

608908
COMMONWEALTH OF AUSTRALIA

Patents Act 1952-1969

CONVENTION APPLICATION FOR A PATENT

(1) Here
Insert (in
full) Name
or Names of
Applicant or
Applicants,
followed by
Address (es).

XX (1) COMPAGNIE GENERALE DES ETABLISSEMENTS MICHELIN
We - MICHELIN & CIE
of 4 rue du Terrail, 63000 Clermont-Ferrand, France

(2) Here
Insert Title
of Invention.

hereby apply for the grant of a Patent for an invention entitled: (2)
TIRE RIM COMPRISING A BODY TO ALLOW TIRE TO ROLL IN A
DEFLATED CONDITION

(3) Here insert
number(s)
of basic
application(s)

which is described in the accompanying complete specification. This application is a
Convention application and is based on the application numbered (3)
8714895

(4) Here insert
Name of basic
Country or
Countries, and
basic date or
dates

for a patent or similar protection made in (4) France
on 26th October 1987

AMENDMENT ACCEPTED AND AMENDMENTS

ALLOWED 24.1.91

My
Our address for service is Messrs. Edwd. Waters & Sons, Patent Attorneys,
50 Queen Street, Melbourne, Victoria, Australia.

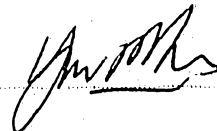
DATED this 24th day of October 1988

(5) Signa-
ture (s) of
Applicant (s)
or
Seal of
Company and
Signatures of
its Officers as
prescribed by
the Statutes of
Association.

(5)

COMPAGNIE GENERALE DES ETABLISSEMENTS
MICHELIN - MICHELIN & CIE

by



Stephen K. Plymin

Registered Patent Attorney

To:

THE COMMISSIONER OF PATENTS.

COMMONWEALTH OF AUSTRALIA

Patents Act 1952-1969

DECLARATION IN SUPPORT OF A CONVENTION
APPLICATION FOR A PATENT OR PATENT OF ADDITION

(1) Here
insert (in
full) Name of
Company.

In support of the Convention Application made by⁽¹⁾
COMPAGNIE GENERALE DES ETABLISSEMENTS MICHELIN -
MICHELIN & CIE

(hereinafter referred to as the applicant) for a Patent

(2) Here
insert title
of Invention.

for an invention entitled:⁽²⁾
TIRE RIM COMPRISING A BODY TO ALLOW TIRE TO ROLL IN A
DEFLATED CONDITION

(3) Here
insert full Name
and Address,
of Company
official
authorized
to make
declaration.

I, ⁽³⁾ MICHEL VILMANT
of 4 rue du Terrail, 63000 Clermont-Ferrand, France

do solemnly and sincerely declare as follows:

1. I am authorised by the applicant for the patent
to make this declaration on its behalf.

2. The basic application as defined by Section 141 of the Act was
made in⁽⁴⁾ France

on the 26th day of October 1987, by
COMPAGNIE GENERALE DES ETABLISSEMENTS MICHELIN - MICHELIN
on ~~XXXXXXX~~ ~~XXXXXX~~ ~~XXXXXXXXX~~ & CIE

(4) Here
insert basic
Country or
Countries
followed by
date or dates
and basic
Applicant or
Applicants.

(5) Here
insert (in
full) Name
and Address
of Actual
Inventor or
Inventors.

3. ⁽⁵⁾ JEAN-PIERRE POMPIER, Enval, 63530 Volvic, France

is/~~are~~ the actual inventor of the invention and the facts upon which the applicant
is entitled to make the application are as follow:

The applicant is the assignee of the said actual inventor

4. The basic application referred to in paragraph 2 of this Declaration
was the first application made in a Convention country in
respect of the invention the subject of the application.

DECLARED at Clermont Ferrand, France
this 8th day of September 1987.

(6) Signature.

(6)

To: THE COMMISSIONER OF PATENTS.

(12) PATENT ABRIDGMENT (11) Document No. AU-B-24194/88
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 608908

- (54) Title
TIRE RIM COMPRISING A BODY TO ALLOW TIRE TO ROLL IN A DEFLATED
CONDITION
- International Patent Classification(s)
(51)⁴ B60B 021/02 B60B 021/10 B60C 017/06
- (21) Application No. : 24194/88 (22) Application Date : 25.10.88
- (30) Priority Data
- (31) Number (32) Date (33) Country
87 14895 26.10.87 FR FRANCE
- (43) Publication Date : 27.04.89
- (44) Publication Date of Accepted Application : 18.04.91
- (71) Applicant(s)
COMPAGNIE GENERALE DES ETABLISSEMENTS MICHELIN - MICHELIN & CIE
- (72) Inventor(s)
JEAN-PIERRE POMPIER
- (74) Attorney or Agent
WATERMARK PATENT & TRADEMARK ATTORNEYS, Locked Bag 5, HAWTHORN VIC
3122
- (56) Prior Art Documents
US 3426821
GB 2160482
- (57) Claim 1. A rim for a tire, said tire being used with a body
which makes it possible to roll in a deflated
condition, said rim having a groove for receiving said
body , whose cross section has approximately a U shape,
the concavity of which is oriented radially outward, a
base portion of said U constituting a bottom portion of
said groove being approximately parallel to the axis of
rotation, said groove being axially delimited on
opposite sides thereof by lateral walls extending
radially outward relative to said bottom portion of
said groove, wherein said lateral walls each comprise
at least one undercut portion and an orifice for
achieving communication with atmospheric pressure is
provided in said groove, radially outward relative to
one of said undercut portions.

608908

Form 10

COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952-69

COMPLETE SPECIFICATION

(ORIGINAL)

Class

Int. Class

Application Number:

Lodged:

Complete Specification Lodged:

Accepted:

Published:

Priority :

Related Art :

Name of Applicant : COMPAGNIE GENERALE DES ETABLISSEMENTS MICHELIN - MICHELIN & CIE

Address of Applicant : 4 rue du Terrail, 63000 Clermont-Ferrand, France

Actual Inventor: JEAN-FIERRE POMPIER

Address for Service : EDWD. WATERS & SONS,
50 QUEEN STREET, MELBOURNE, AUSTRALIA, 3000.

Complete Specification for the invention entitled:

TIRE RIM COMPRISING A BODY TO ALLOW TIRE TO ROLL IN A
DEFLATED CONDITION

The following statement is a full description of this invention, including the best method of performing it known to : us

TITLE OF THE INVENTION

TIRE RIM COMPRISING A BODY TO
ALLOW TIRE TO ROLL IN A DEFLATED CONDITION

BACKGROUND OF THE INVENTION

Field of the Invention:

This invention relates to rims for tires specifically designed to achieve a safety unit comprising, besides the rim and tire, an approximately toroidal body of cellular rubber, intended to support the load in case of pressure loss of the tire.

Discussion of the Background:

Such safety devices are known from US Patent 3,426,821 which discloses the operating principle and describes the behavior of a cellular rubber body under the effect of centrifugal force. Such proposes putting the radially inside face of the body in communication with atmospheric pressure, while the inflation pressure acts on the radially outside face of this body. From this pressure difference a pressure directed radially inward results which the centrifugal force must compensate for before being able to separate the body from the rim well.

This arrangement proves insufficient for maintaining the body flat against the rim well, especially because of the high speeds of which passenger vehicles are now capable.

SUMMARY OF THE INVENTION

This invention aims at improving the anchoring of a body of cellular rubber, also called foam rubber, while preserving to the device in its entirety (i.e., rim, tire and support body)

a sufficient simplicity to reconcile the requirements of costs, ease in mounting and removal.

The solution rests on a modification of the profile of the rim making it possible to attain sufficient anchoring without it being necessary to resort to a greater complexity of the support body .

The rim according to the invention having a groove intended to receive a body , and whose meridian section has approximately a U shape whose concavity is oriented radially outward, the base of said U constituting the bottom of the groove being approximately parallel to the axis of rotation, said groove being axially delimited on both sides by lateral walls extending radially outward relative to the bottom of the groove, is characterized in that the lateral walls each comprise at least one undercut portion and in that an

orifice intended to achieve communication with atmospheric pressure is provided in said groove, radially inward relative to one of said undercuts.

BRIEF DESCRIPTION OF THE DRAWINGS

A more complete appreciation of the invention and many of the attendant advantages thereof will be readily obtained as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings, wherein:

Figure 1 shows a meridian section of a safety unit using a rim according to the present invention.

Figure 2 shows the details of said rim.

Figure 3 shows an alternate embodiment of said rim.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

There is shown a rim 1 on which is mounted tire 2 in Figure 1. Rim 1 is of the most common type for passenger vehicles, such being formed in a single piece and including a substantially symmetrical mounting well. This well constitutes groove 10 required by this invention. The general shape of the meridian section of said groove 10 is that of a U. Said rim 1 comprises, on both sides of said groove 10, a bead seat

4 limited axially outwardly by a rim edge 5. Bottom 101 of the groove (i.e., the base of the U) is approximately parallel to the axis of rotation of rim 1. On rim 1 is mounted a tire 1 and a body 3 of foam rubber, represented in continuous lines in the mounting position (i.e., the volume retracted under the influence of the inflation pressure, and body 3 flattened on bottom 101 of groove 10).

As is known from US Patent 3,426,821, there is a communication with atmospheric pressure to flatten body 3 on rim 1 by the effect of the difference of the pressure applied on radially inside face 31 of body 3 and on its radially outside face.

This communication is achieved here by an orifice 100 on each side of groove 10. Routing of the air to orifices 100 can be improved by any suitable arrangement, as, for example, striae on bottom of 101 of groove 10 or on radially inside face 31 of body 3.

Groove 10 is axially limited on both sides by two lateral walls 102. They extend radially outward. When groove 10 is constituted by the mounting well, said walls 102 are axially separated outward. This is unimportant for the embodiment of this invention. What is essential is to have, on each of these lateral walls 102, an undercut portion 11. For example, the latter is obtained by providing a boss 12 made on the same

principle as hump 13 axially maintaining bead 21 of tire 2.

Anchoring of body 3 therefore is obtained thanks to the fact that lateral wall 102 -- when moving radially inward along it -- goes axially outward at least at one point. Therefore it suffices to dimension body 3 so that the latter, being mounted on the rim and being under the effect of nominal pressure, has an axial width which is, radially at the height of undercut 11, at least as wide as the space available, i.e., wider than the space available radially just above undercut 11. By way of illustration, there is shown in broken lines 3' the same body as such would be arranged, coaxially with rim 1, in the absence of any constraint due to mounting. In the condition free of any constraint, the body therefore occupies a much larger volume than in the mounted condition (i.e., body 3).

When a tubeless tire 2 is mounted as shown, body 3, on mounting, should sufficiently rest axially on boss 12 so that this zone assures sealing of pneumatic cavity 22, relative to the zone put in communication with the atmospheric pressure, limited by said bosses 12 and located radially on their inside. Body 3, notably wider than the available space, is easily inserted between bosses 12 by raising, during mounting,

the inflation pressure to a sufficient value to obtain the necessary dimensional retraction, then in bringing the pressure to its nominal value. With a prestressing of body 3 against bosses 12, the effect of centrifugal force even at very low pressure, does not cause breaking of the seal at right angles with bosses 12 (i.e., the seal between pneumatic cavity 22 and the zone put in communication with atmospheric pressure).

The detail shown in Figure 2 indicates how to place the inflation valve on such a rim. There is shown a connector 14 intended to receive the valve itself. Connector 14 is extended by a duct which ends in an opening 140 placed on hump 13. At the beginning of inflation, the air escapes through orifices 100. It suffices to dimension said orifices 100 so that the escape rate is less than the inflation rate, for body 3 to take its configuration and final place, assuring the sealing of the unit. Otherwise, a temporary blocking of orifices 100 is provided.

Preferably, the profile of the rim is axially symmetrical. Therefore, the two undercuts 11, as represented, are radially at the same height but this, of course, is not essential to combat centrifuging of body 3. It is also possible to obtain an undercut 11 by inclining lateral wall 102 axially inward. Also, it is possible to use the invention with other types of

rims, as for example, rims in several pieces or rims provided for reversed hooked tires . If necessary, said groove 10 comprising undercuts 12 is constituted separately from rim 1, then is attached to it.

It is also to be noted that, as appears above, orifices 100 are intended to achieve permanent communication between the base of body 3 which may be of foam rubber and atmospheric pressure but, if it is desired to drive with the rim according to the invention without equipping it with body 3 of foam, with only tire 2, it will suffice to block orifice or orifices 100 to have a rim air-tight for inflation air.

Figure 3 represents an alternative embodiment which makes it possible to reconcile desirable holding of body 3 of foam rubber with the need of leaving, under groove 10 of rim 1, a sufficient space for braking elements 6. It has been found that the limit of the speed at which the body 3 is held on bottom 101 of groove 10 is increased if height h available under undercut portion 11, between the latter and bottom 101 of groove 10, is increased. The maximum space requirements of braking elements 6 are generally due to the calipers of disk brakes. It is possible to provide a curved zone 12 on bottom 101 of groove 10, a zone whose concavity is oriented radially inward and corresponds to the protuberance caused by the calipers of the disk

brakes. Since the top 60 of said calipers radially exceeds a radially lowermost point of lateral wall 102 of bottom 101 of rim 1, the rim must be engaged above caliper 6 by presenting it at a slant relative to the hub on which it will be fastened, then swinging it to its final position.

Obviously, numerous modifications and variations of the present invention are possible in light of the above teachings. It is therefore to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described herein.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:
~~WHAT IS CLAIMED AS NEW AND DESIRED TO BE SECURED BY~~
~~LETTERS PATENT OF THE UNITED STATES IS:~~

1. A rim for a tire, said tire being used with a body which makes it possible to roll in a deflated condition, said rim having a groove for receiving said body, whose cross section has approximately a U shape, the concavity of which is oriented radially outward, a base portion of said U constituting a bottom portion of said groove being approximately parallel to the axis of rotation, said groove being axially delimited on opposite sides thereof by lateral walls extending radially outward relative to said bottom portion of said groove, wherein said lateral walls each comprise at least one undercut portion and an orifice for achieving communication with atmospheric pressure is provided in said groove, radially outward relative to one of said undercut portions.

2. A rim according to Claim 1, wherein said rim is substantially symmetrical.

3. A rim according to Claim 1, comprising a hump having an inflation opening formed therein.

4. A rim according to Claim 1, wherein said bottom portion of said groove has a curved zone, the concavity of which is oriented radially inward.

DATED this 24th day of October 1988.
COMPAGNIE GENERALE DES ETABLISSEMENTS MICHELIN
- MICHELIN & CIE

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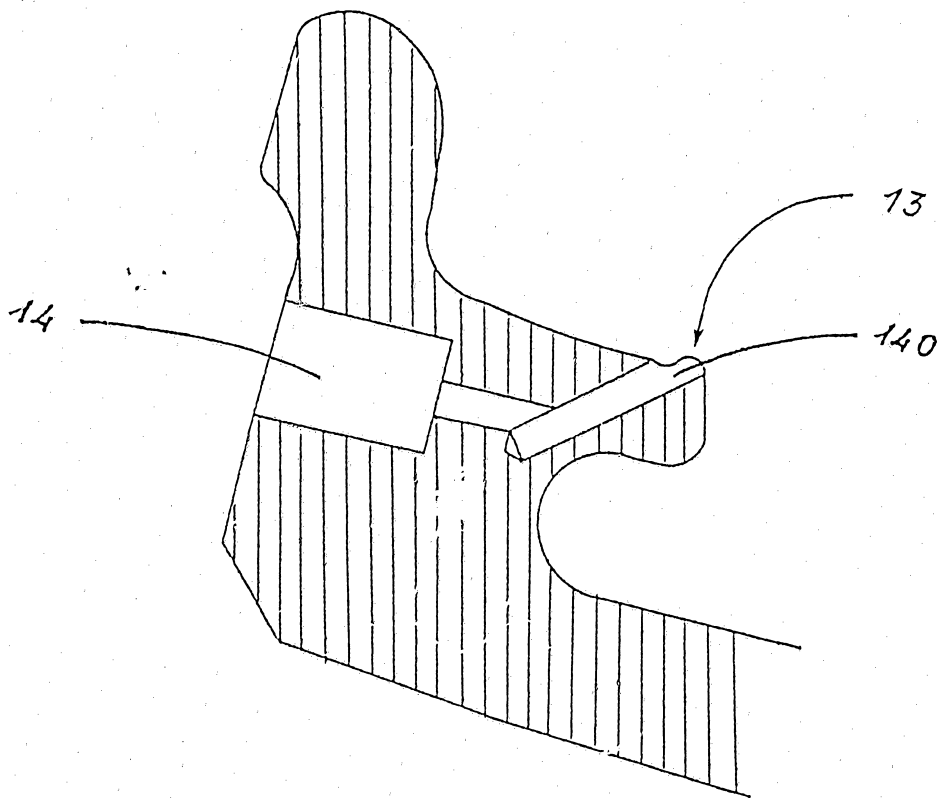


FIG 2

