device,
consisting of the two hinge pins 130a, 130b upon which
are mounted the two metal hooks 125a, 125b for
connecting both ends 115, 120 together at an over-lap
point 70 of the shroud 10. Moulded onto the surface of the shroud 10 are the traction treads 20 at substantially evenly spaced intervals. The last traction tread at either end has the hinge pins 130a, 130b moulded or fitted into them. One of the hinge pins 130a, 130b is fitted with an air valve 80 that permits the passage of air to travel through an air duct 60 causing the inflatable bladder 131 to be inflated. This operation causes the traction device 5 to be put in tension against the metal hooks 125a, 125b and the wheel or tyre 110. The wheel or tyre 110, together with the tensioned traction device 5, now rotate as one. The traction device 5 is removed by releasing the air from the air valve 80 causing the bladder 131 to deflate.

This permits the metals hooks 125a, 125b to be released, and the traction device 5 can be removed. The bladder 131 can be inflated by various means, some of which can be, pressurised air bottles, air pumps, a jumper hose with fittings to permit air to be transferred from the vehicle tyre or tube, and passed into the traction device bladder.

In use, the traction device 5 can be fitted to a wheel/tyre 110 of a vehicle by the steps of:

- providing a traction device 5;
- positioning said traction device 5 adjacent said wheel/tyre 110;
- driving said vehicle onto said device 5;
- retaining said device 5 around said wheel/tyre 110 by means of said retaining means; and

optionally inflating said bladder 131.

The embodiment of the invention hereinbefore described is given by way of example only and is not meant to limit the scope of the invention in any way.
CLAIMS

1. A traction device comprising a body capable of being placed in intimate contact with an outer surface of a wheel or tyre and being retained thereupon by retaining means.

2. A traction device as claimed in claim 1, wherein the body comprises a flexible strip having first and second ends.

3. A traction device as claimed in claim 2, wherein the retaining means are provided at or near the first and second ends so as to retain the ends in association with one another.

4. A traction device as claimed in claim 3, wherein the retaining means comprise at least one hinged hook retained at one of the ends, the/each hook being engageable with at least one pin.

5. A traction device as claimed in any preceding claim, wherein an inflatable bladder is carried on an inner surface of the body.

6. A traction device as claimed in claim 5 when dependant on claim 2, wherein the bladder is retained at or near one of the ends of the body.

7. A traction device as claimed in any preceding claim, wherein an outer surface of the device carries tread and/or studs.

8. A traction device as claimed in any preceding claim, wherein the body is substantially formed from an elastomer/rubber.
9. A traction device as claimed in any preceding claim, wherein the body is reinforced with textile threads and/or metal strips/wires.

10. A traction device as claimed in any preceding claim, wherein the body also provides longitudinal wall portion(s), which, in use, intimately contacts wall(s) of the tyre/wheel.

11. A wheel/tyre having a traction device according to any of claims 1 to 10.

12. A method of providing additional traction to a wheel of a vehicle comprising the steps of:
   providing a traction device according to any of claims 1 to 10;
   positioning said traction device adjacent said wheel;
   driving said vehicle onto said device;
   retaining said device around said wheel by means of said retaining means; and
   optionally inflating said bladder.

13. A traction device comprising a wrap-around shroud or casing, to encapsulate a wheel or tyre tread area, with means of connecting both ends to each other and form a continuous surface, to include moulded elastomer treads or ribs to provide traction or grip, after being attached to the host wheel or tyre by means of hinged metal hooks and a bladder inflated by air or gas.

14. A traction device as claimed in claim 13, wherein the elastomer shroud fully covers the wheel or tyre surface contact area, and a portion of the walls.

15. A traction device as claimed in claims 13 or 14, wherein the shroud or casing supports moulded treads or
ribs which may contain metal studs for additional grip.

16. A traction device as claimed in claims 13 to 15, wherein the two ends are joined by way of hinged metal hooks that may be adjustable.

17. A traction device as claimed in claims 13 to 16, wherein the tensioning device is an inflatable bladder positioned between the shroud or casing, and the vehicle wheel or tyre.

18. A traction device as claimed in claims 13 to 17, wherein one hinge pin provides an air valve and communication duct for bladder inflation by air or gas.

19. A traction device as claimed in any of claims 13 to 18, wherein the shroud or casing ends over-lap, and the inner surface has a non slip or high friction surface.

20. A traction device as claimed in any of claims 13 to 19, wherein the inflatable bladder can be inflated by, air or gas, via an air pump, a compressed air or gas bottle, or a transfer hose that permits air to be transferred from the host tyre or tube, any alternative source.

21. A traction device substantially as hereinbefore described with reference to the accompanying drawings.

22. A wheel/tyre having a traction device substantially as hereinbefore described with reference to the accompanying drawings.

23. A method of providing additional traction to a wheel of a vehicle, as hereinbefore described with reference to the accompanying drawings.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 B60C27/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
IPC 6 B60C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Date of the actual completion of the international search: 21 April 1998

Date of mailing of the international search report: 29/04/1998

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Hageman, L
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