B60C

VEHICLE TYRES; TYRE INFLATION; TYRE CHANGING; CONNECTING VALVES TO INFLATABLE ELASTIC BODIES IN GENERAL; DEVICES OR ARRANGEMENTS RELATED TO TYRES

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Manufacture, repairing	B29D 30/00

B60C 1/00

Tyres characterised by the chemical composition or the physical arrangement or mixture of the composition

Definition statement

This place covers:

Tyres including a chemical composition, i.e. a chemical substance or a combination of chemical substances, or a physical arrangement or mixture of the composition, exhibiting an essential or distinctive attribute to enhance the general structural characteristics of the tyre.

Examples of subject matter classified in this place:

1.

Composition	Parts by weight
Rubber	100
Carbon black	45
Stearic acid	3
Zinc oxide	3
Antioxidant	1.5
Softener	5
Nickel dibutyl dithiocarbamate	1.5
Mercaptobenzoate	0.9
Sulfur	2.75

Table above shows a composition of a rubber side wall stock.

The presence of the nickel dibutyl dithiocarbamate in the composition improves sidewall ozone checking resistance.

2.

A liner composition comprises a blend of a sulfur-vulcanisable elastomeric material with a partially-refined precured rubbery copolymer of a major proportion of an isoolefin having from four to seven carbon atoms with a minor proportion of an open-chain aliphatic conjugated diolefin having from four to eight carbon atoms. The liner of such composition provides excellent resistance to air diffusion and

may be directly bonded to the rubbery body of the article merely by vulcanising the liner in contact with the rubbery body portion, thereby eliminating the necessity of using a tie gum or adhesive in adhering the liner to the rubbery body. Furthermore, the liner has an excellent resistance to chafing and may be manufactured in numerous colours.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Inflatable pneumatic tyres or inner tubes made from other material than rubber	B60C 5/007
Pneumatic tyres whose individual reinforcements, including any treatments thereon (e.g. adhesive treatment), are characterised by the chemical composition	B60C 9/00
Tyres whose individual bead reinforcements, including any treatments thereon (e.g. adhesive treatment), are characterised by the chemical composition	B60C 15/00
Tyres characterised by means enabling restricted operation in damaged or deflated condition whose internal lubrication is characterised by the lubricant chemical composition	B60C 17/106
Electric charge dissipating arrangements	B60C 19/08
Use of inorganic or non-macromolecular organic substance as compounding ingredients	C08K
Rubber compositions for general use	C08L

Special rules of classification

Tyres characterised by physical properties, e.g. modulus, tan delta or dimensions of the tyre component made from the chemical composition are also classified elsewhere in B60C as appropriate:

Tread rubber	B60C 11/0008
Carcass coating rubber	B60C 2009/0269
Belt coating rubber	B60C 2009/2061
Zero-degree belt coating rubber	B60C 2009/2238
Sidewall rubber	B60C 2013/005
Bead reinforcing layer coating rubber	B60C 2015/0682
Run-flat sidewall insert rubber	B60C 2017/0054

B60C 1/0008

{Compositions of the inner liner}

Definition statement

This place covers:

Subject matter wherein the chemical composition is provided as an inner liner, i.e. an integral layer or coating which has a relatively high resistance to the diffusion of inflation medium, e.g. air, at the inflation medium contacting surface of an inflatable pneumatic tyre.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Inflatable pneumatic tyres with impervious inner liner or coating structure or properties	B60C 5/14
Tyres having self-sealing layer	B60C 19/12
Sealing compositions per se	B29C 73/163

Special rules of classification

Inflatable pneumatic tyres having a member performing the function of auto-repairing or self-sealing punctures characterised by the chemical composition are to be classified in B60C 19/12 unless the member is disclosed as also being the inner liner.

B60C 1/0016

{Compositions of the tread}

Definition statement

This place covers:

Subject matter wherein the chemical composition is located in a tread cap or tread base.

Tread is an outer part of a tyre that makes contact with the ground.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tyre tread characterised by physical properties or dimensions	B60C 2011/0016

B60C 1/0025

{Compositions of the sidewalls}

Definition statement

This place covers:

Subject matter wherein the chemical composition is located in at least one of the sidewalls, i.e. external parts of the tyre extending between the tread and rim-engaging portions, e.g. beads, and covering the carcass.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tyre sidewalls characterised by physical properties	B60C 2013/005
Tyre sidewalls characterised by inlay, coating or different rubber layers	B60C 13/04

B60C 2001/0033

{Compositions of the sidewall inserts, e.g. for runflat}

Definition statement

This place covers:

Subject matter wherein the chemical composition is located in the sidewall insert, i.e. a reinforcement layer which enables restricted operation of a pneumatic tyre in damaged or deflated condition.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tyres with sidewall rubber inserts	B60C 17/0009

B60C 1/0041

{Compositions of the carcass layers}

Definition statement

This place covers:

Subject matter wherein the chemical composition is located in a carcass layer, i.e. a part of an inflatable pneumatic tyre exclusive of the tread, sidewalls and belts that forms the body of the tyre.

A carcass layer is usually made of reinforcement embedded in a matrix material, e.g. carcass coating rubber or topping rubber or skim rubber, and the chemical composition forms at least part of the matrix material.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Pneumatic tyres with carcass layer structure or properties	B60C 9/02

B60C 3/00

Tyres characterised by the transverse section

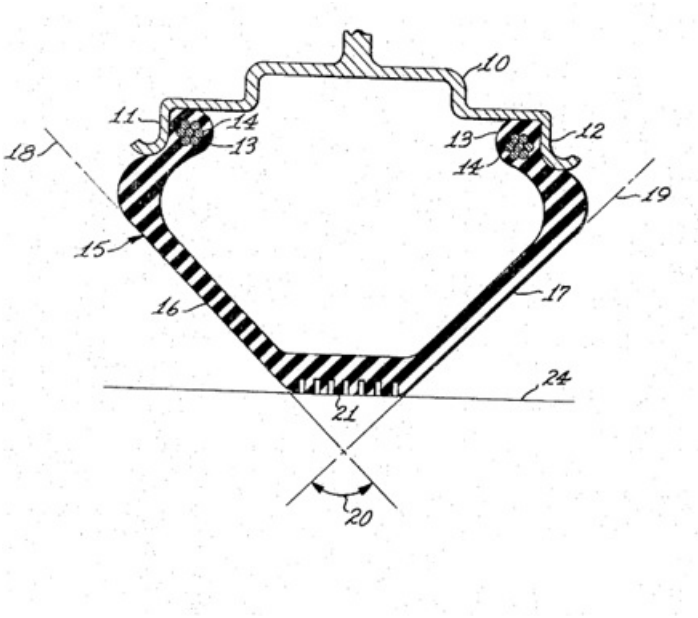
Definition statement

This place covers:

Tyres distinguished by a mathematical relationship, e.g. equation or ratio, or an absolute dimension, e.g. radius of curvature, which mathematical relationship or absolute dimension describes the cross-sectional profile or cross-sectional shape of the tyre.

Illustrative examples of subject matter classified in this place:

1.


10
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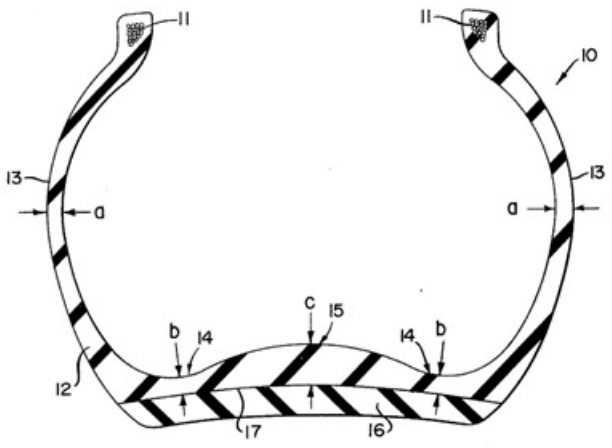
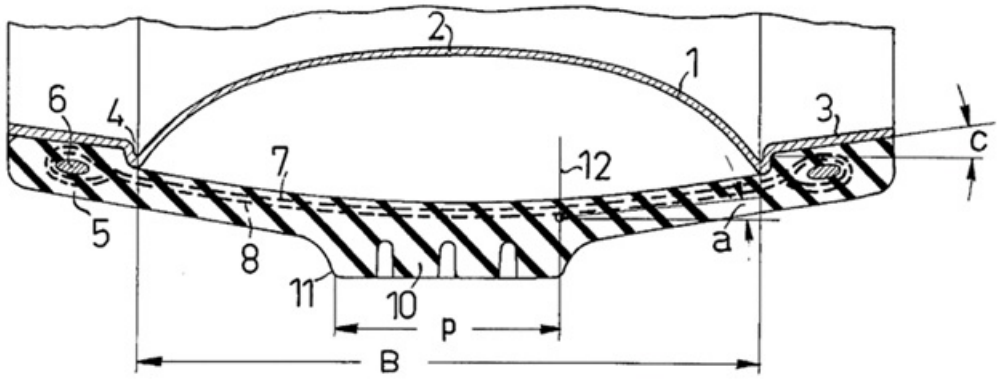
21
20

2.


11
11
10
13
13
a
a
c
15
b
14
14
b
12
17
16

3.


2
1
6
4
3
c
7
12
5
8
a
11
10
p
B

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Wheels characterized by rail-engaging elements and having non-elastic tyres	B60B 17/0055
Wheels characterized by rail-engaging elements and having elastic tyres	B60B 17/02

Special rules of classification

Documents which nominally fit within B60C 3/00 but otherwise fit in any of the areas listed below should be classified in the appropriate area listed below:

Tyres whose transverse section is characterised only by carcass ply curvature	B60C 9/0292
Tyres whose transverse section is characterised only by tyre tread radius of curvature	B60C 11/0083
Tyres whose transverse section is characterised only by shape of the shoulders between tread and sidewall	B60C 11/01
Tyres whose transverse section is characterised only by sidewall radius of curvature	B60C 13/003
Tyres whose transverse section is characterised only by arrangement of sidewall grooves or ribs	B60C 13/02
Tyres whose transverse section is characterised only by shape of the tyre bead contour	B60C 15/024

B60C 3/02

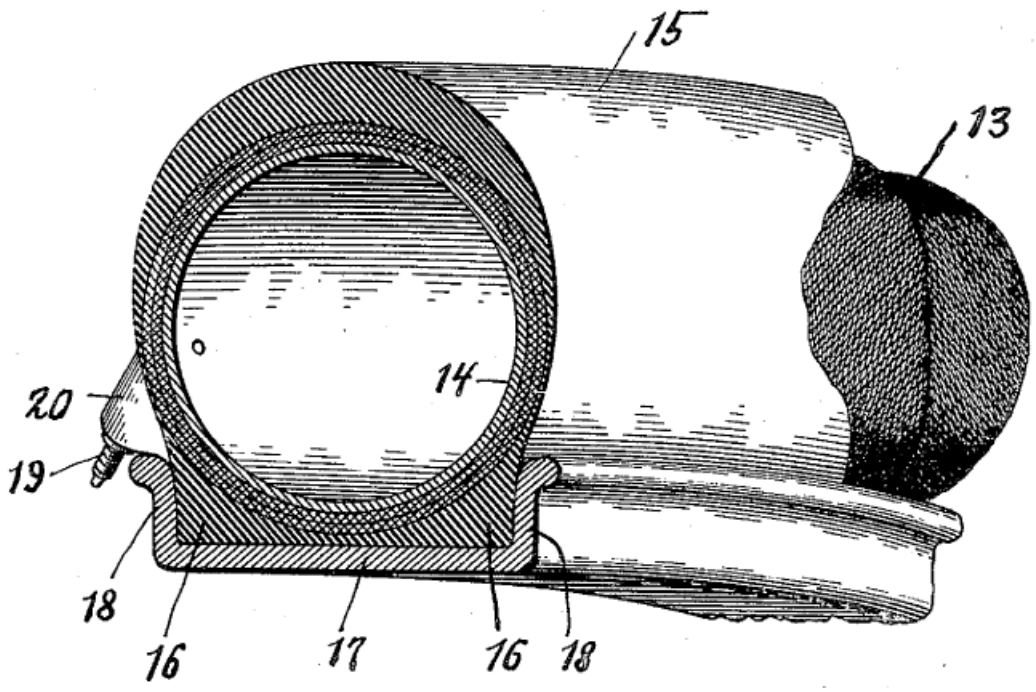
Closed, e.g. toroidal, tyres

Definition statement

This place covers:

Subject matter under main group B60C 3/00 wherein a cross-section defined by a plane passing through the rotation axis of the tyre defines a continuous, circular-type configuration.

Example:



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Securing tyres without beads; Securing closed torus or tubular tyres	B60C 15/0233
Tyres with openings closeable by means other than the rim; Closing means therefor	B60C 19/04

B60C 3/04

characterised by the relative dimensions of the section, e.g. low profile (B60C 3/06 takes precedence)

Definition statement

This place covers:

Subject matter under main group B60C 3/00 wherein the tyre is characterised by the relative dimensions of the section, e.g., section width, section height, and/or aspect ratio.

Example:

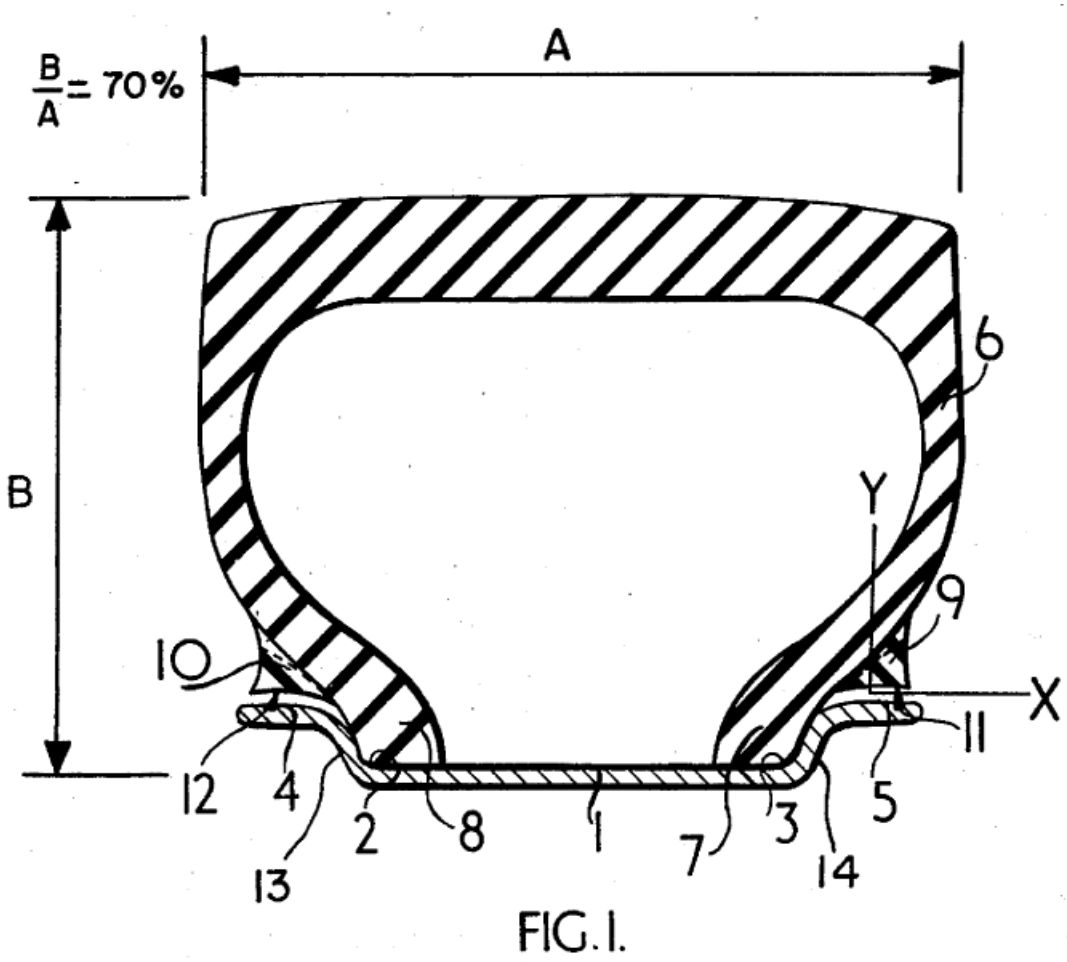


FIG. 1.

References

Limiting references

This place does not cover:

Tyre cross-section asymmetric about equatorial plane	B60C 3/06

B60C 3/06

asymmetric

Definition statement

This place covers:

Subject matter under main group B60C 3/00 wherein the section does not have a plane longitudinally bisecting the section into mirror image halves, i.e. tyre equatorial plane or midcircumferential plane.

Example:

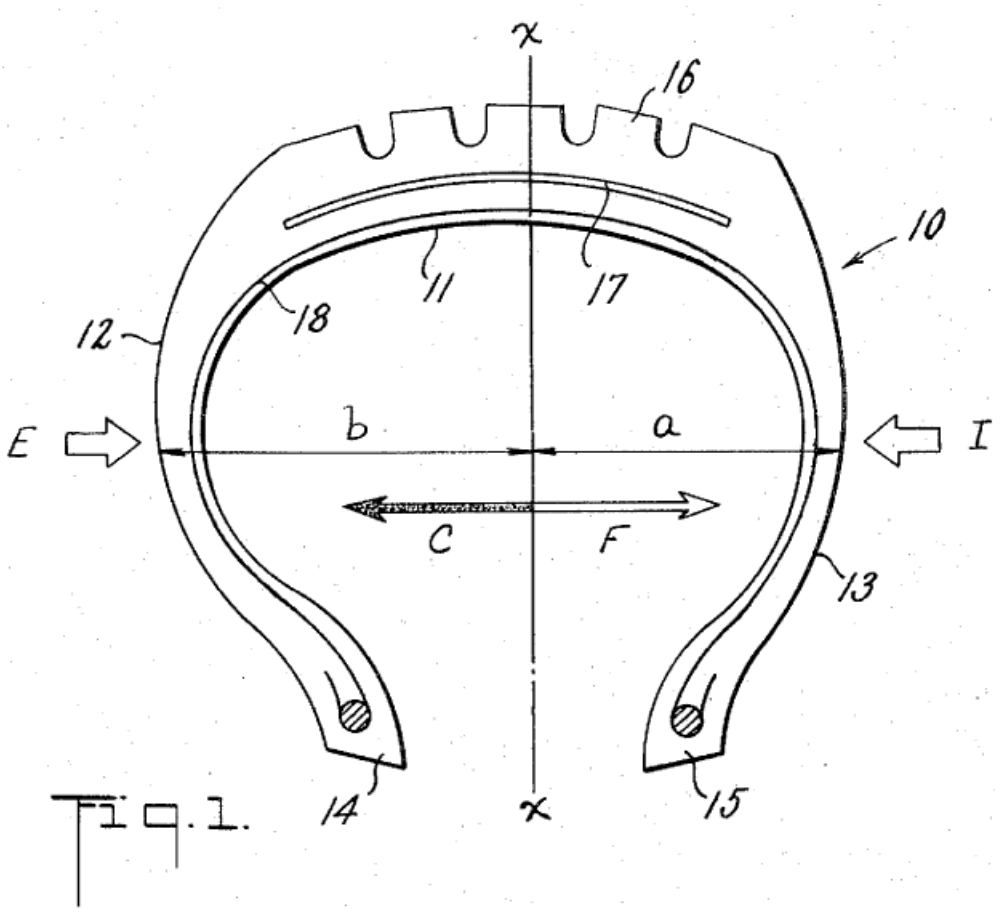


Fig. 1.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Asymmetric carcasses	B60C 9/17
Asymmetric belts	B60C 9/30
Asymmetric caps and base treads	B60C 11/0066
Asymmetric tread patterns	B60C 11/0304
Asymmetric bead seats	B60C 15/0236
Asymmetric bead reinforcement	B60C 2015/0696
Tyres requiring asymmetric or special mounting	B60C 19/001

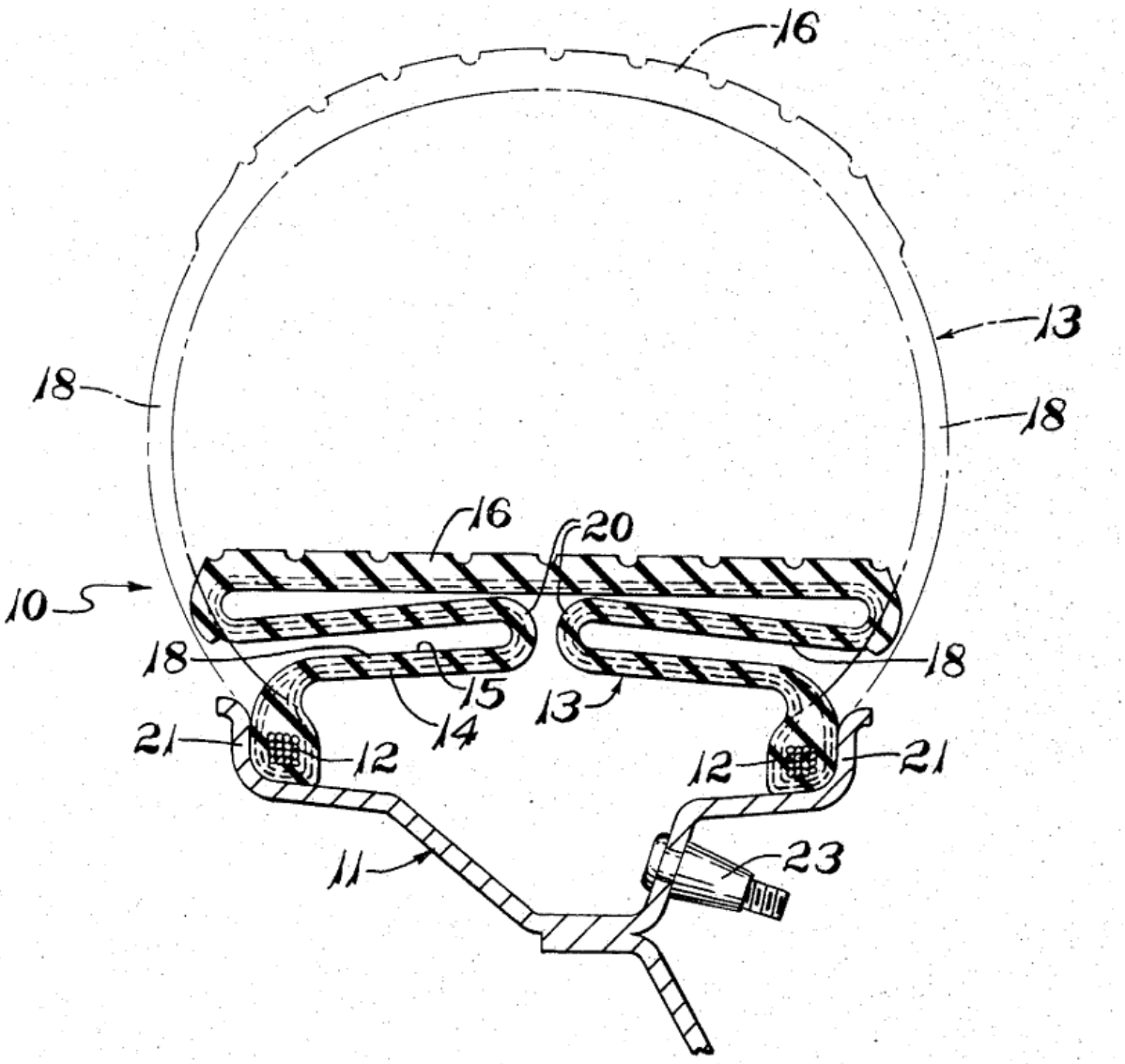
B60C 3/08

collapsible into storage or non-use condition, e.g. space-saving spare tyres

Definition statement

This place covers:

Example illustrating storage condition vs. inflated condition of a spare tyre:



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Run-flat tyres	B60C 17/08

B60C 5/00

Inflatable pneumatic tyres or inner tubes (B60C 1/00, B60C 9/00 - B60C 17/00 take precedence)

Definition statement

This place covers:

Subject matter wherein a tyre casing structure contains a chamber or chambers or a flexible closed annular element carried in said chamber whereby said chamber or annular element is filled with fluid under pressure greater than atmospheric pressure to sustain the tyre in inflated shape upon a hub or rim element.

References

Limiting references

This place does not cover:

Tyres characterised by the chemical composition or the physical arrangement or mixture of the composition	B60C 1/00
Reinforcements or ply arrangement of pneumatic tyres	B60C 9/00
Tyre tread bands; Tread patterns; Anti-skid inserts	B60C 11/00
Tyre sidewalls; Protecting, decorating, marking or the like	B60C 13/00
Tyre beads, e.g. ply turn-up or overlap	B60C 15/00
Tyres characterised by means enabling restricted operation in damaged or deflated condition; Accessories therefor	B60C 17/00

Special rules of classification

Pneumatic tyres with an inner tube smaller than the tyre inner chamber provided for run-flat use are classified in B60C 17/01 only.

B60C 5/001

{filled with gas other than air}

Definition statement

This place covers:

Subject matter wherein the tyre or inner tube is filled with a gas other than air.

B60C 5/002

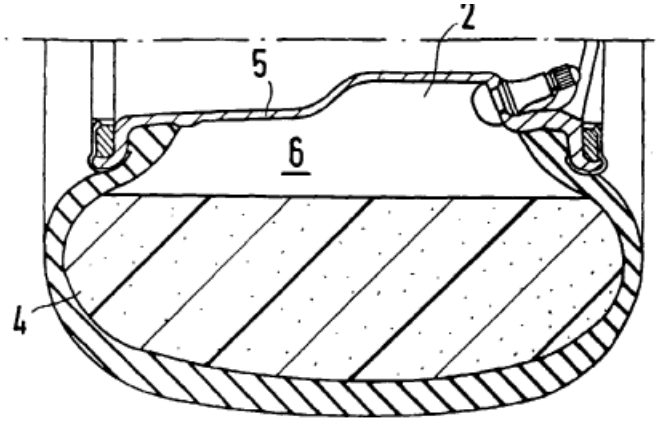
{filled at least partially with foam material}

Definition statement

This place covers:

Subject matter wherein the pneumatic tyre is filled with foam material to absorb shock or support the tyre during normal operating condition.

Illustrative example of subject matter classified in this place:



Pneumatic tyre filled with foam material (4).

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Non-pneumatic tyre comprising foam cushioning means	B60C 7/105
Tyres comprising resilient foam means which become load supporting in a deflated or damage condition	B60C 17/065
Tyres comprising plural spherical elements provided in the tyre chamber and made up from a foam means which becomes load supporting in deflated or damaged condition	B60C 17/066
Tyres comprising foam noise damping means	B60C 19/002

B60C 5/004

{filled at least partially with liquid (B60C 19/12 takes precedence)}

Definition statement

This place covers:

Subject matter wherein the tyre is filled at least partially with water or another liquid.

References

Limiting references

This place does not cover:

Tyre comprising flowable material for sealing punctures, i.e. sealant layer	B60C 19/12

B60C 5/005

{Ballast tyres}

Definition statement

This place covers:

Subject matter wherein the liquid composition serves as a ballast to increase the weight of the tyre.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Valve arrangements for filling a tyre with liquid	B60C 29/062

B60C 5/007

{made from other material than rubber}

Definition statement

This place covers:

Subject matter wherein the tyre casing is made from a material other than natural or synthetic diene rubber, e.g. thermoplastic resin.

B60C 5/008

{Low pressure tyres, e.g. for all terrain vehicles}

Definition statement

This place covers:

Subject matter wherein the tyre is configured for low pressure operation, e.g. tyre can flatten under load to facilitate movement of tyre over soft or irregular support surface.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tyres characterised by means enabling restricted operation in damaged or deflated condition; Accessories therefor	B60C 17/00

B60C 5/01

without substantial cord reinforcement, e.g. cordless tyres, cast tyres

Definition statement

This place covers:

Subject matter wherein the pneumatic tyre lacks substantial cord reinforcement in the structure of the tyre casing, e.g. the tyre is formed without a carcass ply.

The use of bead reinforcements or belt reinforcement without carcass reinforcements constitutes a pneumatic tyre without substantial cord reinforcement for the purposes of this subgroup.

B60C 5/02

having separate inflatable inserts, e.g. with inner tubes; Means for lubricating, venting, preventing relative movement between tyre and inner tube (B60C 5/20 takes precedence)

Definition statement

This place covers:

Subject matter wherein a closed annular element, e.g. inner tube, is carried within the chamber of the tyre and filled with fluid under pressure that is greater than atmospheric pressure.

References

Limiting references

This place does not cover:

Tyres or inner tubes with multiple separate inflating chambers	B60C 5/20

B60C 5/025

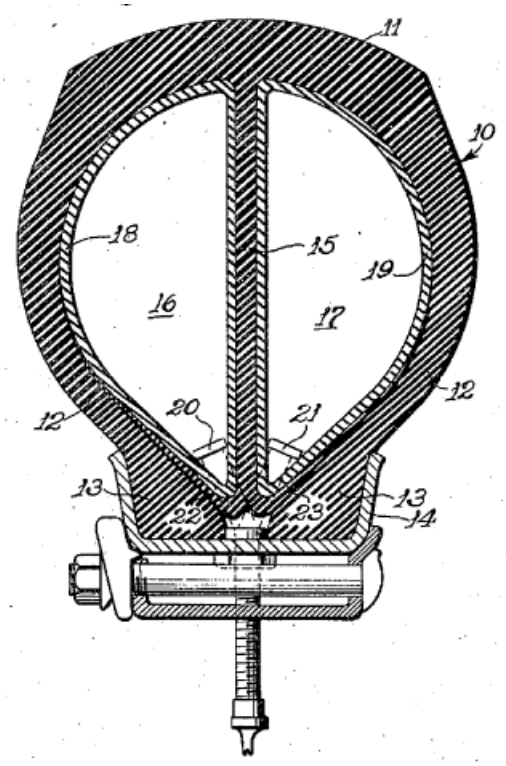
{separated by a part of the tyre (inflatable inserts with several inflatable chambers B60C 5/20)}

Definition statement

This place covers:

Subject matter with multiple chambers defined by the tyre casing, wherein each chamber possesses a separate inflatable insert.

Illustrative example of subject matter classified in this place:



Multiple inflatable inserts (16 and 17) are shown.

References

Limiting references

This place does not cover:

Tyres or inner tubes with multiple separate inflating chambers	B60C 5/20

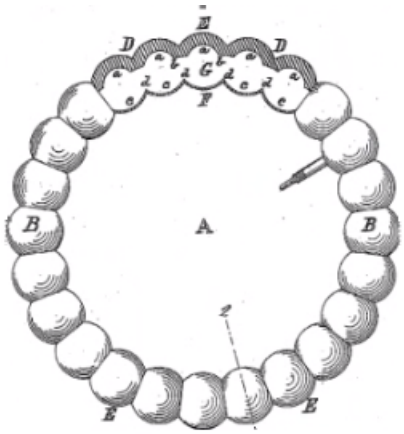
B60C 5/04

Shape or construction of inflatable inserts (B60C 5/10 takes precedence)

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



The figure shows an inner tube having a special shape.

References

Limiting references

This place does not cover:

Inflatable pneumatic tyres or inner tubes formed as a single discontinuous ring with contiguous ends which may be connected together	B60C 5/10

B60C 5/08

having reinforcing means

Definition statement

This place covers:

Subject matter wherein the inner tube is strengthened throughout at least a portion of its extent.

B60C 5/10

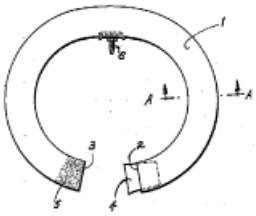
formed as a single discontinuous ring with contiguous ends which may be connected together

Definition statement

This place covers:

Subject matter wherein the pneumatic tyre forms a discontinuous ring, the ends of which may connect together, overlap, or abut.

Example 1:



Example 2:

B60C 5/12

without separate inflatable inserts, e.g. tubeless tyres with transverse section open to the rim (B60C 5/20 takes precedence)

Definition statement

This place covers:

Subject matter wherein the pneumatic tyre is open to the rim and the tyre possesses an integral layer having relatively high resistance to diffusion of air.

References

Limiting references

This place does not cover:

Tyres or inner tubes with multiple separate inflating chambers	B60C 5/20

B60C 5/14

with impervious liner or coating on the inner wall of the tyre

Definition statement

This place covers:

Subject matter wherein the pneumatic tyre possesses an integral layer or coating of elastomeric material which has a relatively high resistance to the diffusion of air at its inner air contacting surfaces. The layer is commonly referred to as an inner liner.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tyres characterised by sealant layer	B60C 9/12

B60C 5/142

{provided partially, i.e. not covering the whole inner wall}

Definition statement

This place covers:

Subject matter wherein air impervious liner does not traverse the entire inner cavity surface of the tyre, i.e. it does not extend from one bead portion to another bead portion.

B60C 2005/147

{characterised by the joint or splice}

Definition statement

This place covers:

Subject matter wherein the impervious layer is characterised by the joints or splices between adjoining ends of the layer.

B60C 5/16

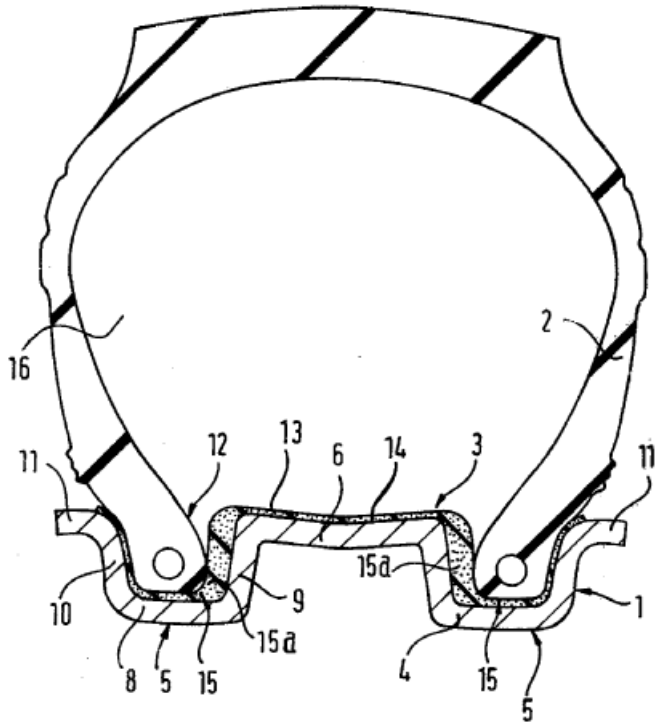
Sealing means between beads and rims, e.g. bands

Definition statement

This place covers:

Subject matter characterised by sealing means between beads and rims of tubeless tyres.

Illustrative example of subject matter classified in this place:



Sealing means (3) is provided between the bead and rim (5).

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Rim appurtenances, e.g. lining bands	B60B 21/12

B60C 5/18

Sectional casings, e.g. comprising replaceable arcuate parts

Definition statement

This place covers:

Subject matter wherein the pneumatic tyre casing is composed of segments adapted to enclose an annular inner-tube.

B60C 5/20

having multiple separate inflatable chambers

Definition statement

This place covers:

Subject matter wherein the tyre inner cavity or the inflatable insert is divided into multiple inflatable chambers.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Pneumatic tyre having additional inflatable supports which becomes load supporting when tyre is in deflated condition	B60C 17/01
Pneumatic tyre having inflatable chamber which becomes load supporting only when tyre is in deflated or damaged condition	B60C 17/02

B60C 5/22

the chambers being annular

Definition statement

This place covers:

Subject matter wherein the multiple chambers are circular in form.

B60C 5/24

the walls of the chambers extending transversely of the tyre

Definition statement

This place covers:

Subject matter wherein the multiple chambers are provided with walls that extend transversely of the tyre.

B60C 7/00

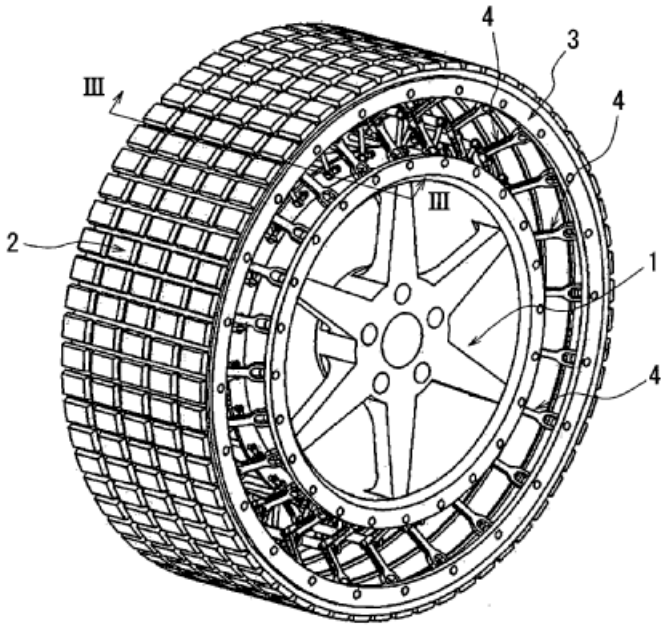
Non-inflatable or solid tyres (B60C 1/00 takes precedence)

Definition statement

This place covers:

- non-inflatable tires of the solid rubber tyre type (e.g. sectional, casing enclosed core, integral) whether or not they include voids such as chamber openings
- non-inflatable tires made up of a tread band supported by a plurality of springs or spokes
- means for securing non-inflatable tyres to rims

Example:



References

Limiting references

This place does not cover:

Tyres characterised by the chemical composition or the physical arrangement or mixture of the composition	B60C 1/00

Informative references

Attention is drawn to the following places, which may be of interest for search:

Wheels characterised by rail-engaging elements	B60B 17/00
Castor wheels	B60B 33/00

Special rules of classification

The precedential classification within B60C 1/00 should be given if the subject matter cannot to be classified within any subgroup of B60C 7/00. For example, disclosure which is related to the chemical composition of the tread but also discloses a solid tyre using foam material should be classified in both B60C 1/0016 as well as B60C 7/105.

B60C 7/10

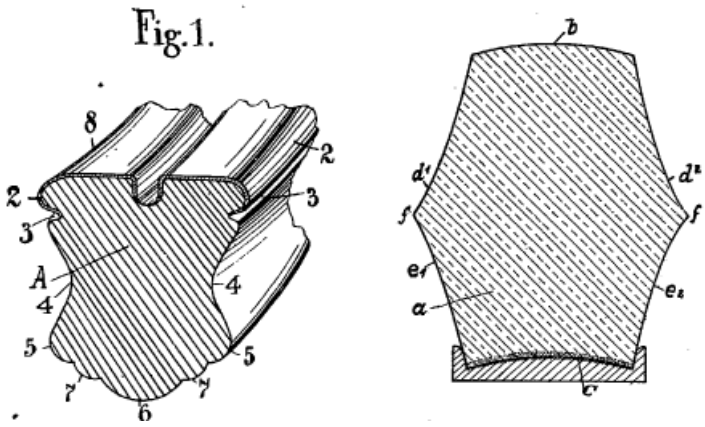
characterised by means for increasing resiliency

Definition statement

This place covers:

Subject matter wherein there is provided means for absorbing road shocks other than the use of a pneumatic means (e.g. non-inflatable or solid tyre having a particular structure and/or composition).

Examples:



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Highly resilient wheels	B60B 9/00

B60C 7/101

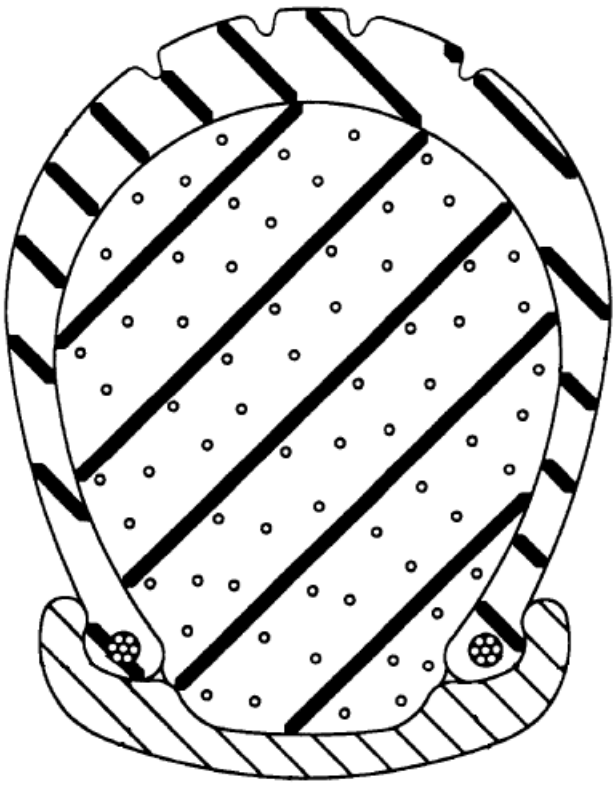
{Tyre casings enclosing a distinct core, e.g. foam (enclosed chambers defined by a distinct core B60C 7/121)}

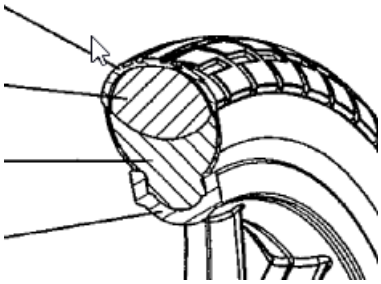
Definition statement

This place covers:

Subject matter wherein the tyre consists of a casing enclosing a core where the core may be separate or integral with the casing. The core and casing must be distinct by reason of differing materials or arrangement.

Example:





References

Limiting references

This place does not cover:

Tyre casing enclosing a distinct core where the core has chambers therein	B60C 7/121

Informative references

Attention is drawn to the following places, which may be of interest for search:

Pneumatic tyre at least partially filled with foam material	B60C 5/002
Tyres comprising resilient foam means which become load supporting in deflated or damaged condition	B60C 17/065

B60C 7/12

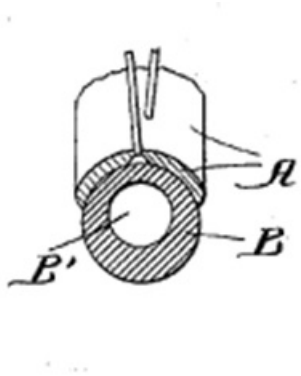
using enclosed chambers, e.g. gas-filled

Definition statement

This place covers:

Subject matter where the tyres use enclosed chambers where the chambers are effectively empty, i.e. not filled with a solid material.

Illustrative example of subject matter classified in this place:



The figure shows enclosed chamber (B') surrounded by tyre (B).

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Inflatable tyres	B60C 5/00

B60C 7/121

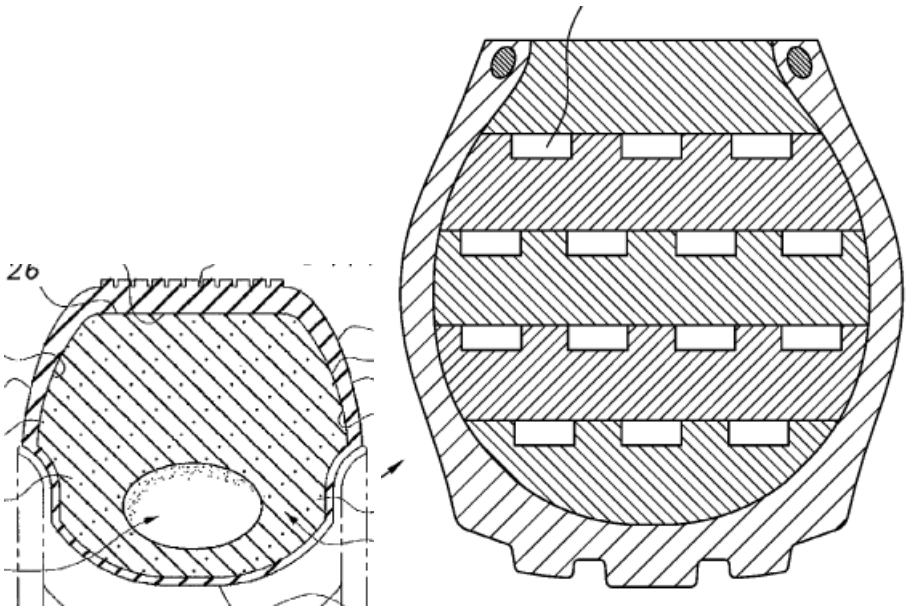
{enclosed chambers defined by a distinct core}

Definition statement

This place covers:

Subject matter wherein the tyre consists of a casing enclosing a core where the core may be separate or integral with the casing. The core and casing must be distinct by reason of differing materials or arrangement and include chambers within the core.

Example:



B60C 7/125

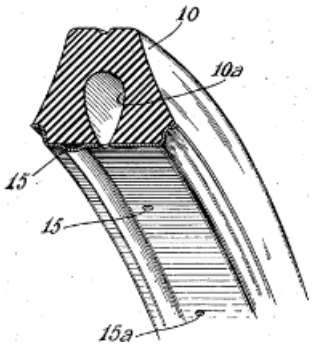
{enclosed chambers defined between rim and tread}

Definition statement

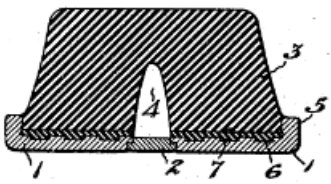
This place covers:

Illustrative examples of subject matter classified in this place:

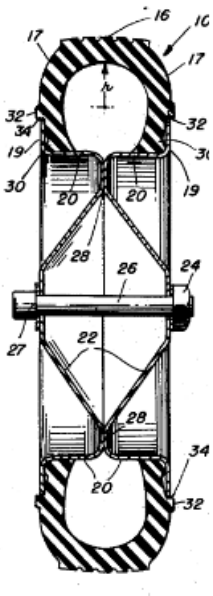
1.



2.



3.



Each figure above shows chambers formed by the tyre and rim.

B60C 9/00

Reinforcements or ply arrangement of pneumatic tyres (inserts having reinforcing means B60C 5/08; bead structure, e.g. turnup or overlap construction, B60C 15/00)

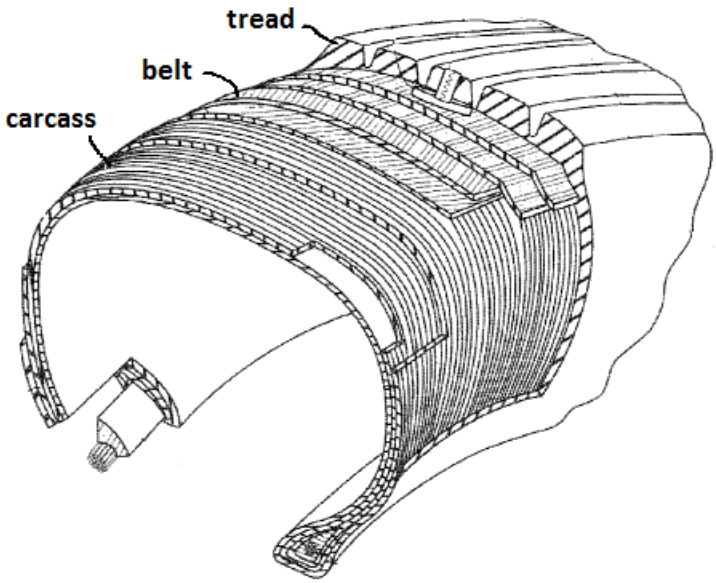
Definition statement

This place covers:

Subject matter that includes the structure and arrangement of reinforcing elements and cushioning layers which form a carcass/body ply or crown/belt reinforcement of the tyre.

This group also includes materials used in the reinforcement of a tyre which are not claimed as specific components of the belt, breaker, bead or carcass portions of a tyre.

Illustrative example of subject matter classified in this place:



References

Limiting references

This place does not cover:

Inserts having reinforcing means	B60C 5/08
Bead structure, e.g. turnup or overlap construction	B60C 15/00

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tyre characterised only by sidewall protection or reinforcing layer	B60C 13/00
Run-flat inserts	B60C 17/0009
Textile tyre cords per se	D02G 3/48
Fabrics per se	D03D, D04H
Metal ropes or cables per se	D07B 1/06

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

bias angle ply	layer that has reinforcing elements that are arranged generally at an angle of less than about 75° with respect to the mid-circumferential plane of the tyre.
belt reinforcement	the arrangement of reinforcing material that is between the tread and carcass and generally extends between the shoulder regions of the tyre tread.
carcass reinforcement	the arrangement of reinforcing material which forms the body of a tyre and which generally extends between the bead portions of the tyre.
cords	threads, filaments, fibres, yarns or twisted assemblies thereof, which may be made of metal wire, glass or natural or synthetic fibres.
geodesic cord path	the minimum length cord path.
radial ply	layer that has reinforcing elements that are arranged generally at an angle of about 75° to 90° with respect to the mid-circumferential plane of the tyre, or arranged more specifically at an angle of 90°, i.e. parallel to the tyre axis.

Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

- "carcass" and "body ply"
- "crown" and "belt reinforcement"

B60C 9/0007

{Reinforcements made of metallic elements, e.g. cords, yarns, filaments or fibres made from metal}

Definition statement

This place covers:

Tyre reinforcements which are made of metallic elements, strands, wires or cords.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Ropes or cables built-up from metal wires per se	D07B 1/06

B60C 2009/0014

{Surface treatments of steel cords}

Definition statement

This place covers:

Subject matter wherein a means or chemical composition is applied to the metallic reinforcing element, commonly used to improve bonding with rubber coating, e.g. brass plating.

B60C 2009/0021

{Coating rubbers for steel cords}

Definition statement

This place covers:

Subject matter directed towards rubber coating compositions of the cord or ply.

B60C 9/0028

{Reinforcements comprising mineral fibres, e.g. glass or carbon fibres}

Definition statement

This place covers:

Reinforcements made from non-metallic, inorganic materials such as glass, carbon or asbestos.

B60C 9/0042

{Reinforcements made of synthetic materials}

Definition statement

This place covers:

Reinforcements made from synthetic materials such as polyester, nylon or aromatic polyamide, e.g. aramid.

B60C 9/005

{Reinforcements made of different materials, e.g. hybrid or composite cords}

Definition statement

This place covers:

Reinforcements which comprise different materials, e.g. cords formed by twisting together nylon and aramid yarns or yarns formed from nylon and aramid fibres.

B60C 9/0057

{Reinforcements comprising preshaped elements, e.g. undulated or zig-zag filaments}

Definition statement

This place covers:

Reinforcements that are preshaped prior to arrangement in the tyre.

B60C 9/0064

{Reinforcements comprising monofilaments}

Definition statement

This place covers:

Reinforcements wherein each reinforcing element is formed by a singular filament.

B60C 2009/0071

{characterised by special physical properties of the reinforcements}

Definition statement

This place covers:

Reinforcements characterised by physical properties such as modulus, tensile strength or elongation at break.

B60C 9/02

Carcasses

Definition statement

This place covers:

Subject matter directed towards the carcass of a tyre.

A carcass reinforcement refers to the arrangement of reinforcing material which forms the body of a tyre and which generally extends between the bead portions of the tyre.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tyres with carcass without substantial cord reinforcement, e.g. cast tyres made up of polyurethane	B60C 5/01

B60C 9/0207

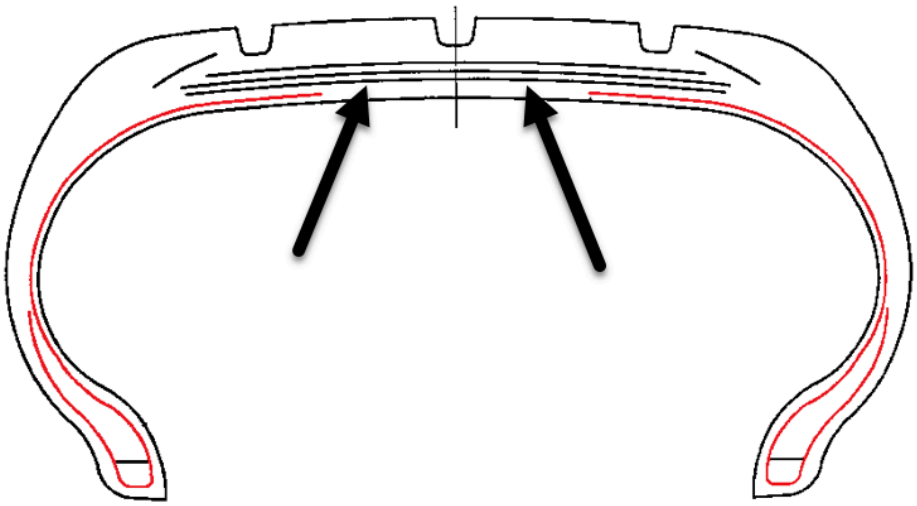
{Carcasses comprising an interrupted ply, i.e. where the carcass ply does not continuously extend from bead to bead but is interrupted, e.g. at the belt area, into two or more portions of the same ply}

Definition statement

This place covers:

Subject matter wherein the carcass is characterised as an interrupted ply wherein the ply is discontinuous between bead portions.

Illustrative example of subject matter classified in this place:



Carcass is interrupted at the central portion of the crown as indicated by the arrows.

B60C 9/023

{built up from narrow strips, individual cords or filaments, e.g. using filament winding}

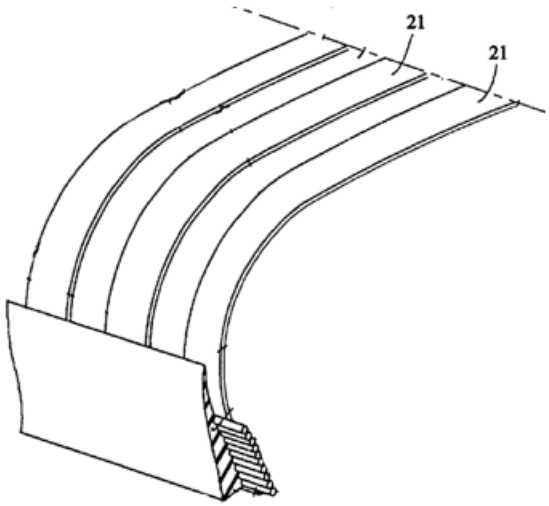
Definition statement

This place covers:

Subject matter wherein the carcass is formed by winding strips or individual cords instead of a continuous ply.

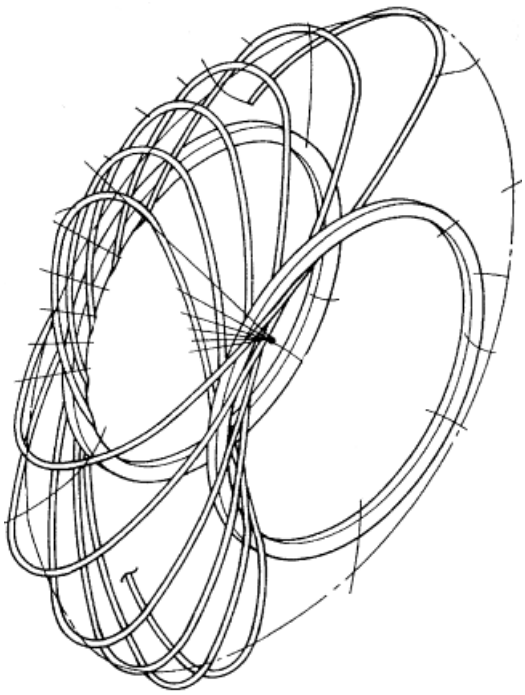
Illustrative examples of subject matter classified in this place:

1.



In figure 1, narrow strips (21) are used.

2.



In figure 2, individual cords or filaments are used.

B60C 9/0238

{characterised by special physical properties of the carcass ply}

Definition statement

This place covers:

Subject matter wherein the carcass ply is characterised by special physical properties of the ply as a whole, e.g. modulus or strength at break.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Physical properties or dimensions of carcass cords per se	B60C 2009/0416

B60C 9/0292

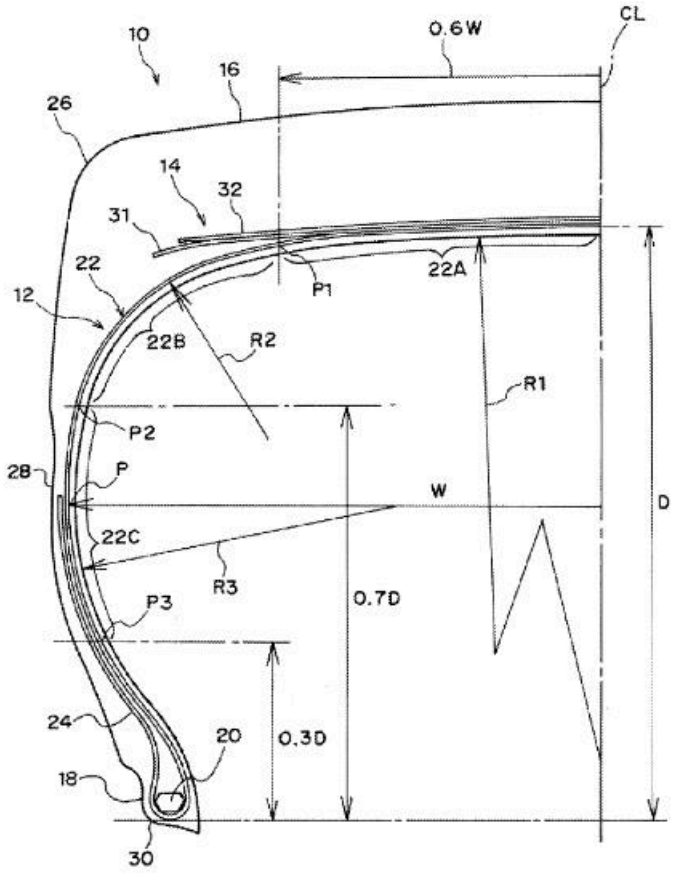
{Carcass ply curvature (sidewall curvature B60C 13/003)}

Definition statement

This place covers:

Subject matter wherein the carcass reinforcement is characterised by its curvature or cross-sectional shape.

Illustrative example of subject matter classified in this place:



(R1), (R2) and (R3) are radii of curvature of different carcass ply portions.

References

Limiting references

This place does not cover:

Carcass ply curvature specifically relating to sidewall	B60C 13/003

B60C 9/04

the reinforcing cords of each carcass ply arranged in a substantially parallel relationship

Definition statement

This place covers:

Subject matter wherein the carcass plies are composed of reinforcing materials which extend in the same direction substantially equidistant at all points without converging or diverging from one another.

B60C 2009/0408

{Carcass joints or splices}

Definition statement

This place covers:

Subject matter wherein the carcass layer is characterised by the joints or splices between adjoining ends of the layer.

Illustrative example of subject matter classified in this place:

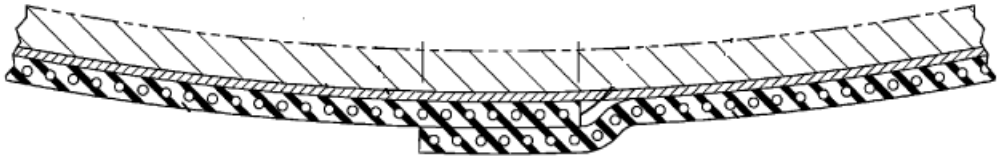


Figure shows an overlap splice.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

General aspects of the joining methods	B29D 2030/421

B60C 2009/0416

{Physical properties or dimensions of the carcass cords}

Definition statement

This place covers:

Subject matter wherein the carcass ply is characterised by the physical properties of the carcass cords.

B60C 2009/0475

{Particular materials of the carcass cords}

Definition statement

This place covers:

Subject matter wherein the carcass is characterised by the material or composition of the reinforcement elements.

B60C 2009/0483

{Different cords in the same layer}

Definition statement

This place covers:

Subject matter wherein the reinforcing materials of the carcass plies are of dissimilar materials or shape, e.g. different diameters.

B60C 2009/0491

{with special path of the carcass cords, e.g. sinusoidal}

Definition statement

This place covers:

Carcass reinforcements characterised by the path of the carcass cord along its extension direction, e.g. cords extend in radial direction with a localized undulating or sinusoidal shape.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Path characterised by an overall curved extension between beads, e.g. S-shaped or geodesic	B60C 9/07

B60C 9/06

the cords extend diagonally from bead to bead and run in opposite directions in each successive carcass ply, i.e. bias angle ply (B60C 9/07, B60C 9/09 take precedence)

Definition statement

This place covers:

Subject matter wherein the carcass reinforcing materials in the carcass plies are so disposed that the reinforcing cords in adjacent carcass plies subtend (cross) each other such that they are in a superimposed angular relationship relative to one another.

References

Limiting references

This place does not cover:

Cords which curve from bead to bead in plural planes	B60C 9/07
Cords extending transversely from bead to bead and combined with other carcass plies having cords which extend diagonally	B60C 9/09

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

bias ply	plies where the angular orientation of the reinforcing elements with respect to the mid-circumferential plane of the tyre is less than about 75°
radial ply	plies where the angular orientation of the reinforcing elements with respect to the mid-circumferential plane of the tyre is about 90°, i.e. parallel to the tyre axis, and more generally from about 90° to about 75°

B60C 9/07

the cords curve from bead to bead in plural planes, e.g. S-shaped cords

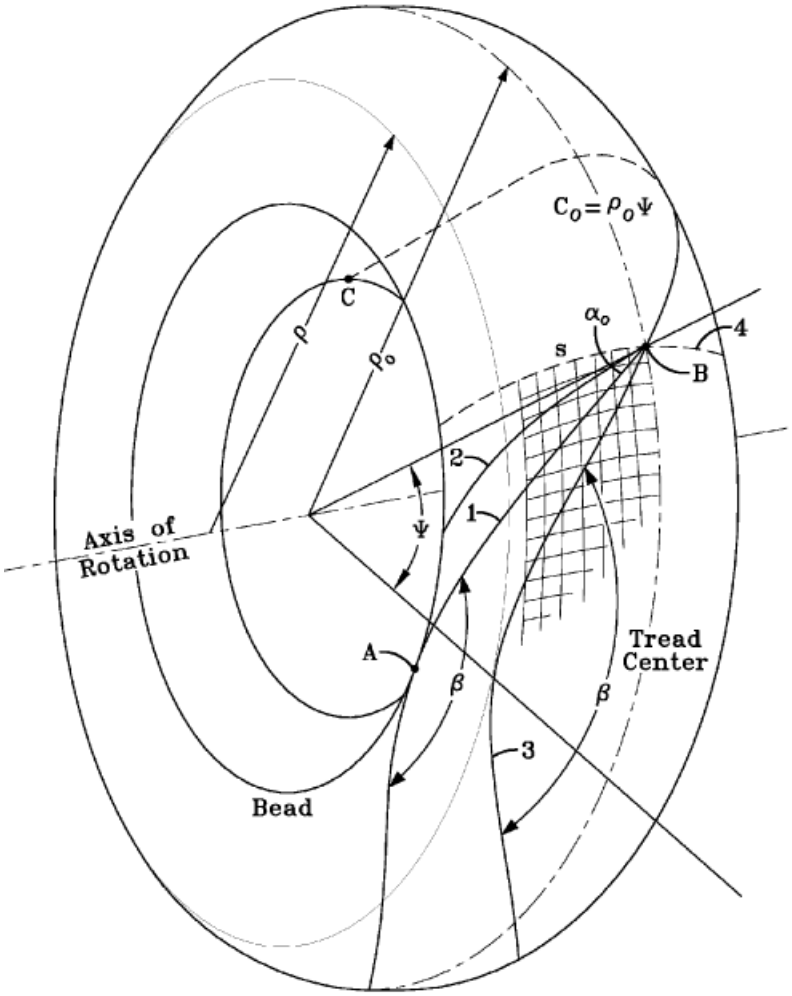
Definition statement

This place covers:

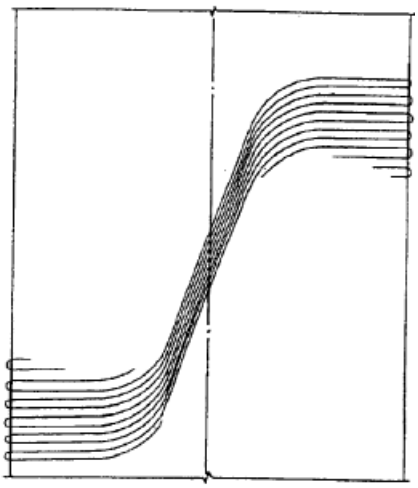
Subject matter wherein the carcass reinforcing elements are disposed in the tyre casing such that an extension of the reinforcing elements from one bead portion to the other bead portion includes more than one angular orientation such that the carcass reinforcing elements in said ply do not lie along a single plane.

Illustrative examples of subject matter classified in this place:

1.



2.



Figures 1 and 2 include S-shaped cord paths and paths of minimum length along the curved surface of the tyre. The minimum length cord path is usually referred in the art as a geodesic cord path.

B60C 9/08

the cords extend transversely from bead to bead, i.e. radial ply (B60C 9/07 takes precedence)

Definition statement

This place covers:

Subject matter wherein the carcass plies are composed of reinforcing materials which are substantially disposed in a radial plane, i.e. a plane that includes the axis of rotation.

References

Limiting references

This place does not cover:

Cords which curve from bead to bead in plural planes	B60C 9/07

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

bias ply	plies where the angular orientation of the reinforcing elements with respect to the mid-circumferential plane of the tyre is less than about 75°
radial ply	plies where the angular orientation of the reinforcing elements with respect to the mid-circumferential plane of the tyre is about 90°, i.e. parallel to the tyre axis, and more generally from about 90° to about 75°

B60C 9/10

the reinforcing cords within each carcass ply arranged in a crossing relationship

Definition statement

This place covers:

Carcass plies characterised by cords which extend in non-parallel directions such that the cords cross each other, e.g. plies are fabric, woven, non-woven or knitted.

B60C 9/11

Woven, braided, or knitted plies

Definition statement

This place covers:

Carcass plies characterised by reinforcement formed with woven i.e. interlaced warps/wefts, braided, or knitted textiles i.e. interlocking loops formed by continuous thread.

B60C 9/12

built-up with rubberised layers of discrete fibres or filaments

Definition statement

This place covers:

Carcass reinforcements which are characterised by discrete, non-continuous fibres or filaments, e.g. short fibres.

B60C 9/14

built-up with sheets, webs, or films of homogeneous material, e.g. synthetics, sheet metal, rubber

Definition statement

This place covers:

Subject matter wherein the carcass comprises a layer which can be characterised as a homogeneous sheet, web or film, e.g. unreinforced rubber layers rather than reinforced by discrete cords or woven fabrics.

B60C 9/16

built-up with metallic reinforcing inlays

Definition statement

This place covers:

Tyres comprising embedded metal armour as an element of the casing construction, e.g. metal plates, linked mats or woven fabrics.

B60C 9/17

asymmetric to the midcircumferential plane of the tyre

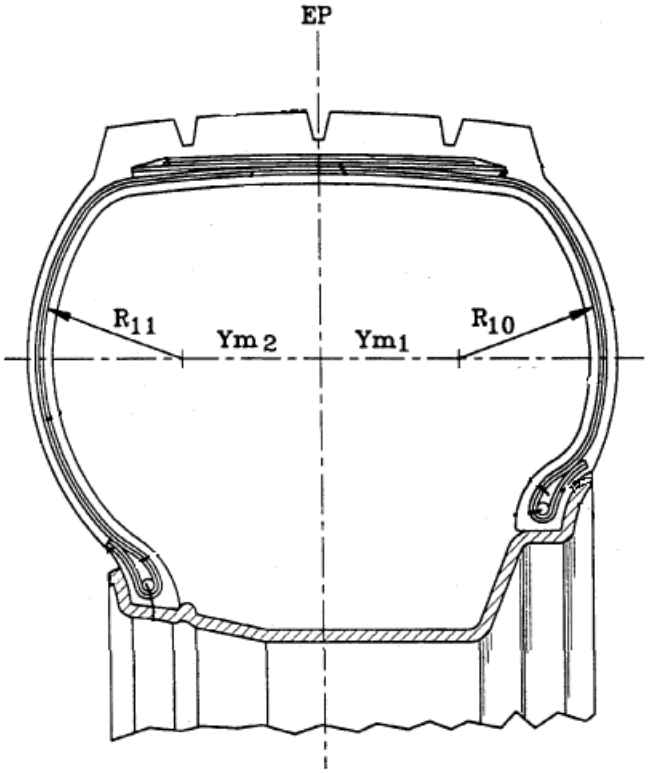
Definition statement

This place covers:

Subject matter wherein the carcass shape is asymmetrical to the centre plane of the tyre.

Illustrative example of subject matter classified in this place:

Asymmetric to mid circumferential plane (EP).



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tyres with asymmetric traverse section	B60C 3/06

B60C 9/18

Structure or arrangement of belts or breakers, crown-reinforcing or cushioning layers

Definition statement

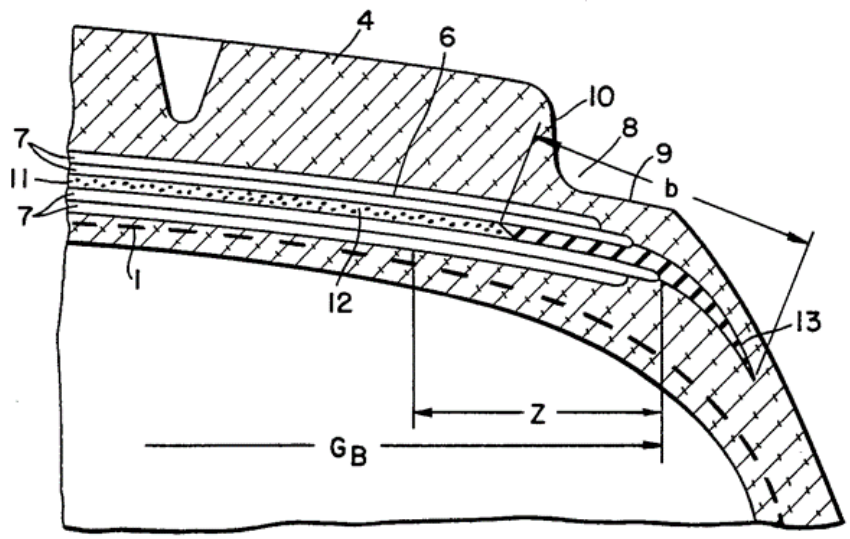
This place covers:

Subject matter which includes one or more relatively thin threads, filaments, yarns, wires, cables, bands, braids or the like formed into cords or reinforcing elements that are arranged to form a ply which annularly extends continuously at the radial outer side of the tyre casing substantially from

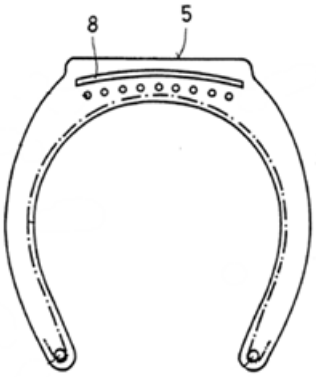
shoulder region to shoulder region of a tyre tread to add strength to said tyre tread area or to protect the tyre casing in this region.

Illustrative examples of subject matter classified in this place:

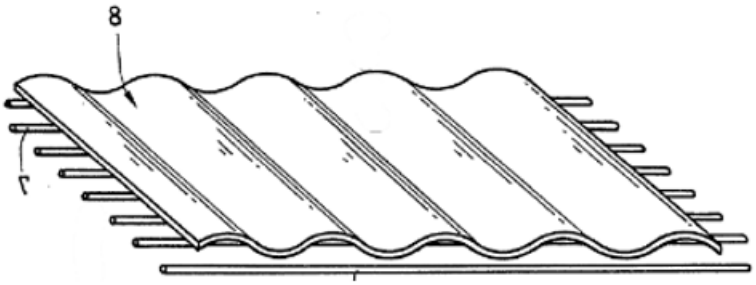
1.



2.



3.



B60C 9/1807

{comprising fabric reinforcements}

Definition statement

This place covers:

Subject matter wherein the belt layer comprises fabric material, e.g. woven, knitted or felted.

B60C 2009/1814

{square woven}

Definition statement

This place covers:

Subject matter wherein the belt layer comprises fabric material having a square or plain woven structure, i.e. threads cross at 90 degrees to each other.

B60C 9/1821

{comprising discrete fibres or filaments}

Definition statement

This place covers:

Subject matter wherein the belt layer comprises discontinuous fibres or filaments, e.g. short fibres.

B60C 2009/1828

{characterised by special physical properties of the belt ply}

Definition statement

This place covers:

Subject matter wherein the belt layer is characterised by its physical properties, e.g. modulus of elasticity or tensile strength at break.

B60C 9/1835

{Rubber strips or cushions at the belt edges}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Compositions	B60C 2001/0075

B60C 2009/1871

{with flat cushions or shear layers between belt layers}

Definition statement

This place covers:

Subject matter wherein a discrete layer of elastomeric material is provided between belt layers and not limited to the belt edge region.

B60C 2009/1878

{with flat cushions or shear layers between the carcass and the belt}

Definition statement

This place covers:

Subject matter wherein a discrete layer of elastomeric material is provided between a belt layer and carcass layer and not limited to the belt edge region.

B60C 2009/1885

{with belt ply between adjacent carcass plies}

Definition statement

This place covers:

Subject matter wherein the tyre comprises multiple carcass plies and a belt layer is arranged between at least two of the carcass plies.

B60C 2009/1892

{with belt ply radial inside the carcass structure}

Definition statement

This place covers:

Subject matter wherein a belt layer is arranged radially inwards of the carcass reinforcement layers.

B60C 9/20

built-up from rubberised plies each having all cords arranged substantially parallel

Definition statement

This place covers:

Subject matter wherein the belt layer structure comprises a plurality of reinforcement cords, yarns, threads, wires, filaments or the like having a parallel arrangement and which are coated with an elastomer layer to form a ply.

B60C 9/2003

{characterised by the materials of the belt cords}

Definition statement

This place covers:

Subject matter wherein the belt layer is characterised by the material or composition of the reinforcing elements.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tyre reinforcements made of metallic elements	B60C 9/0007
Tyre reinforcements made of mineral fibres	B60C 9/0028
Tyre reinforcements made of organic materials	B60C 2009/0035
Tyre reinforcements made of synthetic materials	B60C 9/0042
Tyre reinforcements made of different materials	B60C 9/005

B60C 9/2006

{consisting of steel cord plies only}

Definition statement

This place covers:

Subject matter where the entire belt package consists solely of steel cord plies, e.g. construction vehicle tyres where the working plies and the protection plies are made of steel – such structure is usually provided for light truck tyres, heavy duty tyres or construction vehicle tyres.

B60C 9/2009

{comprising plies of different materials}

Definition statement

This place covers:

Subject matter wherein the tyre comprises multiple plies wherein one ply has reinforcing elements of different material from that of another ply – such structure is usually provided in passenger car tyres, e.g. two steel plies and one nylon cap ply.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Different cords in the same layer	B60C 2009/2029

B60C 2009/2025

{with angle different or variable in the same layer}

Definition statement

This place covers:

Subject matter wherein the belt reinforcing elements are disposed such that an extension of the reinforcing elements from lateral edge to the other lateral edge of the belt includes more than one angular orientation such that the reinforcing elements in said ply do not lie along a single plane.

B60C 2009/2029

{with different cords in the same layer, i.e. cords with different materials or dimensions}

Definition statement

This place covers:

Subject matter wherein a belt ply comprises cords having different materials, dimensions or constructions.

B60C 2009/2032

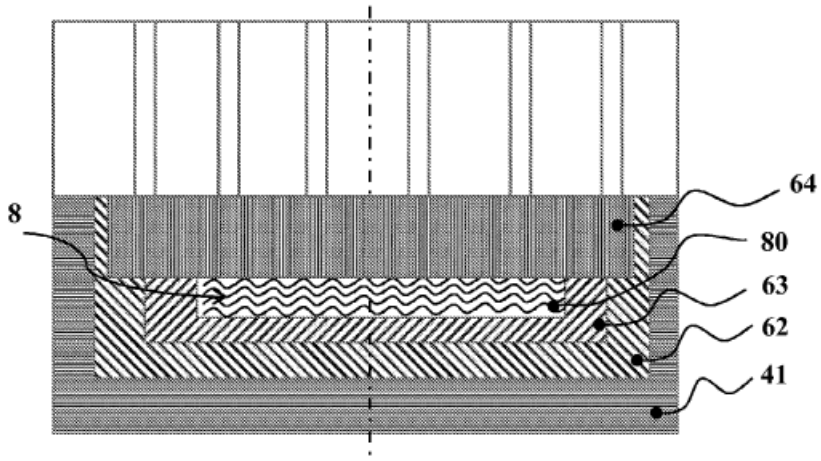
{characterised by the course of the belt cords, e.g. undulated or sinusoidal}

Definition statement

This place covers:

Subject matter wherein the belt reinforcing elements are characterised by a special path of the reinforcing element along its extension direction, e.g. cords extend with an undulating or sinusoidal shape.

Illustrative example of subject matter classified in this place:



Layer (8) has cords (80) that are undulated.

Special rules of classification

Belt plies having a folded or zigzag configuration wherein the reinforcement bends back onto itself at the lateral edges of the ply should be classified under B60C 9/26 or B60C 9/263.

B60C 2009/2035

{built-up by narrow strips}

Definition statement

This place covers:

Subject matter wherein the belt ply is comprised of material formed into thin strips or bands.

B60C 2009/2038

{using lateral belt strips at belt edges, e.g. edge bands}

Definition statement

This place covers:

Subject matter wherein the disposition of a ply having cords inclined or 90 degrees to the circumferential direction is limited to an axially outer edge of a belt reinforcement layer.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Belts with an interrupted belt ply, e.g. using two or more portions of the same ply	B60C 2009/2041

B60C 9/22

the plies being arranged with all cords disposed along the circumference of the tyre

Definition statement

This place covers:

Subject matter wherein the tyre comprises at least one belt ply having cords that define an angle of substantially zero degrees relative to a median equatorial plane of the tyre.

Tyres having a single ply of substantially zero-degree cords.

B60C 9/2204

{obtained by circumferentially narrow strip winding}

Definition statement

This place covers:

Subject matter wherein the belt ply is comprised of material formed into thin strips or bands which are wrapped around the carcass in the crown region according to a predetermined pattern, e.g. helically wound band strip.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Building a tyre on a round core wherein a continuous band is applied by winding it spirally	B29D 30/1621
Building a tyre on a round core wherein a continuous band is applied by winding it helically	B29D 30/1628
Building a tyre on a round core wherein a continuous band is applied by back and forth (zigzag) movement	B29D 30/1635
Building a tyre on a drum wherein a continuous band is applied by winding it spirally	B29D 30/3021
Building a tyre on a drum wherein a continuous band is applied by winding it helically	B29D 30/3028
Building a tyre on a drum wherein a continuous band is applied by back and forth (zigzag) movement	B29D 30/3035

B60C 2009/2219

{with a partial zero degree ply at the belt edges - edge band}

Definition statement

This place covers:

Subject matter wherein the disposition of a zero-degree ply is limited to an axially outer edge of a belt reinforcement layer.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Zero-degree plies that are interrupted, i.e. plies using two or more portions for the same ply	B60C 2009/2223

B60C 9/26

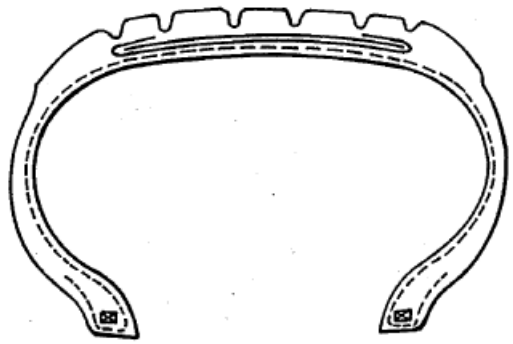
Folded plies

Definition statement

This place covers:

Subject matter wherein the lateral end of a belt ply is folded or bent to extend back in the opposite inclination direction at the lateral edges of the ply.

Illustrative example of subject matter classified in this place:



B60C 9/263

{further characterised by an endless zigzag configuration in at least one belt ply, i.e. no cut edge being present}

Definition statement

This place covers:

Subject matter wherein the belt ply comprises a continuous reinforcement strip or cord which extends at an inclination across the ply and then bends back in the opposite inclination direction at the lateral edges of the ply so as to form an endless zigzag configuration.

Illustrative examples of subject matter classified in this place:

1.

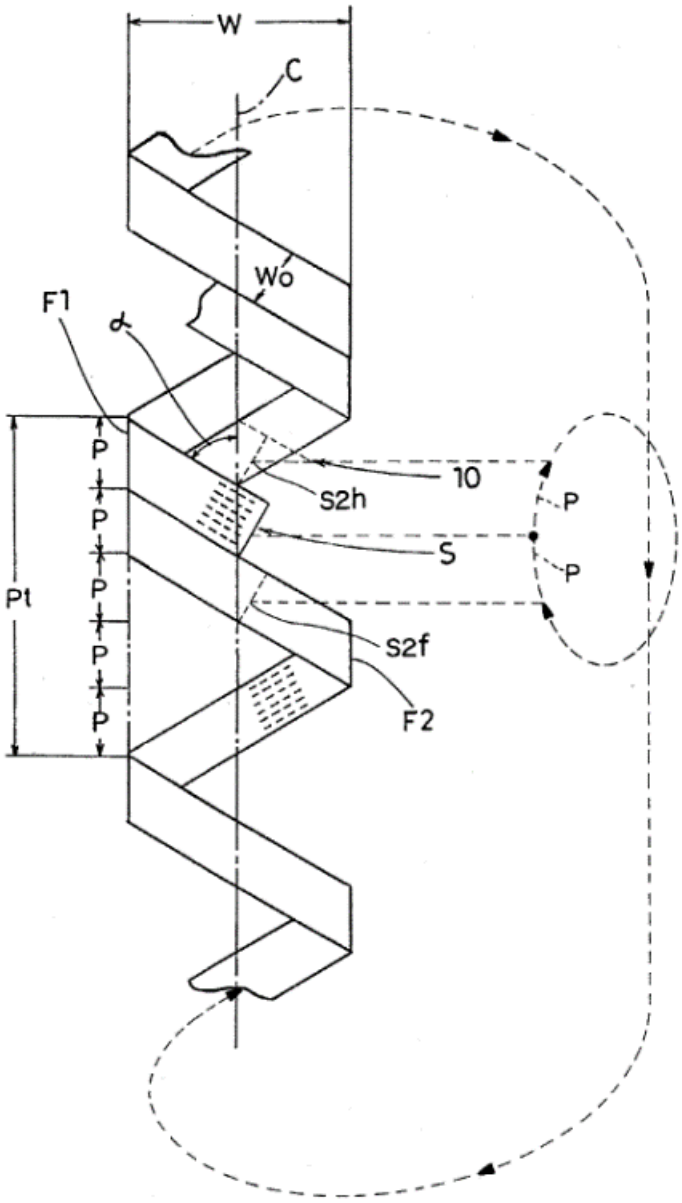


Figure 1 shows a strip being folded upon itself at the edges and forming a zigzag configuration.

2.

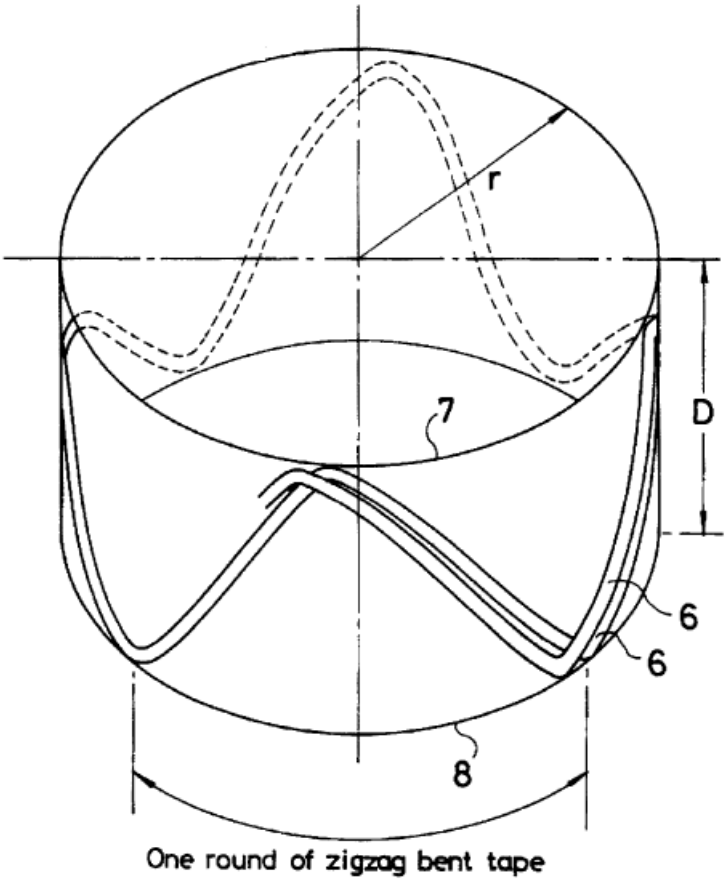


Figure 2 shows a strip that is bent at the edges to form a zigzag configuration without being folded upon itself.

B60C 9/28

characterised by the belt or breaker dimensions or curvature relative to carcass (B60C 9/30 takes precedence)

Definition statement

This place covers:

Subject matter wherein significance is attributed to the size or the curvilinear profile of the belt or breaker.

References

Limiting references

This place does not cover:

Belts and breakers asymmetric to the midcircumferential plane	B60C 9/30

B60C 9/30

asymmetric to the midcircumferential plane of the tyre

Definition statement

This place covers:

Subject matter wherein the crown reinforcement or cushioning layers are asymmetric about the midcircumferential plane of the tyre.

B60C 11/00

Tyre tread bands; Tread patterns; Anti-skid inserts

Definition statement

This place covers:

Tyre tread bands characterised by physical properties, dimensions and the like as well as tyre tread bands characterised by at least two different tread sections, e.g. cap section-base section or side-by-side tread sections, wherein at least one of the tread sections has a specified chemical composition or physical properties.

Tread patterns characterised by tread elements, e.g. blocks, ribs, grooves, channels, sipes, incisions, voids, recesses, notches, slits, slots or holes.

In general grooves remain open in the footprint whereas sipes close in the footprint.

Anti-skid inserts characterised by inserts, short fibres, spikes or studs for improving anti-skid.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Rubber compositions for treads	B60C 1/0016
Soles for shoes	A43B 13/00
Producing tyre treads	B29D 30/52
Tracks for endless track vehicles	B62D 55/18
Tracks of continuously flexible type, e.g. rubber belts	B62D 55/24

Special rules of classification

Non-skid devices temporarily attachable to tyre treads are only classified in B60C 27/00.

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

NTG	net to gross; contact area ratio; land ratio; total contact area/total tread area; 100% - GA [negative ratio]
GA	groove area ratio; negative ratio; sea ratio; total groove area/total tread area; 100% - NTG
L/S	land sea ratio; total contact area/total groove area
S/L	sea land ratio; total groove area/total contact area

open in footprint	when the mounted tyre is contacting the road, the walls of material delimiting a void do not contact one another
closed in footprint	when the mounted tyre is contacting the road, the walls of material delimiting a void at least partially come into contact with one another

B60C 11/0008

{characterised by the tread rubber}

Definition statement

This place covers:

Tyre treads characterised by physical properties, dimensions or the like of the tread rubber.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tyre treads characterised by chemical composition	B60C 1/0016

B60C 2011/0016

{Physical properties or dimensions}

Definition statement

This place covers:

Tread characterised by physical properties including hardness, modulus, tan delta, i.e. hysteresis, snow traction index and the like.

Treads characterised by dimensions including tread thickness, e.g. having specified units such as millimetres.

B60C 2011/0025

{Modulus or tan delta}

Definition statement

This place covers:

Treads when the modulus is described numerically, e.g. modulus = 10 MPa; and when the tan delta is described numerically, e.g. tan delta = 0.10.

B60C 2011/0033

{Thickness of the tread}

Definition statement

This place covers:

Treads when the thickness of the tread is described absolutely, e.g. tread thickness = 8 mm to 10 mm, or thickness is described relatively, e.g. tread thickness at equatorial plane is less than tread thickness at tread edge, or tread thickness = 6% tread width.

B60C 11/0041

{comprising different tread rubber layers}

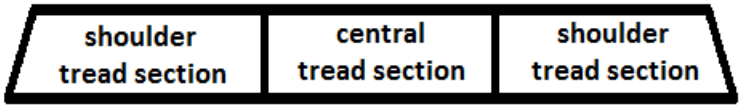
Definition statement

This place covers:

Tyre treads characterised by at least two different tread sections, e.g. cap and base sections or side by side tread sections, wherein at least one of the tread sections has specified chemical composition and/or physical properties different from the other section.

Illustrative example of subject matter classified in this place:

Side-by-side tread section



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tread having different rubber for tread wings	B60C 2011/016
Tread grooves covered by a rubber different from the tread rubber	B60C 11/1346
Tread having rubber anti-skid inserts	B60C 11/18

B60C 11/005

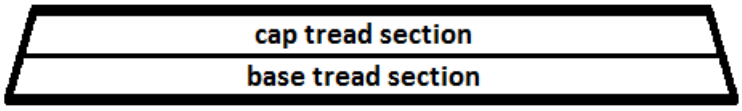
{with cap and base layers}

Definition statement

This place covers:

Treads characterised by tread rubber layers disposed adjacent in the radial direction.

Illustrative example of subject matter classified in this place:



B60C 11/0058

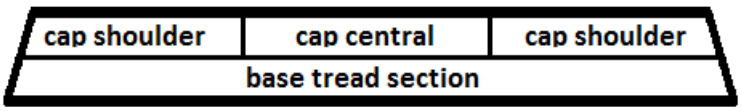
{with different cap rubber layers in the axial direction}

Definition statement

This place covers:

Treads characterised by different cap rubber layers in the axial direction.

Illustrative example of subject matter classified in this place:



B60C 11/0066

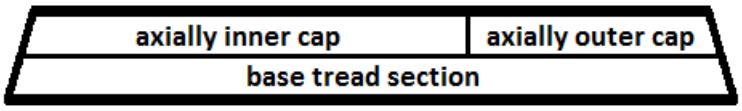
{having an asymmetric arrangement}

Definition statement

This place covers:

Treads characterised by cap layers having asymmetric arrangement about the tyre equator.

Illustrative example of subject matter classified in this place:



B60C 11/0075

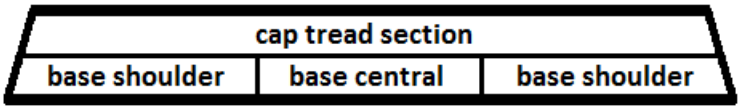
{with different base rubber layers in the axial direction}

Definition statement

This place covers:

Treads characterised by different base rubber layers in the axial direction.

Illustrative example of subject matter classified in this place:



B60C 11/0083

{characterised by the curvature of the tyre tread}

Definition statement

This place covers:

Subject matter wherein the curvature of tread between tread edges is described numerically by using equations or by plural radii, e.g. tread has radius R1 = 500 mm or radius R1 > radius R2.

B60C 2011/0091

{built-up by narrow strip winding}

Definition statement

This place covers:

Treads made by winding narrow strips.

B60C 2011/013

{provided with a recessed portion}

Definition statement

This place covers:

Subject matter wherein the shoulder is provided with at least one recess.

Illustrative examples of subject matter classified in this place:

1.

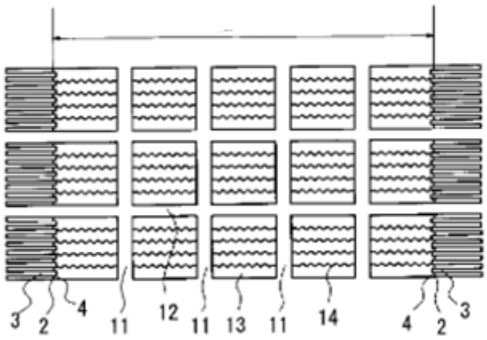


Figure 1 illustrates recesses (4) in the shoulder.

2.

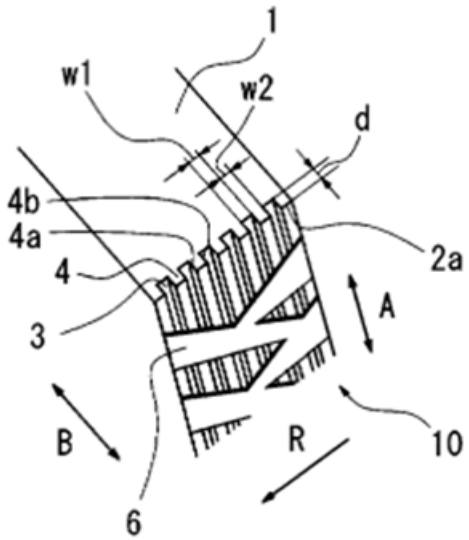


Figure 2 illustrates recesses (6) in the shoulder.

B60C 11/02

Replaceable treads

Definition statement

This place covers:

Replaceable treads including treads which are bonded or secured mechanically to a cured tyre carcass, e.g. precured treads for retreading a used tyre.

B60C 11/03

Tread patterns

Definition statement

This place covers:

Treads characterised by tread elements:

- blocks or ribs;
- grooves or channels, open in footprint;
- sipes or incisions, closed in footprint;
- voids, e.g. recesses, notches, slits, slots, holes.

B60C 11/0302

{directional pattern, i.e. with main rolling direction}

Definition statement

This place covers:

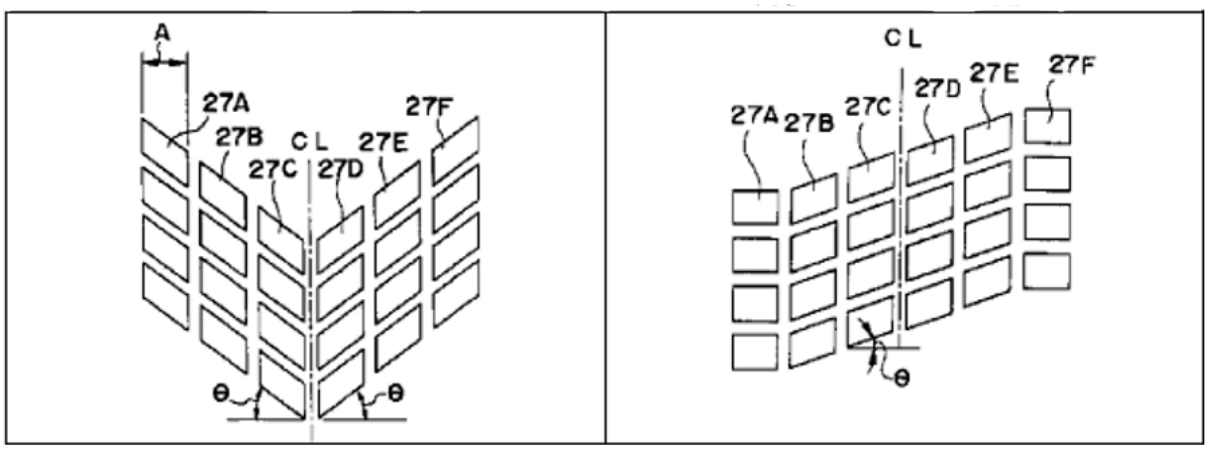
Directional tread patterns.

A directional pattern commonly has lateral grooves on each side of the tyre equator which converge at an angle to form a "V" shape.

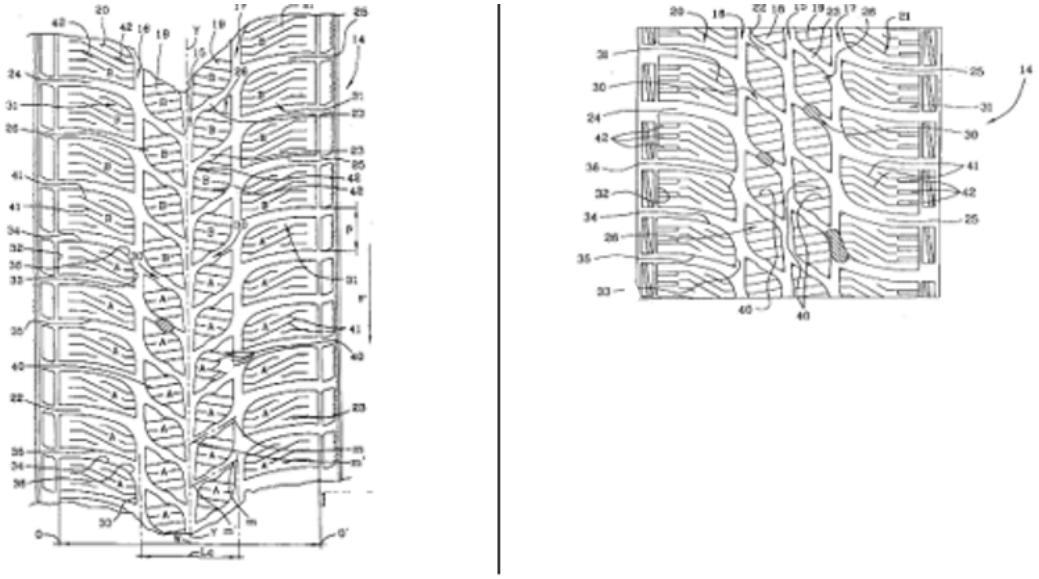
A tyre having directional pattern has an intended rotational direction whereas a tyre having non-directional pattern can be mounted in either direction on a vehicle and retain the same pattern arrangement.

Illustrative examples of subject matter classified in this place:

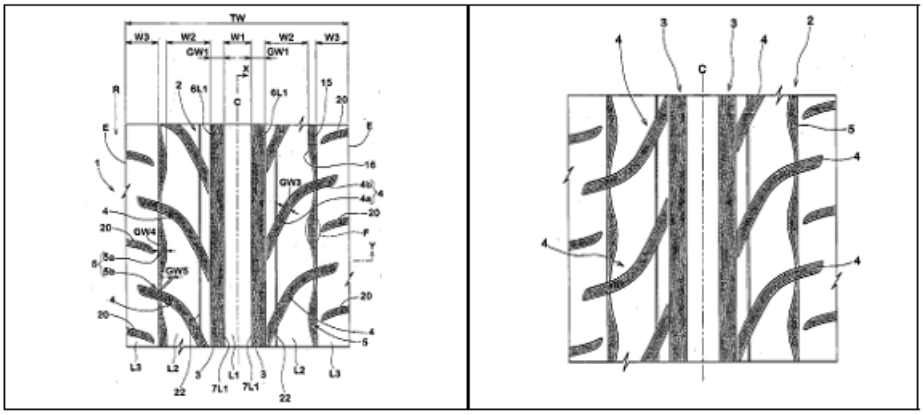
1.



2.



3.



In figures 1, 2 and 3, the left columns illustrate directional tread patterns in contrast to the right columns which illustrate non-directional tread patterns.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Asymmetric patterns having no rotational direction	B60C 11/0304
Directional patterns comprising tread lugs arranged parallel or oblique to the axis of rotation	B60C 2011/0313

B60C 11/0304

{Asymmetric patterns}

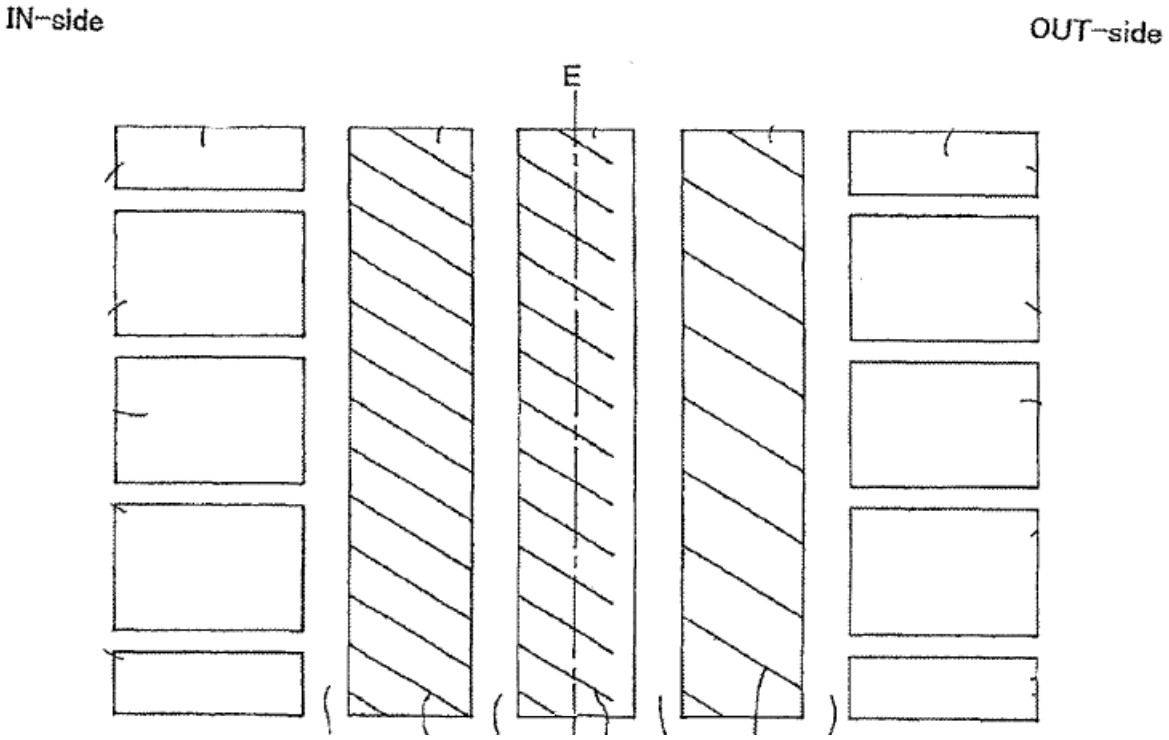
Definition statement

This place covers:

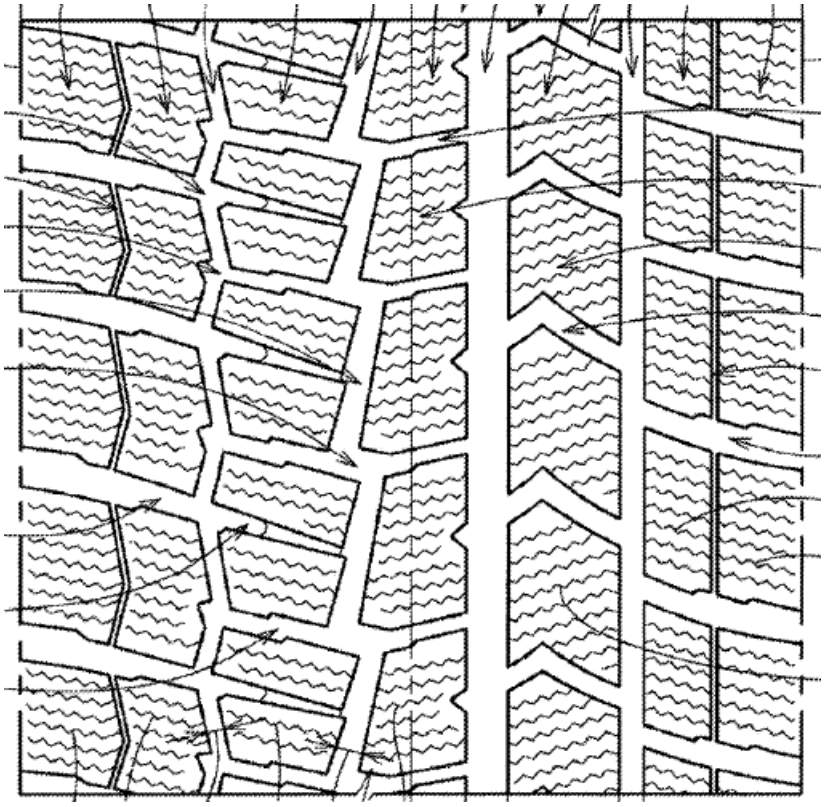
Tread patterns whereby one side of tread centreline is not a mirror image or does not have symmetry with a tread pattern on other side of tread centreline. Asymmetric tread patterns are generally characterised by a specified mounting direction in relation to the vehicle, e.g. inboard vs. outboard or inner vs. outer side.

Illustrative examples of subject matter classified in this place:

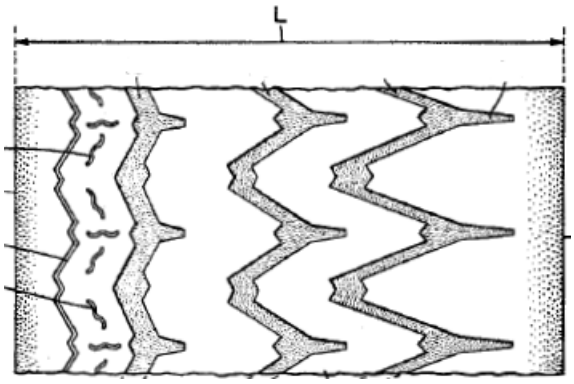
1.



2.



3.



These figures illustrate an asymmetric tread pattern having at least one tread feature on one half of the tread that is not the same as the other half of the tread.

Special rules of classification

A tread pattern that has line-symmetry or point-symmetry about the tread centreline, i.e. non-directional, is not considered to be an asymmetric tread pattern.

A tread pattern wherein the patterns on either side of the centreline are circumferentially off-set mirror images is not considered to be an asymmetric tread pattern.

B60C 11/0306

{Patterns comprising block rows or discontinuous ribs}

Definition statement

This place covers:

Treads including at least one row of blocks separated by width direction grooves and that may include at least one rib.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tread pattern consists only of isolated elements, e.g. blocks	B60C 11/11

B60C 11/0309

{further characterised by the groove cross-section}

Definition statement

This place covers:

Treads comprising at least one block row and further characterised by a special shape of the groove cross-section of the circumferential grooves.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tread characterised by the groove cross-section	B60C 11/13

Special rules of classification

Treads having grooves characterised by the groove cross-section should also receive classification under B60C 11/13.

B60C 11/0311

{Patterns comprising tread lugs arranged parallel or oblique to the axis of rotation}

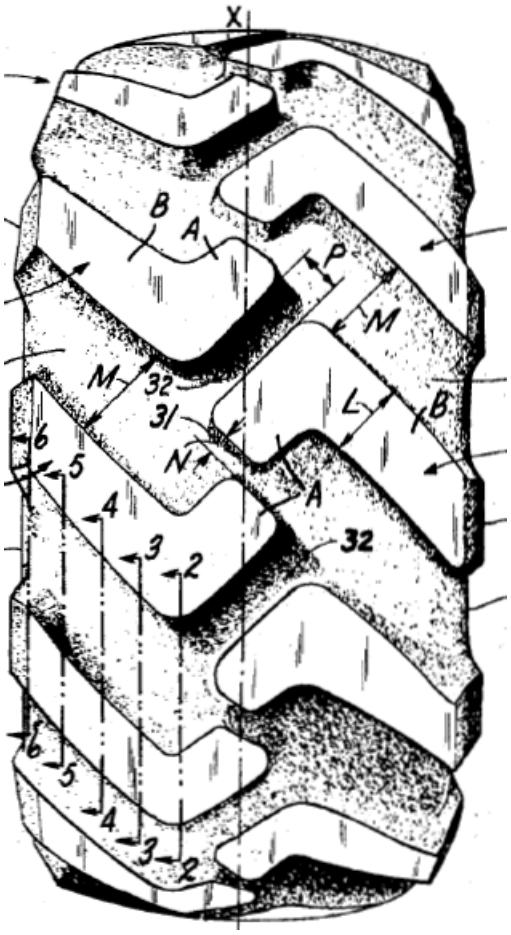
Definition statement

This place covers:

Treads comprising large tread lugs for agricultural tyre or construction tyre or treads comprising large lug grooves extending from tread edge to centre rib and defining large tread lug elements connected to the centre rib.

Illustrative examples of subject matter classified in this place:

1.



2.

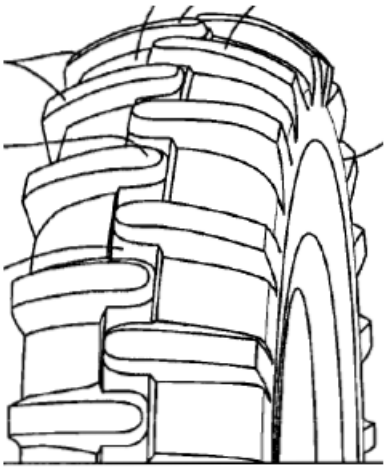
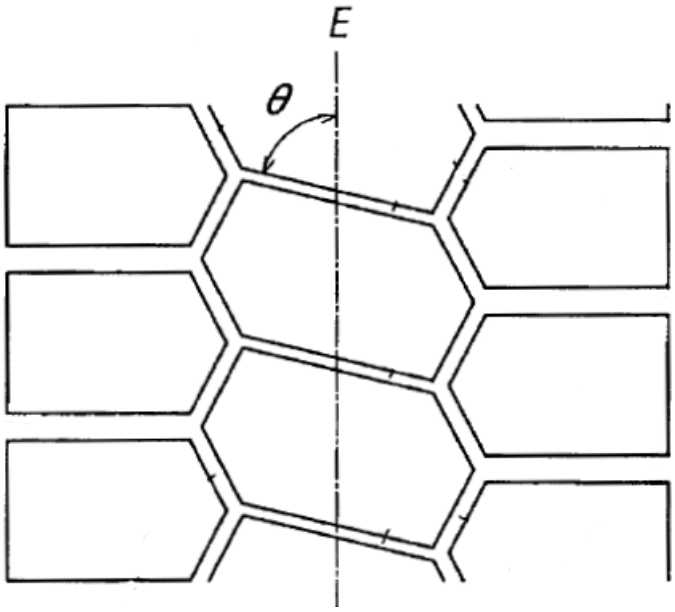


Figure 2 shows an off-road tyre having two rows of large lugs.

3.



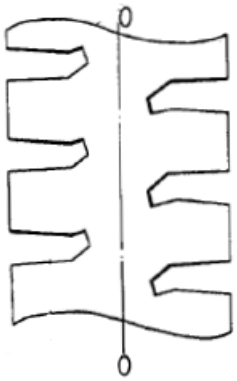


Figure 3 shows a construction tyre having three rows of large lugs. Right figure shows a construction tyre having two rows of large lug grooves.

B60C 2011/0313

{directional type}

Definition statement

This place covers:

Treads comprising large tread lugs and further characterised by a directional pattern.

Illustrative example of subject matter classified in this place:

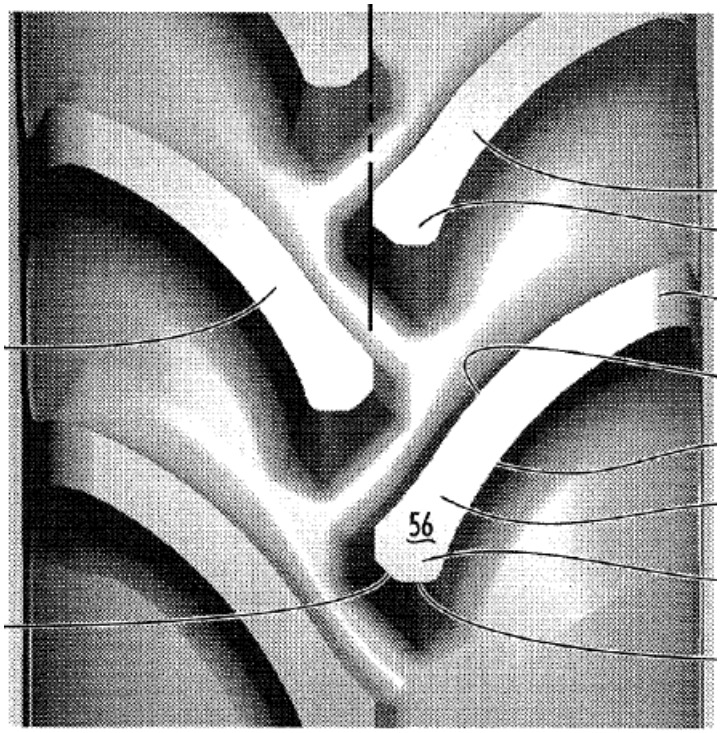


Figure shows an agricultural tyre having two rows of large lugs (56) arranged to define a directional tread patter.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Treads characterised by directional pattern	B60C 11/0302

B60C 11/0316

{further characterised by the groove cross-section}

Definition statement

This place covers:

Treads further characterised by the shape of the groove cross-section.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Treads characterised by the groove cross-section	B60C 11/13

Special rules of classification

Treads having grooves characterised by the groove cross-section should also receive classification under B60C 11/13.

B60C 11/0318

{irregular patterns with particular pitch sequence}

Definition statement

This place covers:

Treads comprising repeating geometric features having different pitch lengths usually for reducing noise, e.g. a row of blocks comprising blocks having large length L, blocks having medium length M and blocks having small length S arranged in a sequence such as SMLMSML ... or random sequence of S, M, L.

B60C 11/032

{Patterns comprising isolated recesses}

Definition statement

This place covers:

Tread patterns that include isolated recesses e.g. holes or both end closed grooves.

Illustrative examples of subject matter classified in this place:

1.

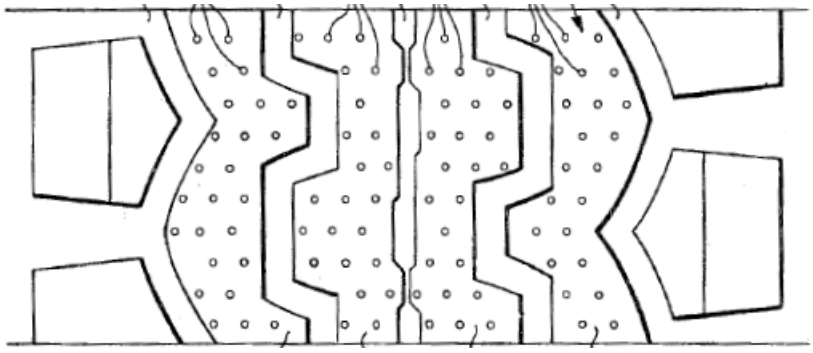


Figure 1 shows a tread having ribs, each comprising small holes.

2.

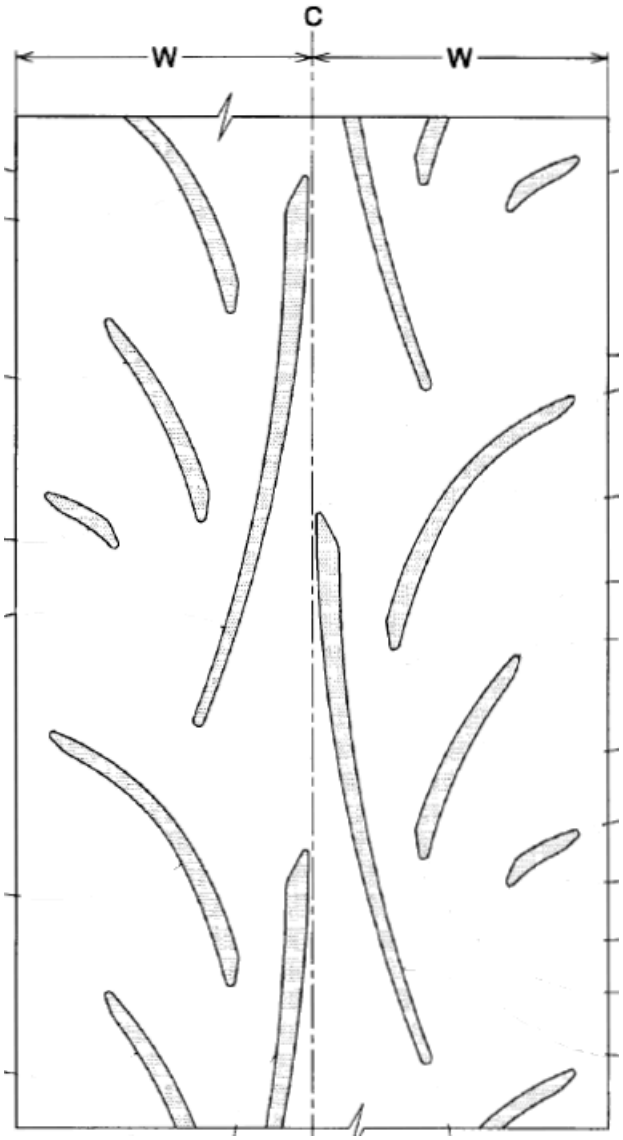


Figure 2 shows a tread having isolated grooves.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Treads comprising channels under the tread surface	B60C 11/0323

B60C 11/0323

{tread comprising channels under the tread surface, e.g. for draining water}

Definition statement

This place covers:

Treads comprising sunken cavities that appear at the tread surface after the tyre is worn. The sunken cavities may or may not be connected to the tread surface by a sipe or incision.

Illustrative example of subject matter classified in this place:

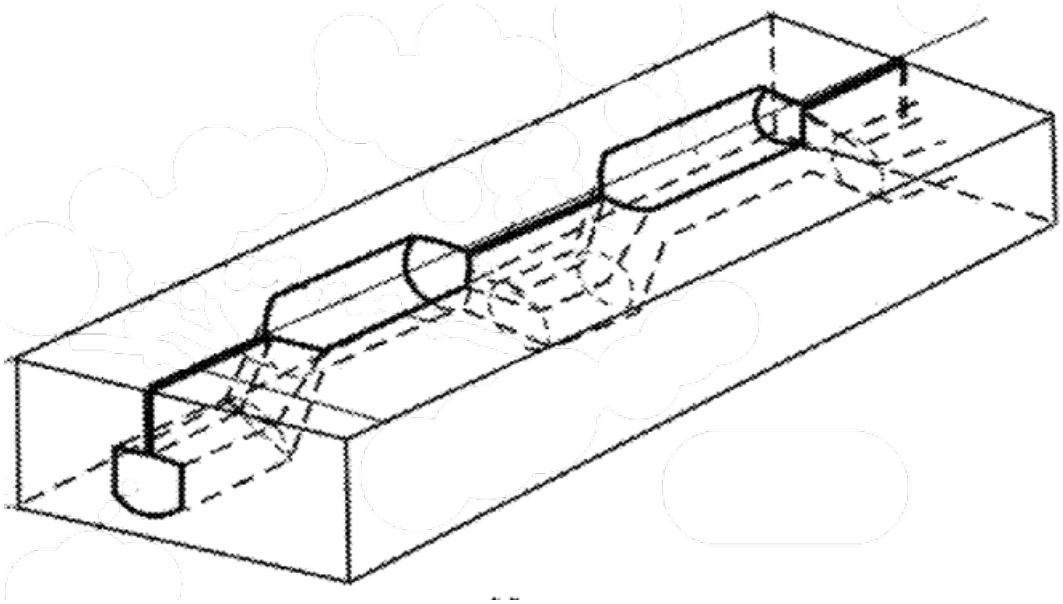


Figure shows sunken cavities each connected to the tread surface by a sipe.

B60C 11/0327

{characterised by special properties of the tread pattern}

Definition statement

This place covers:

Tyres characterised by the properties of the tread pattern such as groove area ratio, shape of the footprint or stiffness of the tread.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Physical properties or dimensions of tread rubber	B60C 2011/0016
Modulus or tan delta of the tread rubber	B60C 2011/0025

B60C 11/033

{by the void or net-to-gross ratios of the patterns}

Definition statement

This place covers:

Net-to-gross ratios, groove area ratios, volume ratios or the like of tread patterns being described numerically or net-to-gross ratio, groove area ratio, volume ratio, or the like of one region of tread pattern being compared to another region of the tread pattern, e.g. net to gross of central region is less than net to gross of shoulder region.

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

NTG	net to gross = contact area ratio = land ratio
NTG	total contact area/total tread area
NTG	[net to gross] = 100% - GA [negative ratio]
GA	groove area ratio = negative ratio = sea ratio
GA	total groove area/total tread area
GA	[groove area ratio] = 100% - NTG [net to gross]
L/S	land sea ratio
L/S	total contact area/total groove area
S/L	sea land ratio
S/L	total groove area/total contact area

B60C 11/0332

{by the footprint-ground contacting area of the tyre tread}

Definition statement

This place covers:

Tyres characterised by the footprint or contact patch of the tread, including:

- overall shape of the footprint, e.g. rectangular or oval-shaped;
- leading or trailing edge of the footprint;
- dimensions of the footprint, e.g. ratio of the length of the footprint at centreline to length of the footprint at shoulder or width of the footprint at different loads.

B60C 2011/0337

{characterised by particular design features of the pattern}

Definition statement

This place covers:

Design features of the pattern including circumferential grooves, lateral grooves, slant grooves or continuous ribs.

B60C 2011/0339

{Grooves}

Definition statement

This place covers:

Tread patterns having at least one groove.

B60C 2011/0341

{Circumferential grooves}

Definition statement

This place covers:

Tread patterns having at least one circumferential groove.

B60C 2011/0346

{with zigzag shape}

Definition statement

This place covers:

Circumferential grooves having undulating traces.

B60C 2011/0348

{Narrow grooves, i.e. having a width of less than 4 mm}

Definition statement

This place covers:

Circumferential grooves described as having a width less than 4 mm.

Special rules of classification

A figure showing a circumferential groove but no circumferential sipes having significantly smaller width than typical full width main circumferential grooves should be placed in B60C 2011/0348 regardless of whether the exact width is numerically specified.

B60C 2011/0351

{Shallow grooves, i.e. having a depth of less than 50% of other grooves}

Definition statement

This place covers:

Tread patterns whereby at least one circumferential groove has a depth of less than 50% of at least one other groove.

B60C 2011/0353

{characterised by width}

Definition statement

This place covers:

Tread patterns whereby the width of circumferential groove is described numerically.

B60C 2011/0355

{characterised by depth}

Definition statement

This place covers:

Tread patterns whereby the depth of circumferential groove is described numerically.

B60C 2011/0358

{Lateral grooves, i.e. having an angle of 45 to 90 degees to the equatorial plane}

Definition statement

This place covers:

Tread patterns whereby the angle of lateral groove is illustrated or described numerically as being 45 to 90 degrees with respect to the equatorial plane.

B60C 2011/0362

{Shallow grooves, i.e. having a depth of less than 50% of other grooves}

Definition statement

This place covers:

Tread patterns whereby the lateral groove is a shallow lateral groove having a depth less than 50% of at least one other groove.

B60C 2011/0365

{characterised by width}

Definition statement

This place covers:

Tread patterns whereby the width of lateral groove is described numerically.

B60C 2011/0367

{characterised by depth}

Definition statement

This place covers:

Tread patterns whereby the depth of lateral groove is described numerically.

B60C 2011/0369

{with varying depth of the groove}

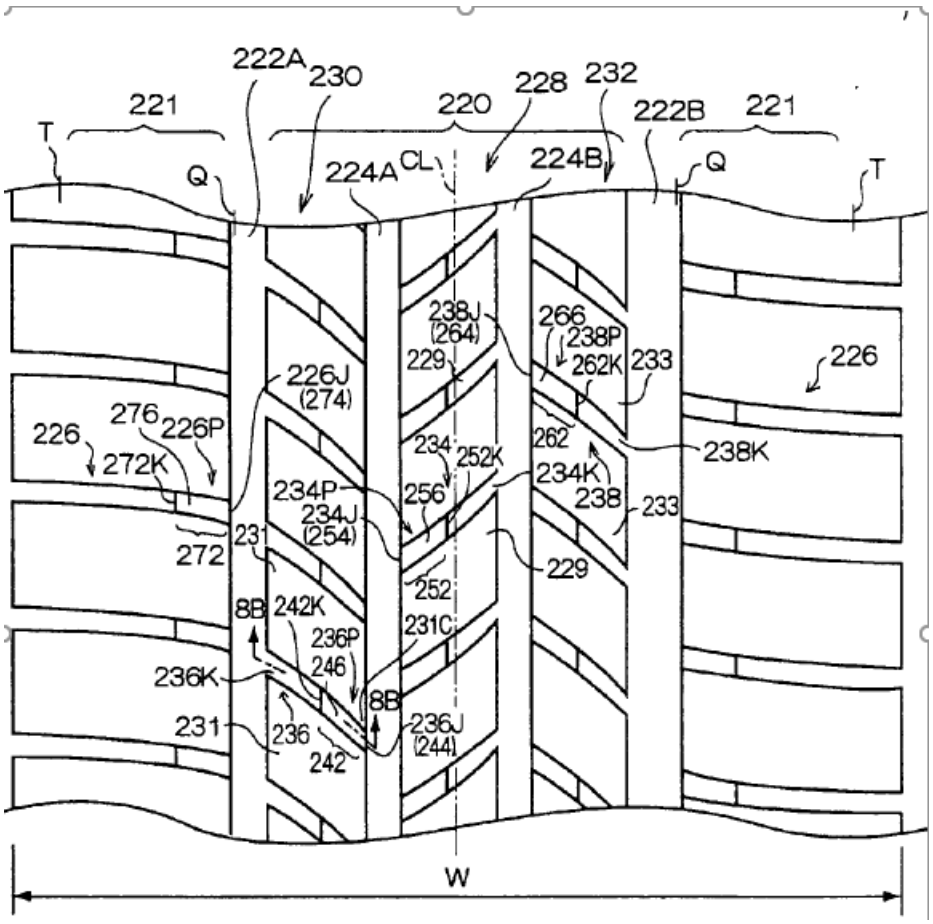
Definition statement

This place covers:

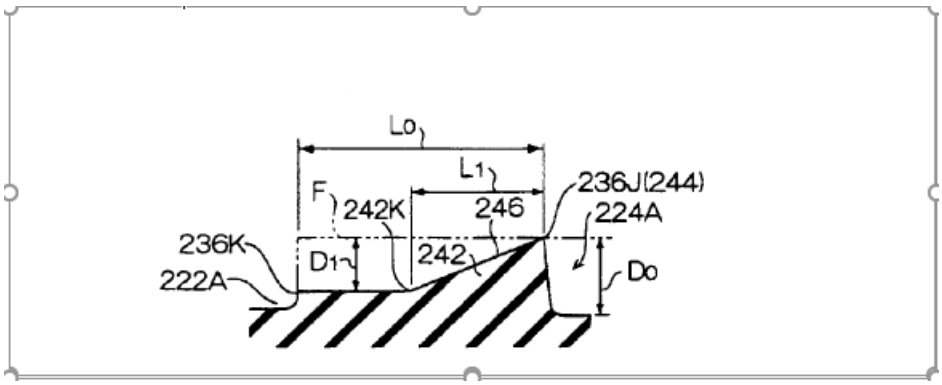
Tread patterns whereby the depth of lateral grooves changes along length of lateral groove or along width of lateral groove. The varying depth may be defined by a tie bar.

Illustrative example of subject matter classified in this place:

1a.



1b.



Above figures 1a and 1b show a lateral groove having a depth varying over length (L1).

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tie bars for linking block elements and bridging the groove	B60C 11/1369

B60C 2011/0372

{with particular inclination angles}

Definition statement

This place covers:

Tread patterns whereby the angle of lateral groove is described numerically.

B60C 2011/0374

{Slant grooves, i.e. having an angle of about 5 to 35 degrees to the equatorial plane}

Definition statement

This place covers:

Tread patterns whereby the angle of slant groove is illustrated or described numerically as being 5 to 35 degrees with respect to the equatorial plane or angle.

B60C 2011/0376

{characterised by width}

Definition statement

This place covers:

Tread patterns whereby the width of slant groove is described numerically.

B60C 2011/0379

{characterised by depth}

Definition statement

This place covers:

Tread patterns whereby the depth of slant groove is described numerically.

B60C 2011/0381

{Blind or isolated grooves}

Definition statement

This place covers:

Treads comprising one end open grooves, i.e. one end of the groove is open to another groove and the other end of the groove terminates in a tread element such that the other end of the groove is closed.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Both end closed grooves	B60C 11/032

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

one end open groove	one end of the groove is open to another groove and the other end of the groove terminates in a tread element such that the other end of the groove is closed

B60C 2011/0383

{at the centre of the tread}

Definition statement

This place covers:

Tread patterns whereby one end open grooves are formed in land portion at equatorial plane.

B60C 2011/0395

{for linking shoulder blocks}

Definition statement

This place covers:

Tread patterns whereby the continuous rib is a continuous shoulder rib including lateral grooves having one end terminating in rib and the other end open to the tread end. The continuous rib may be divided by both end open sipes.

Illustrative examples of subject matter classified in this place:

1.

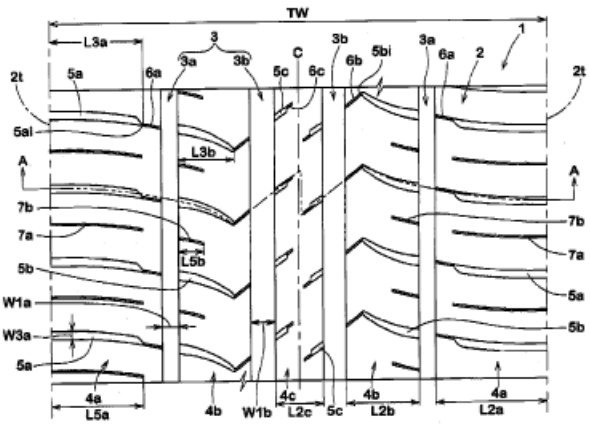


Figure 1 shows a shoulder rib (2) comprising a narrow rib divided by short sipes (6a) that are connected to shoulder lateral grooves (5a).

2.

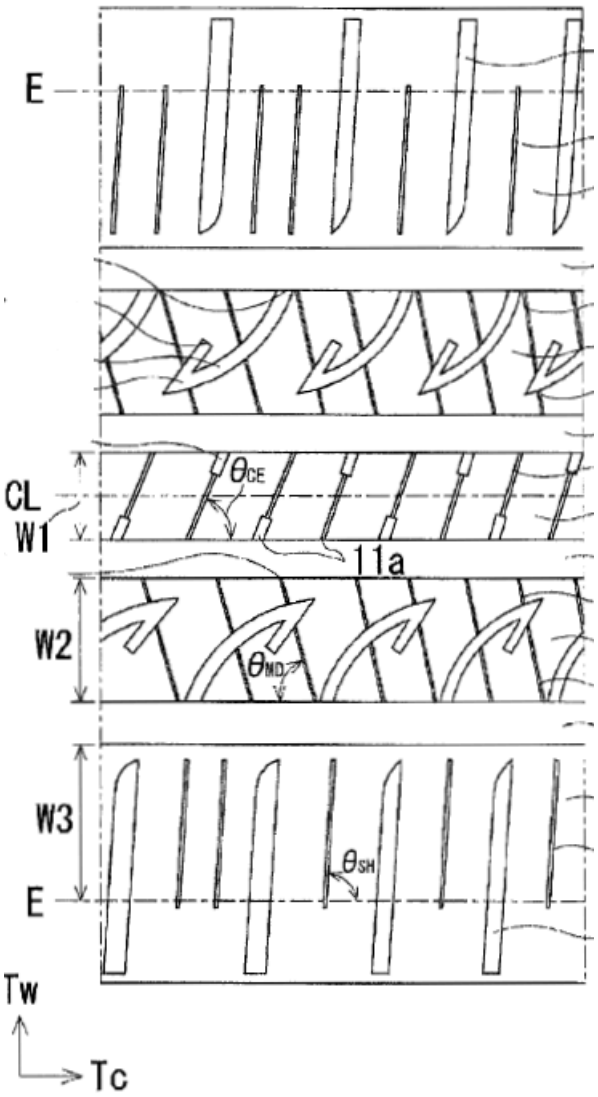


Figure 2 shows a shoulder rib comprising an undivided narrow rib and one end opening lateral grooves.

B60C 2011/0397

{Sacrificial ribs, i.e. ribs recessed from outer tread contour}

Definition statement

This place covers:

Treads including continuous ribs offset from the tread surface.

B60C 11/04

in which the raised area of the pattern consists only of continuous circumferential ribs, e.g. zig-zag (B60C 11/12, B60C 11/13 take precedence)

Definition statement

This place covers:

Tread patterns whereby all tread elements in the tread pattern are continuous circumferential ribs, i.e. circumferentially extending ribs that may be divided by both end open sipes, such that the tread pattern is exclusive of blocks.

References

Limiting references

This place does not cover:

Tread patterns characterised by narrow slits or incisions	B60C 11/12
Tread patterns characterised by groove cross-section	B60C 11/13

B60C 11/11

in which the raised area of the pattern consists only of isolated elements, e.g. blocks (B60C 11/12, B60C 11/13 take precedence)

Definition statement

This place covers:

Subject matter wherein all tread elements in the tread pattern are blocks such that the tread pattern is exclusive of ribs.

The subject-matter of this place refers in particular to irregularly arranged blocks which are not provided in simple block rows – such tread patterns may be found, for example, on off-road tyres.

References

Limiting references

This place does not cover:

Characterised by the use of narrow slits or incisions, e.g. sipes	B60C 11/12
Characterised by the groove cross-section, e.g. for buttressing or preventing stone-trapping	B60C 11/13

B60C 11/1204

{with special shape of the sipe}

Definition statement

This place covers:

Tread patterns whereby the sipes are characterised by the two-dimensional, i.e. planar, or three-dimensional shape of the sipe walls or by a particular shape formed in the tread, e.g. crank-shaped, zigzag, circular or polygonal.

Special rules of classification

Sipes having variable depth or width within the same sipe should include further classifications in B60C 11/1263 or B60C 11/1281, respectively.

B60C 2011/1209

{straight at the tread surface}

Definition statement

This place covers:

Tread patterns whereby in the plan view of the tread surface, the sipe has a rectilinear trace instead of curved.

B60C 2011/1213

{sinusoidal or zigzag at the tread surface}

Definition statement

This place covers:

Tread patterns whereby, in the plan view of the tread surface, the sipe has a sinusoidal, zigzag or wavy shape.

B60C 11/1218

{Three-dimensional shape with regard to depth and extending direction}

Definition statement

This place covers:

Tread patterns whereby sipes have three-dimensional shape, e.g. varying shape or undulating width in both the depth direction and extending directions or having a shape which splits in the depth direction, e.g. inverted Y-shape. Sipes which vary in only extension direction or depth direction are generally not considered to be three-dimensional sipes.

Illustrative examples of subject matter classified in this place:

1.

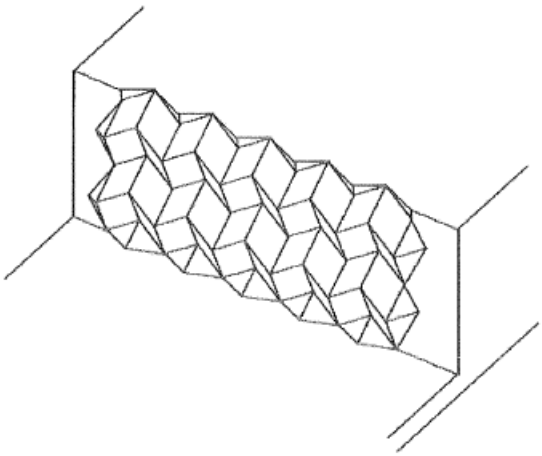


Figure 1 shows a three-dimensional sipe being zigzag along its length and being zigzag along its depth.

2.

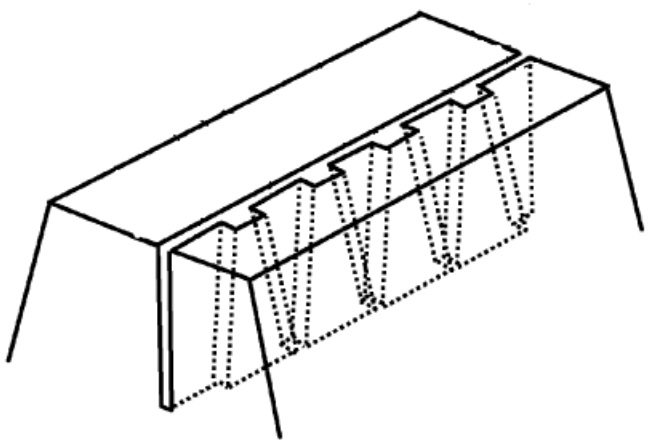


Figure 2 shows a three-dimensional sipe having wide portions varying along the depth of the sipe.

3.

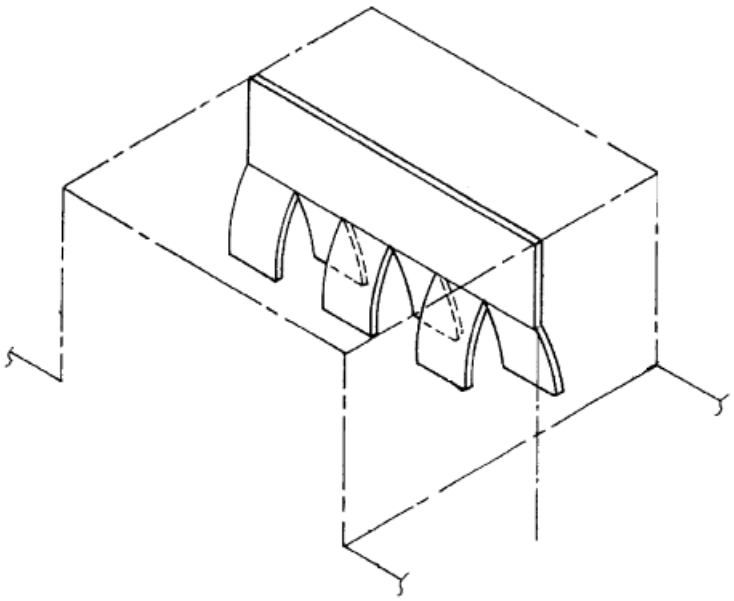


Figure 3 shows a three-dimensional sipe having lower branched portions.

B60C 11/1222

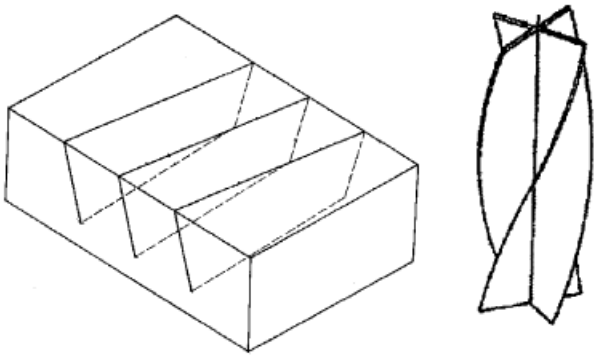
{Twisted or warped shape in the sipe plane}

Definition statement

This place covers:

Tread patterns whereby the shape of the sipe twists or warps along the extension of the sipe.

Illustrative example of subject matter classified in this place:



Above figures show sipes being twisted in the depth direction.

B60C 2011/1227

{having different shape within the pattern}

Definition statement

This place covers:

Tread patterns having sipes with different shapes or individual sipes having portions with different shapes, e.g. linear at ends and zigzag in middle.

Illustrative examples of subject matter classified in this place:

1.

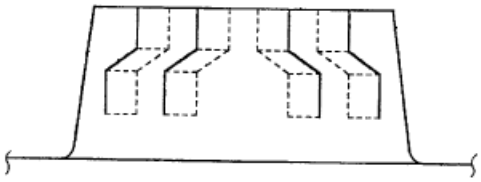


Figure 1 shows one type of sipes having a step portion facing left and another type of sipes having a step portion facing right.

2

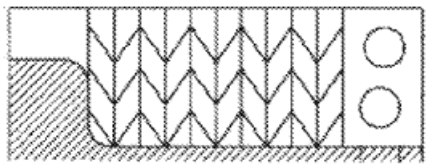


Figure 2 shows a sipe having a left flat region, a middle region having zigzag traces and a right region having circular protrusions.

3.

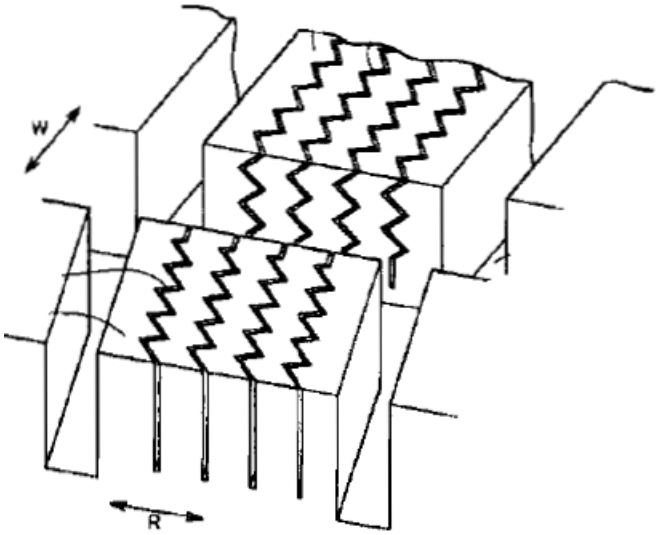


Figure 3 shows one block having a first sipe type being zigzag along its length and straight along its depth, and another block having a second sipe type being zigzag along its length and zigzag along its depth.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Sipes characterised only by variable depth	B60C 2011/1268
Sipes characterised only by variable width	B60C 2011/1286

B60C 2011/1231

{being shallow, i.e. sipe depth of less than 3 mm}

Definition statement

This place covers:

Tread patterns whereby the sipes or fine grooves have shallow depths.

B60C 11/1236

{with special arrangements in the tread pattern}

Definition statement

This place covers:

Tread patterns whereby the sipes are characterised by their location, orientation, or inclination in the tread pattern.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Sipes characterised by pitch or density	B60C 2011/129

B60C 11/124

{inclined with regard to a plane normal to the tread surface}

Definition statement

This place covers:

Tread patterns with sipes whose depth-wise extension is inclined with respect to the radial direction of the tyre.

Illustrative example of subject matter classified in this place:

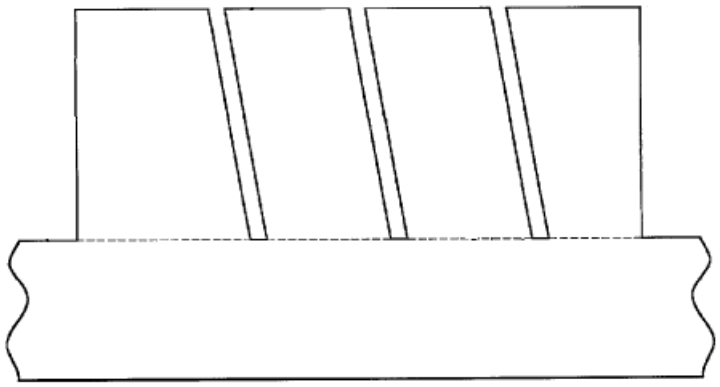


Figure shows sipes extending inward from the tread surface and being inclined with respect to the radial direction.

B60C 2011/1245

{being arranged in crossing relation, e.g. sipe mesh}

Definition statement

This place covers:

Tread patterns wherein sipes are arranged as a network of intersecting sipes, e.g. pattern forming a mesh.

Illustrative example of subject matter classified in this place:

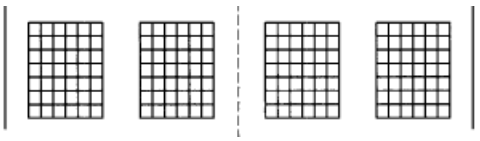


Figure shows circumferentially extending sipes intersecting axially extending sipes in a surface of a block to form a mesh.

B60C 11/125

{arranged at the groove bottom}

Definition statement

This place covers:

Tread patterns with sipes extending from bottom of a groove.

Illustrative example of subject matter classified in this place:

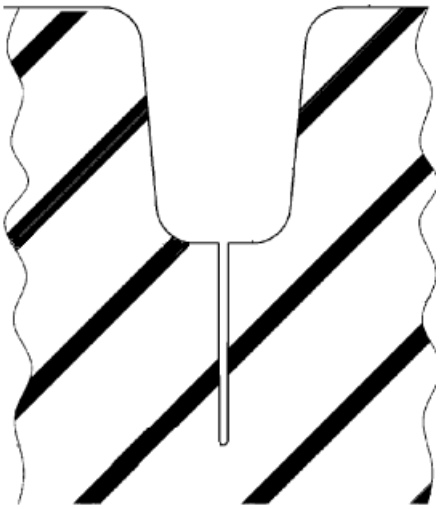


Figure shows a sipe extending radially inward from a bottom of a groove.

B60C 2011/1254

{with closed sipe, i.e. not extending to a groove}

Definition statement

This place covers:

Tread patterns whereby the sipes can be identified as closed or blind, i.e. both ends of the sipe do not open to a groove.

B60C 11/1259

{Depth of the sipe}

Definition statement

This place covers:

Tread patterns whereby the sipes are characterised by variable depth or specified depth dimensions.

B60C 11/1263

{different within the same sipe}

Definition statement

This place covers:

Tread patterns with sipes comprising portions having different depths.

Illustrative example of subject matter classified in this place:

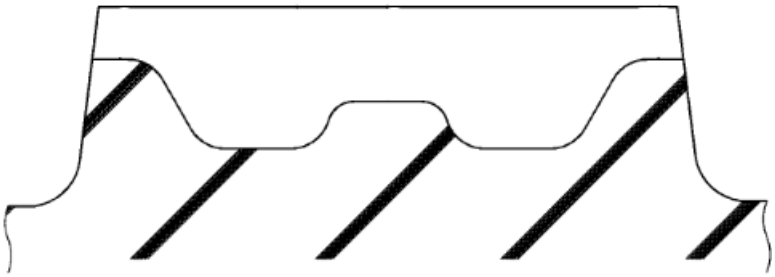


Figure shows a sipe having shallow end portions and a shallow middle portion.

B60C 2011/1268

{being different from sipe to sipe}

Definition statement

This place covers:

Treads comprising sipes having different depths.

B60C 11/1272

{Width of the sipe}

Definition statement

This place covers:

Treads comprising sipes characterised by variable width or specified width dimensions.

B60C 11/1281

{different within the same sipe, i.e. enlarged width portion at sipe bottom or along its length}

Definition statement

This place covers:

Tread patterns whereby the sipes comprise portions having different widths, e.g. enlarged bottom or enlarged or chamfered openings.

Illustrative examples of subject matter classified in this place:

1.

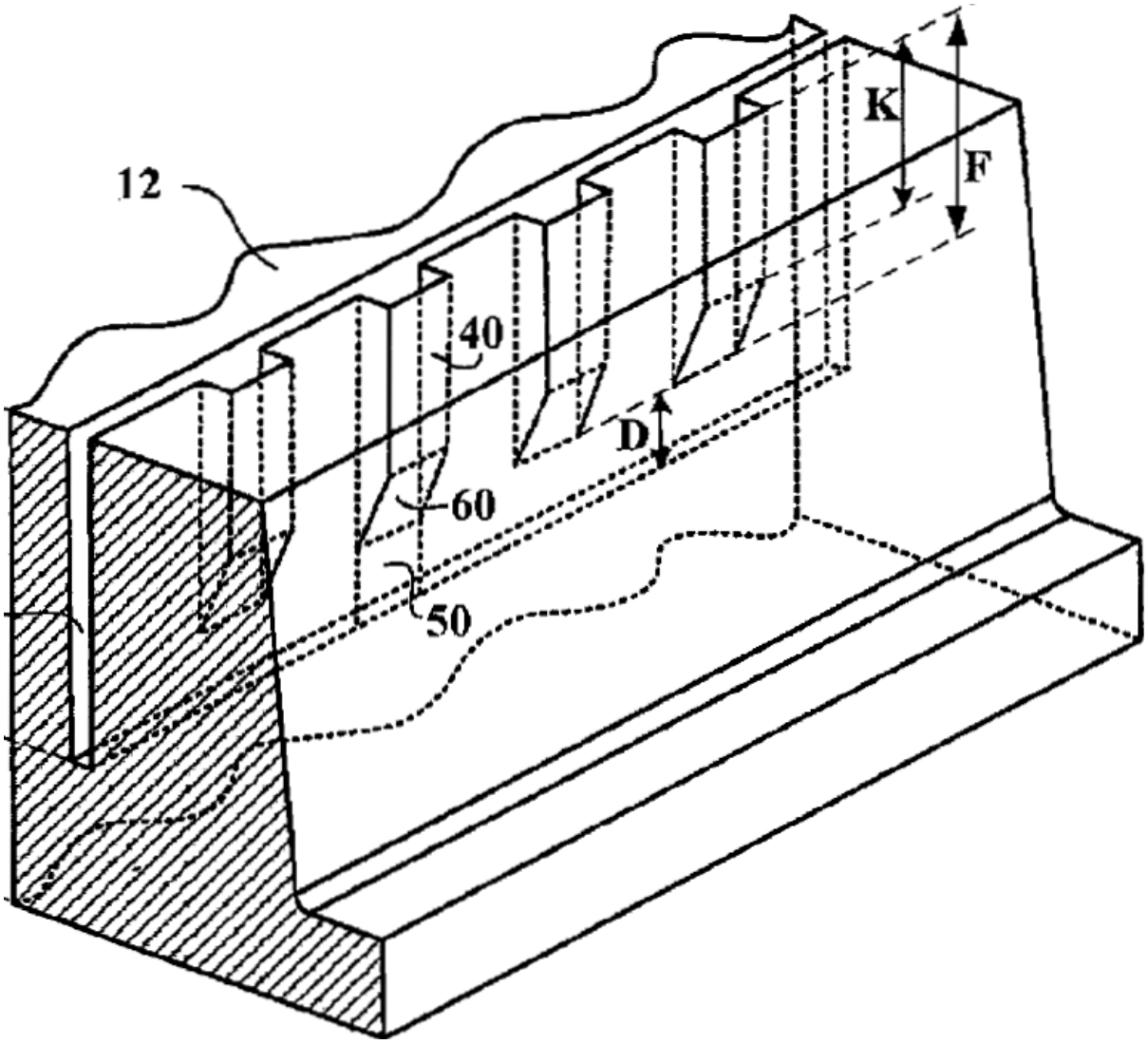


Figure 1 shows a sipe having a width varying along the length of the sipe.

2.

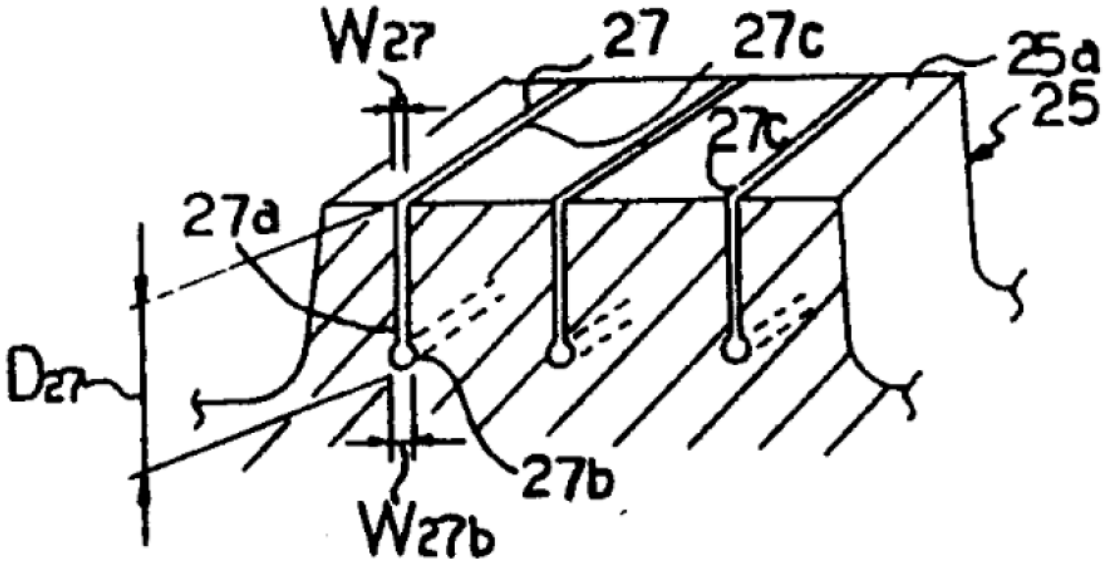


Figure 2 shows sipes, each having an enlarged bottom portion (27b).

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Sipes formed at the bottom of a groove	B60C 11/125

B60C 2011/1286

{being different from sipe to sipe}

Definition statement

This place covers:

Treads comprising sipes having different widths.

B60C 2011/129

{Sipe density, i.e. the distance between the sipes within the pattern}

Definition statement

This place covers:

Treads comprising sipes characterised by their density, their pitch or the distance between adjacent sipes.

B60C 2011/1295

{variable}

Definition statement

This place covers:

Tread patterns comprising portions having different sipe densities, e.g. high sipe density in the central tread region and low sipe density in the shoulder tread regions.

B60C 11/13

characterised by the groove cross-section, e.g. for buttressing or preventing stone-trapping

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tread patterns comprising block rows or discontinuous ribs and further characterised by the groove cross-section	B60C 11/0309
Tread patterns comprising tread lugs and further characterised by the groove cross-section	B60C 11/0316
Pattern characterised by grooves	B60C 2011/0339
Tread patterns comprising ribs and further characterised by the groove cross-section	B60C 11/042

Special rules of classification

Subject matter classified in B60C 11/0309, B60C 11/0316 or B60C 11/042 – B60C 11/047 should also include a classification in B60C 11/13 or its subgroups.

B60C 11/1307

{with special features of the groove walls}

Definition statement

This place covers:

Treads comprising grooves that are characterised by the shape of groove walls, e.g. inclination angles, protrusions or recesses.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Groove walls having a three-dimensional shape	B60C 11/045

B60C 11/1315

{having variable inclination angles, e.g. warped groove walls}

Definition statement

This place covers:

Treads comprising grooves having at least one wall defined by varying inclination angles along its extension direction.

Illustrative examples of subject matter classified in this place:

1.

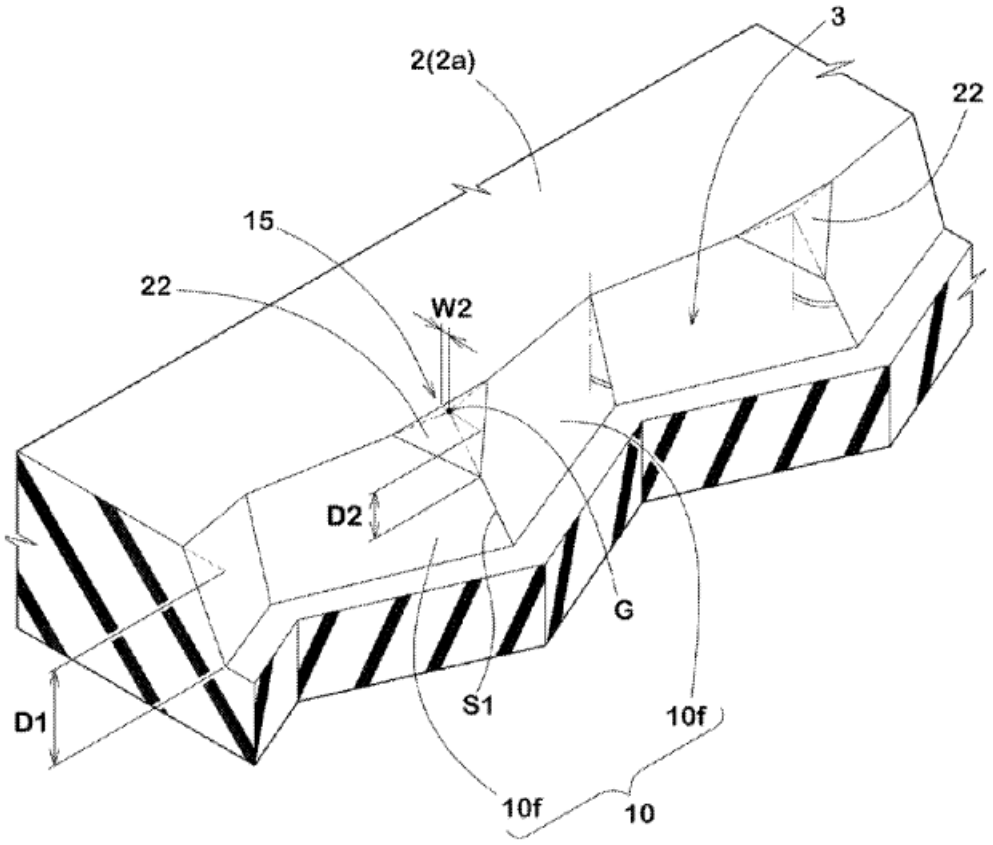
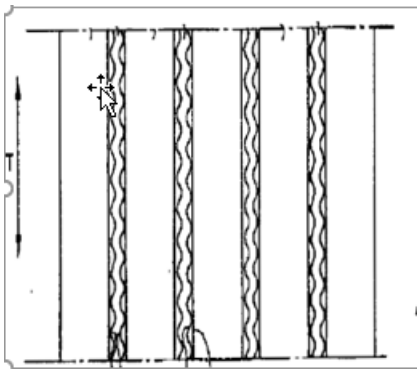
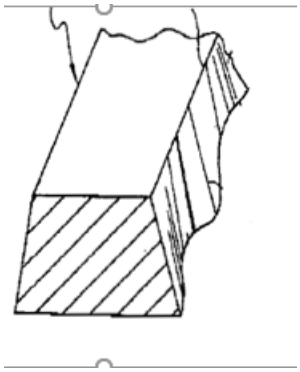


Figure 1 shows the angle of the sidewall of a groove with respect to the radial direction varying along the length of the groove.

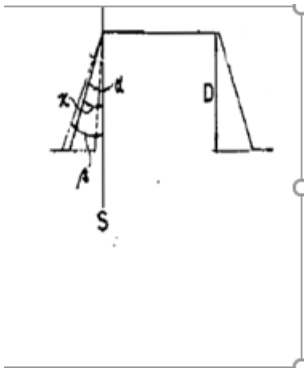
2a.



2b.



2c.



Above figures 2a, 2b and 2c show four circumferential grooves, each having a straight trace at the tread surface and undulating trace at the groove bottom, where these traces are joined by a sidewall having an angle with respect to the radial direction that varies along the length of the groove.

B60C 11/1323

{asymmetric}

Definition statement

This place covers:

Treads comprising grooves defined by opposing walls having shapes that are asymmetric to the groove centreline, e.g. groove walls defined by different inclination angles.

Illustrative example of subject matter classified in this place:

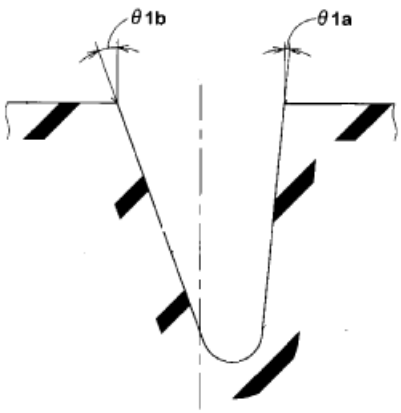


Figure shows a groove having a left sidewall inclined at a large angle (theta 1b) with respect to the radial direction and a right sidewall inclined at a small angle (theta 1a) with respect to the radial direction.

B60C 2011/133

{comprising recesses}

Definition statement

This place covers:

Treads whereby the groove wall surface is concave or recessed relative to the extension direction of the wall.

Illustrative example of subject matter classified in this place:

Figure shows a groove having a recess in each sidewall of the groove.

B60C 2011/1338

{comprising protrusions}

Definition statement

This place covers:

Treads whereby the groove wall has an element projecting from one wall and spaced from the bottom and opposing wall of the groove.

Illustrative example of subject matter classified in this place:

Figure shows a groove having a protrusion projecting from each sidewall of the groove.

B60C 11/1346

{covered by a rubber different from the tread rubber}

Definition statement

This place covers:

Treads whereby the grooves having a thin layer of rubber that covers the surface of the groove.

Illustrative example of subject matter classified in this place:

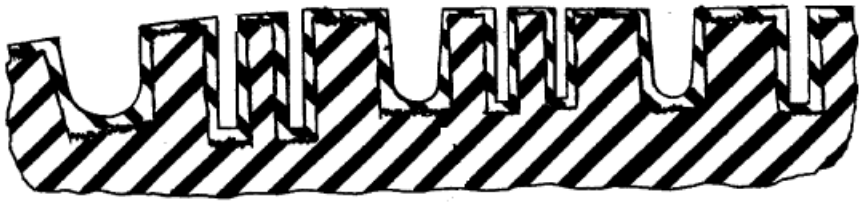


Figure shows thin rubber layer following contour of tread surface and grooves.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tread characterised by cap and base sections	B60C 11/005

B60C 11/1353

{with special features of the groove bottom}

Definition statement

This place covers:

Treads whereby the grooves are characterised by the shape of the groove bottom, e.g. recesses, protrusions or undulating.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Sipes formed at the bottom of a groove	B60C 11/125
Protrusion from groove bottom linking tread elements, i.e. tie bars	B60C 11/1369

B60C 2011/1361

{with protrusions extending from the groove bottom}

Definition statement

This place covers:

Grooves having a protrusion from the bottom of the groove and spaced from one or both walls of the groove.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Groove bottom comprising trapping protection elements, e.g. stone ejectors	B60C 11/047

B60C 11/1369

{Tie bars for linking block elements and bridging the groove}

Definition statement

This place covers:

Treads having an element projecting from one wall, extending laterally and connecting to the opposing wall of the groove.

Illustrative examples of subject matter classified in this place:

1a.

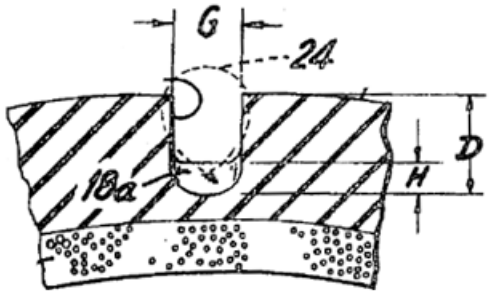


Figure 1a is an axial cross-section showing a tie bar in a groove.

1b.

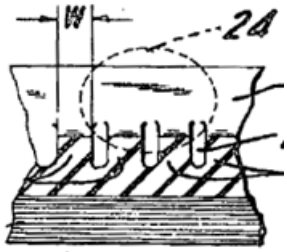


Figure 1b is a circumferential cross-section showing tie bars in a groove.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Groove cross-sections characterised by special features of the groove bottom	B60C 11/1353

B60C 11/1376

{Three dimensional block surfaces departing from the enveloping tread contour}

Definition statement

This place covers:

Tread elements having tread contact surface which departs from the general tread contour, e.g. tread elements have a concave, convex or rounded shape relative to the general tread contour.

Illustrative example of subject matter classified in this place:

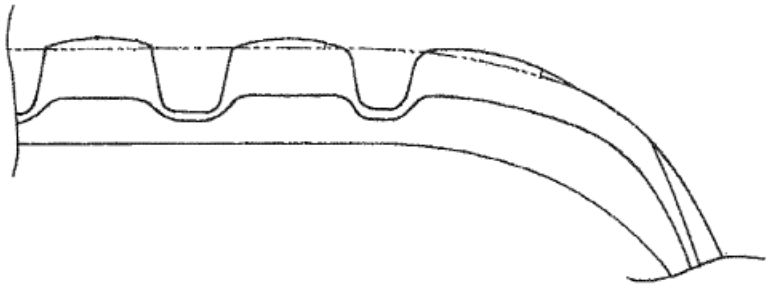


Figure shows land portions, each having a curved convex upper surface.

B60C 11/1384

{with chamfered block corners}

Definition statement

This place covers:

Tread elements having a chamfer only at the corner of the element.

Illustrative example of subject matter classified in this place:

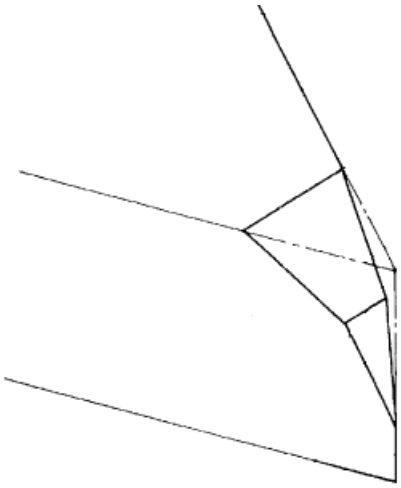


Figure shows a chamfer at a corner of a tread element.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Chamfer extends substantially along edge of the tread element	B60C 11/1392

B60C 11/1392

{with chamfered block edges}

Definition statement

This place covers:

Tread elements having chamfer which extends along the length of the edge of the tread element.

Illustrative examples of subject matter classified in this place:

1.

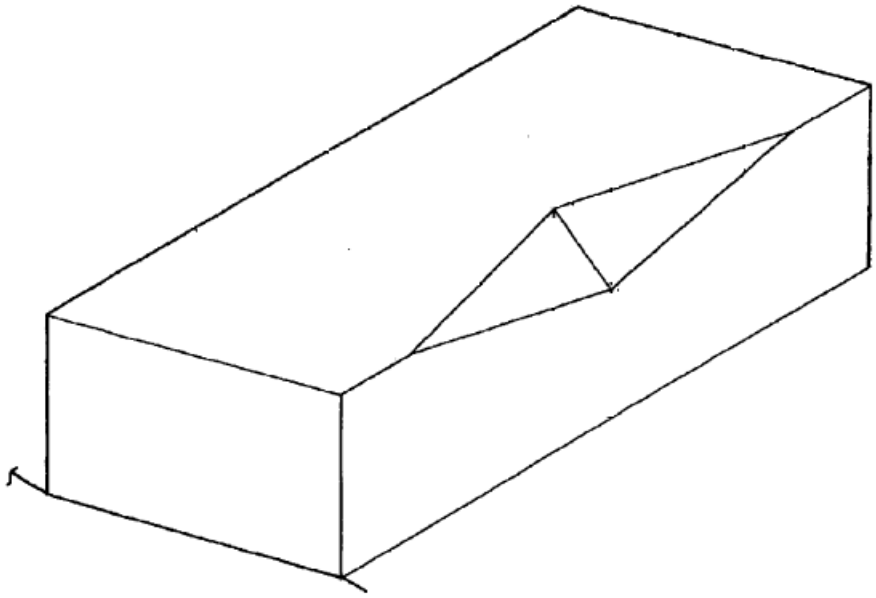


Figure 1 shows a chamfer along an edge of a block.

2.

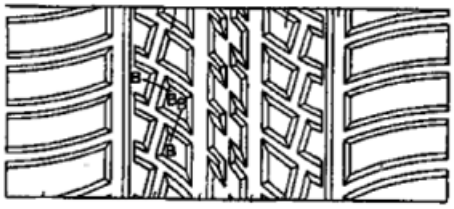


Figure 2 shows edges of blocks and ribs having a chamfer.

3.

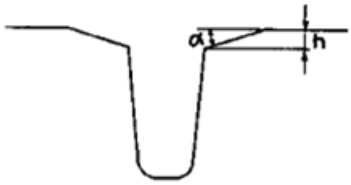


Figure 3 shows a cross-section of a groove including a chamfer having a height (h).

B60C 11/14

Anti-skid inserts, e.g. vulcanised into the tread band

Definition statement

This place covers:

Treads wherein the tyre constitutes an anti-skid device by virtue of anti-skid elements embedded therein.

Anti-skid elements, per se, when it is disclosed that they are for use in a tyre.

Relationships with other classification places

Studs for snow mobiles are only classified in B62D 55/286.

B60C 2011/142

{Granular particles, e.g. hard granules}

Definition statement

This place covers:

Anti-skid elements characterised by scattered particles embedded in the tread surface.

Illustrative example of subject matter classified in this place:

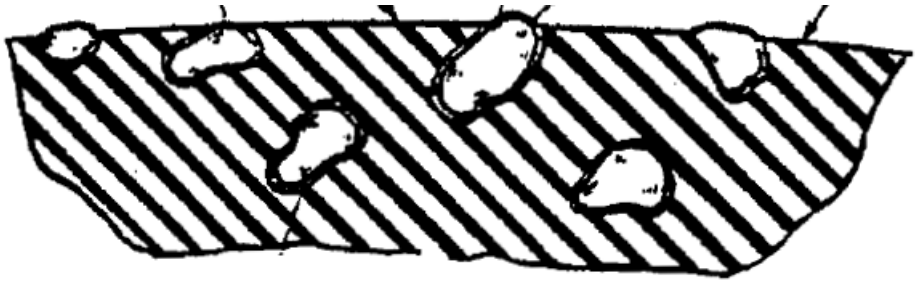


Figure shows particles embedded in the tread surface.

B60C 2011/145

{Discontinuous fibres}

Definition statement

This place covers:

Anti-skid elements characterised by discontinuous fibres, cords, wires or fabric embedded in the tread surface.

B60C 11/16

of plug form, e.g. made from metal, textile

Definition statement

This place covers:

Anti-skid element characterised by a discrete piece of metal or textile that projects from the surface of the tread, e.g. a stud or spike.

Illustrative example of subject matter classified in this place:

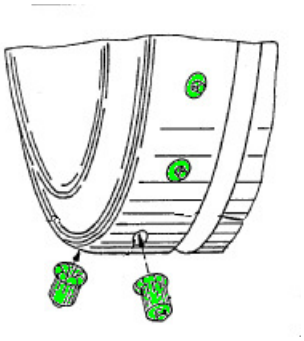


Figure shows studs and a tyre comprising studs.

B60C 11/1606

{retractable plug}

Definition statement

This place covers:

Subject matter wherein the tyre or plug has means to actuate the extension or retraction of the plug from the tread contact surface.

Illustrative example of subject matter classified in this place:

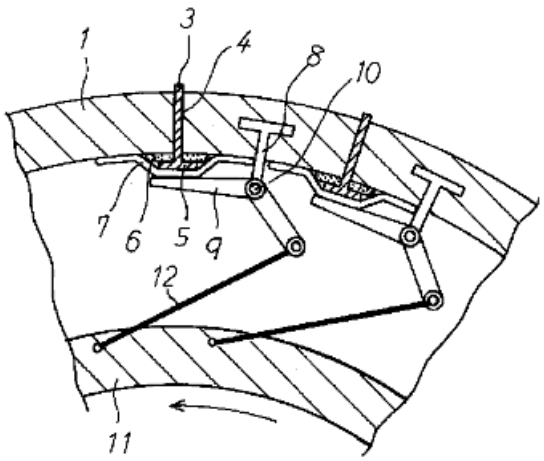


Figure shows retractable plugs 3.

B60C 11/1612

{actuated by fluid, e.g. using fluid pressure difference}

Definition statement

This place covers:

Subject matter wherein the extension or retraction of the plug actuated by fluid, e.g. air.

Illustrative example of subject matter classified in this place:

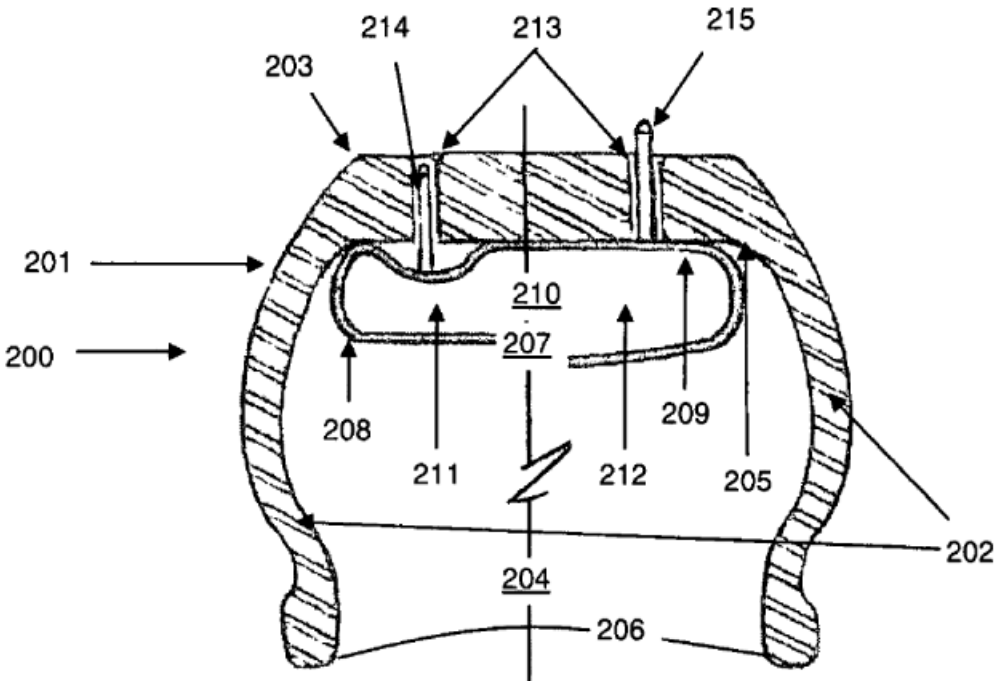


Figure shows plugs (214) and (215) actuated by inflation of chamber (210).

B60C 11/1618

{actuated by temperature, e.g. by means of temperature sensitive elements}

Definition statement

This place covers:

Subject matter wherein the extension or retraction of the plug actuated by temperature sensitive elements.

Illustrative example of subject matter classified in this place:

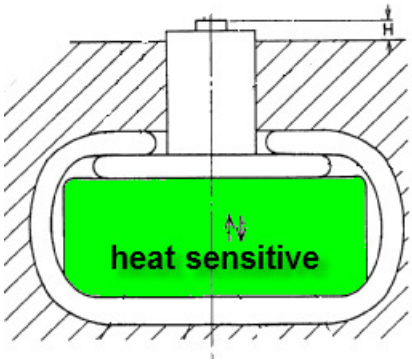


Figure shows a stud which extends or retracts depending on temperature.

B60C 11/1625

{Arrangements thereof in the tread patterns, e.g. irregular}

Definition statement

This place covers:

Treads characterised by the arrangement of the plug within the tread pattern, e.g. different orientation to each other, arranged at different depths, arranged in relation to a groove.

B60C 11/1637

{Attachment of the plugs into the tread, e.g. screwed}

Definition statement

This place covers:

Tyres or plugs characterised by the specific means of attachment of the plug into the tread.

Illustrative example of subject matter classified in this place:

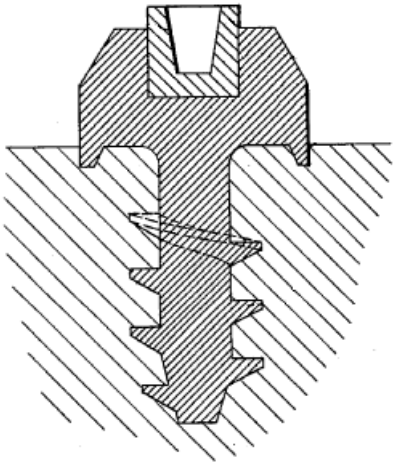


Figure shows a stud having means for attachment in the form of a helical thread for attaching the stud to the tread.

B60C 11/1643

{with special shape of the plug-body portion, i.e. not cylindrical}

Definition statement

This place covers:

Plugs characterised by the shape of the plug body portion. The body portion is generally the portion of the plug which is embedded in the tread.

B60C 11/165

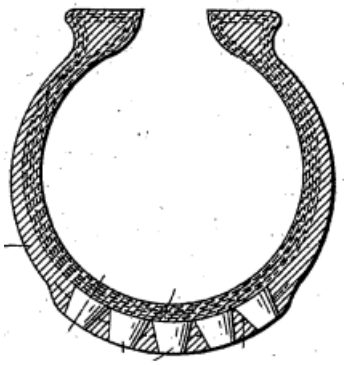
{conical}

Definition statement

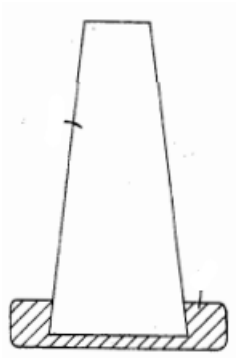
This place covers:

Illustrative examples of subject matter classified in this place:

1.



2.



Figures 1 and 2 show stud having conical shaped body.

B60C 11/1656

{concave or convex, e.g. barrel-shaped}

Definition statement

This place covers:

Illustrative examples of subject matter classified in this place:

1.

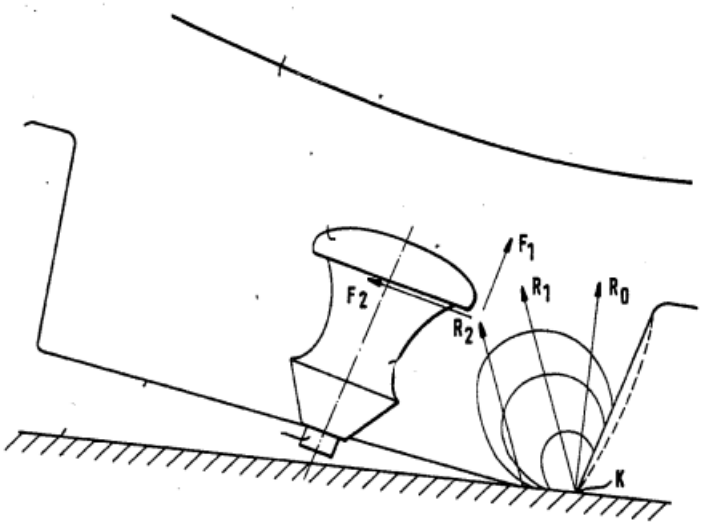


Figure 1 shows stud comprising body having concave surface.

2.

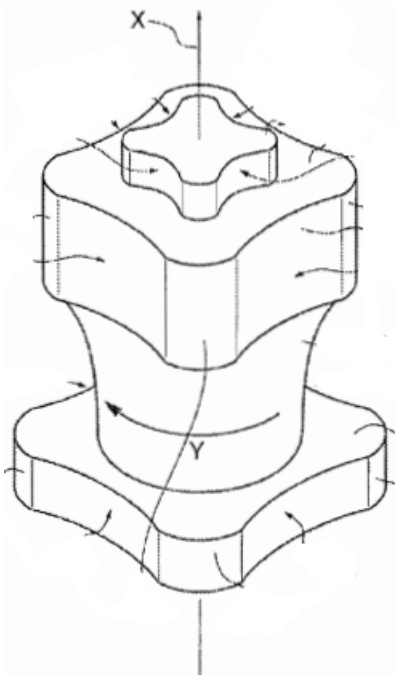


Figure 2 shows stud comprising upper body portion having convex and concave portions, and shows lower body portion that is the bottom flange having convex and concave portions.

B60C 11/1662

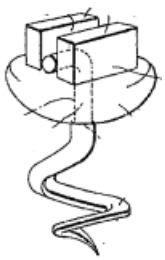
{helical-shaped}

Definition statement

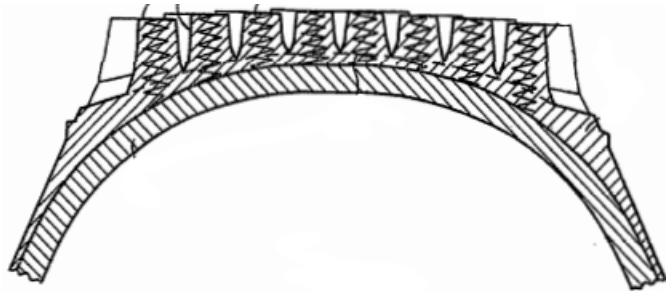
This place covers:

Illustrative examples of subject matter classified in this place:

1.



2.



Above figures 1 and 2 show studs having helical shaped body.

B60C 11/1668

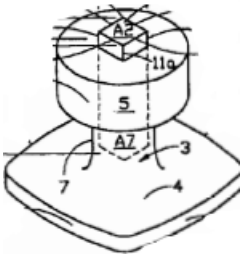
{with an additional collar}

Definition statement

This place covers:

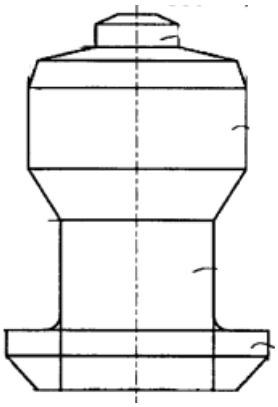
Illustrative examples of subject matter classified in this place:

1.



2.

3.



Figures 1, 2 and 3 each show a stud comprising a body having an upper collar and a bottom flange.

B60C 11/1675

{with special shape of the plug- tip}

Definition statement

This place covers:

Plugs characterised by the shape of the plug tip portion which engages with the ground contact surface.

B60C 11/1681

{Spherical top portions}

Definition statement

This place covers:

Plug tips having a circular cross-section, e.g. hemispherical top.

B60C 11/1687

{Multiple tips}

Definition statement

This place covers:

Plugs whereby each plug comprises multiple tips.

B60C 11/1693

{Attachment of the plug-tip within the plug-body}

Definition statement

This place covers:

Plugs characterised by the means by which the plug-tip is secured to the plug-body.

B60C 11/18

of strip form, e.g. metallic combs, rubber strips of different wear resistance (B60C 11/20 takes precedence)

Definition statement

This place covers:

Anti-skid inserts characterised by thin, elongate structure.

Illustrative example of subject matter classified in this place:

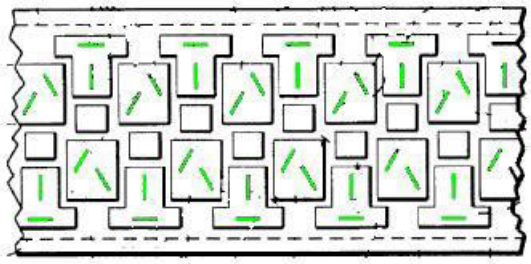


Figure shows thin rectangular studs.

References

Limiting references

This place does not cover:

Anti-skid inserts in coiled form	B60C 11/20

B60C 11/185

{of metal comb form, lamellar shaped or blade-like}

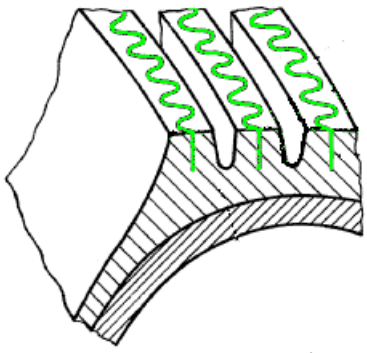
Definition statement

This place covers:

Subject matter wherein the anti-skid insert is made of metal and has a strip form.

Illustrative examples of subject matter classified in this place:

1.



2.

Figures 1 and 2 show anti-skid strip having blade-like form.

B60C 11/20

in coiled form

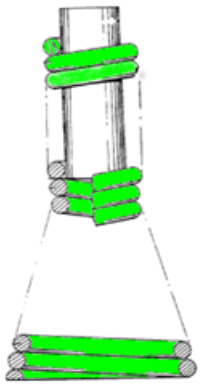
Definition statement

This place covers:

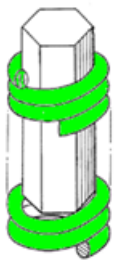
Subject matter wherein the anti-skid insert has a coiled, wound or spiral shape.

Illustrative examples of subject matter classified in this place:

1.



2.



Figures 1 and 2 show an anti-skid insert comprising a coiled form.

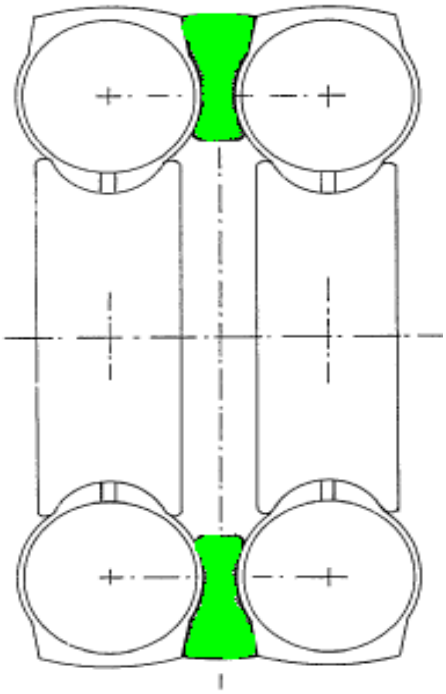
B60C 11/22

Tread rings between dual tyres

Definition statement

This place covers:

Example:



B60C 11/24

Wear-indicating arrangements

Definition statement

This place covers:

Treads having tread wear indicators, e.g. protrusions, recesses, markings, coloured layers or systems for visually indicating tread wear.

Illustrative examples of subject matter classified in this place:

1.

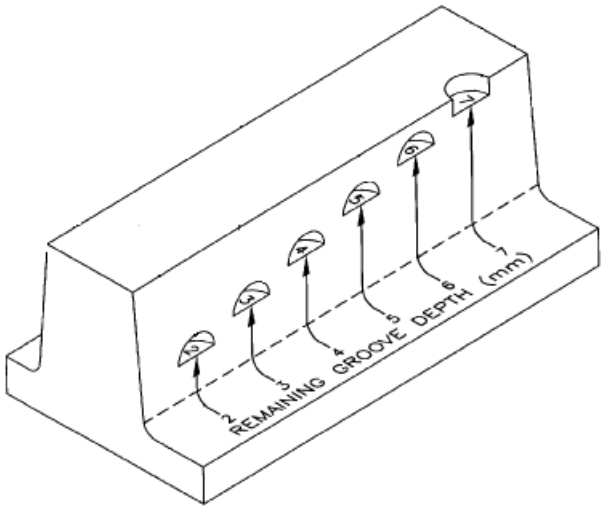


Figure 1 shows wear indicator comprising recesses in a tread element.

2.

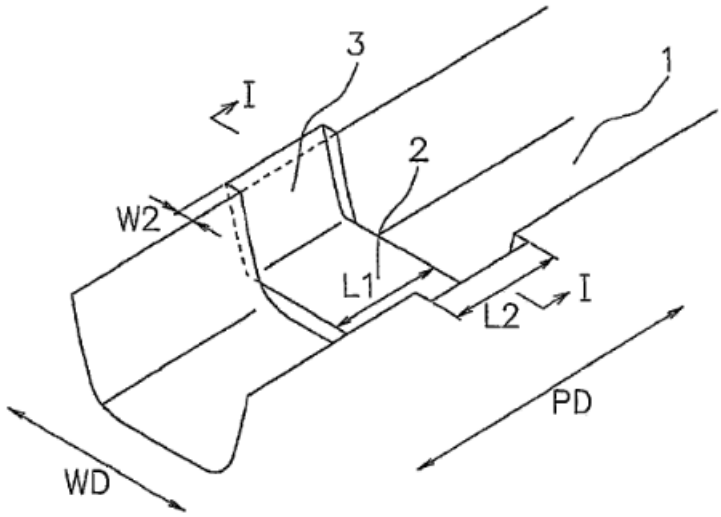


Figure 2 shows wear indicator 2 in the form of a tie bar.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Warning devices, e.g. devices generating noise due to flat or worn tyres	B60C 2019/006

B60C 11/243

{Tread wear sensors, e.g. electronic sensors}

Definition statement

This place covers:

Tyres with sensor arrangements for determining tyre wear.

Illustrative example of subject matter classified in this place:

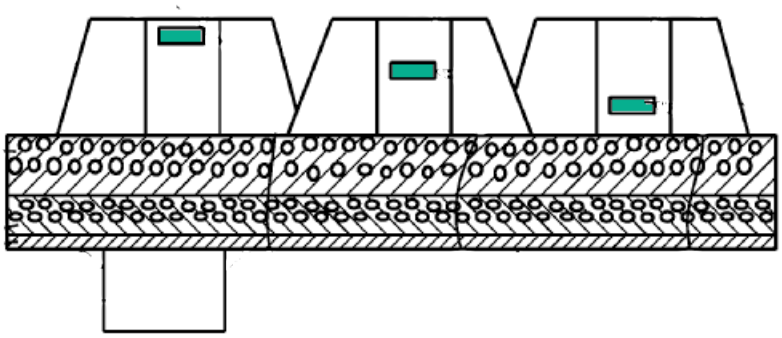


Figure shows an arrangement of sensors for determining wear in the tread.

B60C 11/246

{Tread wear monitoring systems}

Definition statement

This place covers:

Systems or computer models that monitor or predict tyre wear.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Signalling devices actuated by tyre pressure	B60C 23/02
Signalling devices actuated by deformation of the tyre	B60C 23/06

B60C 13/00

Tyre sidewalls; Protecting, decorating, marking, or the like, thereof (B60C 17/08 takes precedence; tyre shoulders B60C 11/01; removable tyre sidewall trim rings B60B 7/01)

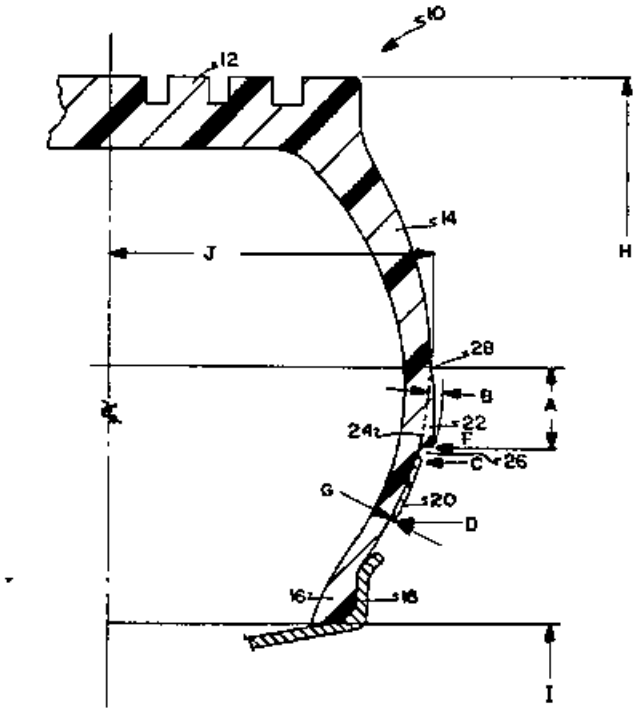
Definition statement

This place covers:

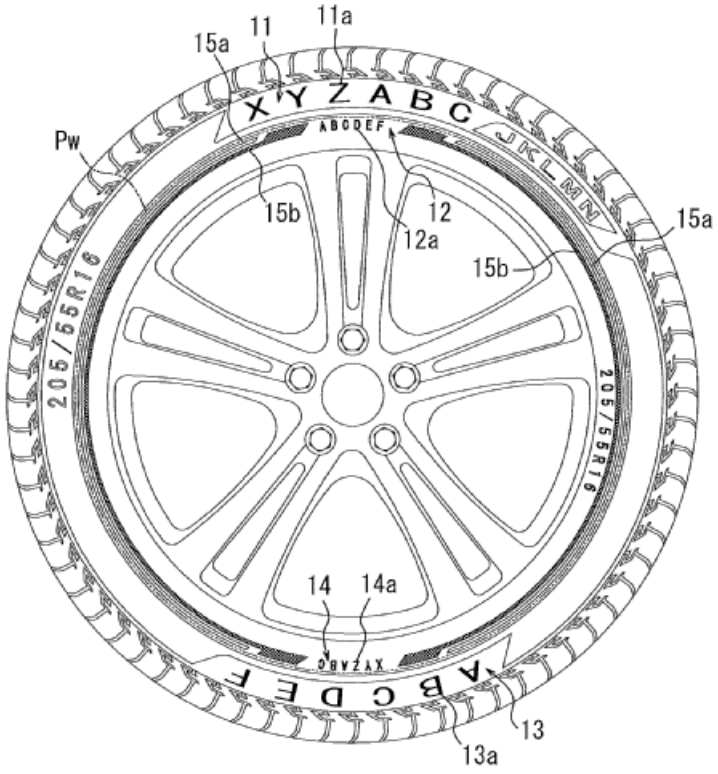
Subject matter which includes structure that corresponds with the part of the tyre between the shoulder of the tread and the rim.

Illustrative examples of subject matter classified in this place:

1.


10
12
14
J
H
28
8
A
22
24
26
C
G
20
D
16
18
I

2.


11a
11
15a
X Y Z A B C
ABCDEF
JKLMN
Pw
15b
12
12a
15a
15b
205/55R16
205/55R16
14
14a
ABCDEF
13
13a

Figures 1 and 2 generally show tyre sidewall features.

References

Limiting references

This place does not cover:

Shape of the shoulders between tread and sidewall	B60C 11/01
Means facilitating folding of sidewalls, e.g. run-flat sidewalls	B60C 17/08
Removable tyre sidewall trim rings	B60B 7/01

Informative references

Attention is drawn to the following places, which may be of interest for search:

Sidewall rubber compositions	B60C 1/0025
Tyre transverse section	B60C 3/04
Production of the tyre sidewall	B29D 30/72

Special rules of classification

Carcass or bead reinforcements are only classified in groups B60C 9/00 and B60C 15/00 respectively.

Sidewall reinforcing inserts for run-flat use are classified in group B60C 17/00 only.

B60C 13/001

{Decorating, marking or the like}

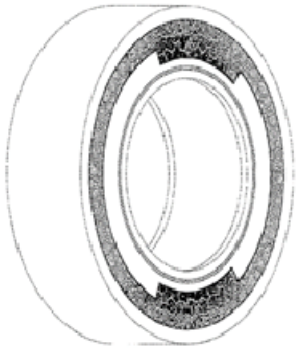
Definition statement

This place covers:

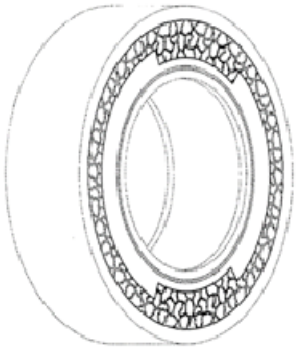
Subject matter wherein the tyre sidewall is provided with decorative markings, patterns or lettering.

Illustrative examples of subject matter classified in this place:

1.



2.



B60C 13/002

{Protection against exterior elements}

Definition statement

This place covers:

Elements in the side wall which increase the resistance to cutting or cracking.

Illustrative examples of subject matter classified in this place:

1.

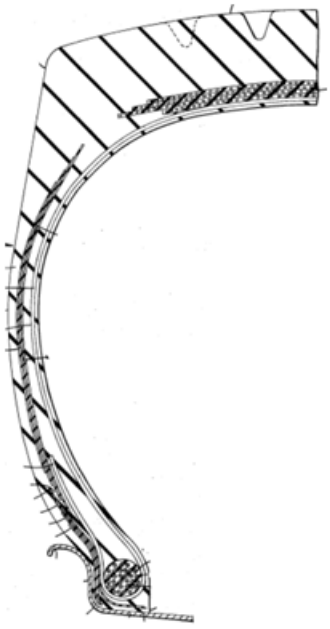


Figure 1 shows embedded pucture prevention layer within the sidewall of the tyre.

2.

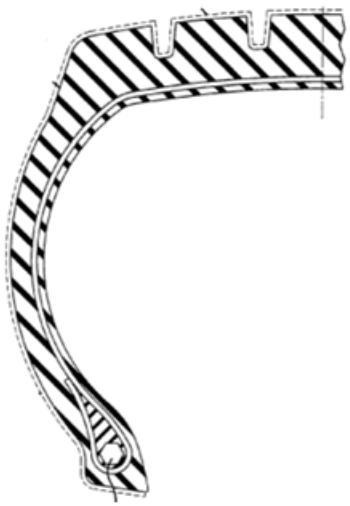


Figure 2 shows weather resistant coating provided to the tyre outer surface.

B60C 13/003

{characterised by sidewall curvature}

Definition statement

This place covers:

Tyres characterised by the curvature of the sidewall, e.g. radius of curvature.

Illustrative example of subject matter classified in this place:

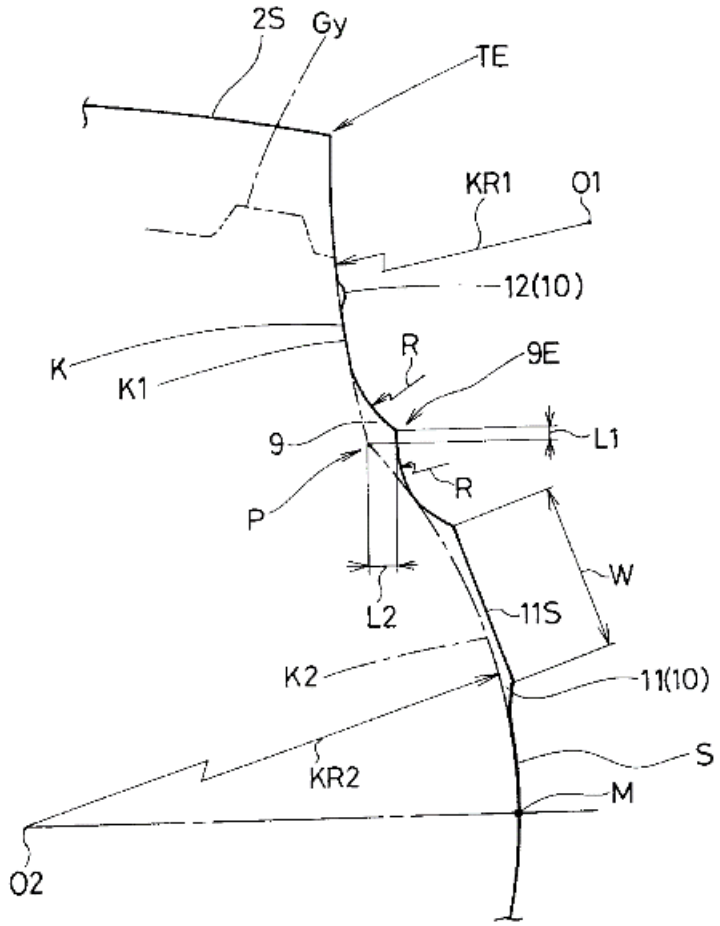


Figure shows a tyre having a sidewall with specified curvature (i.e. KR2).

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Carcass ply curvature	B60C 9/0292

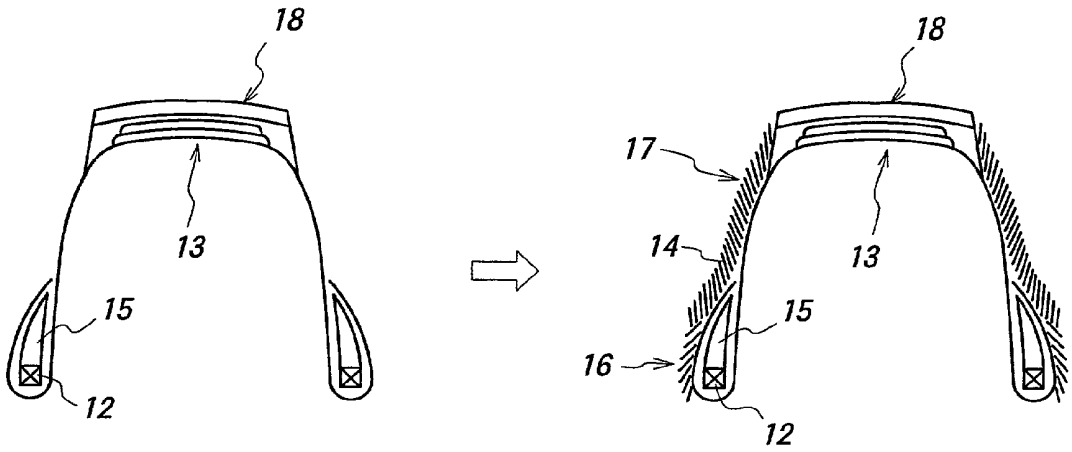
B60C 2013/008

{built-up by narrow strip winding}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



B60C 13/009

{comprising additional bead cores in the sidewall}

Definition statement

This place covers:

Subject matter wherein additional bead cores are provided in the sidewall portion of the tyre.

Illustrative example of subject matter classified in this place:

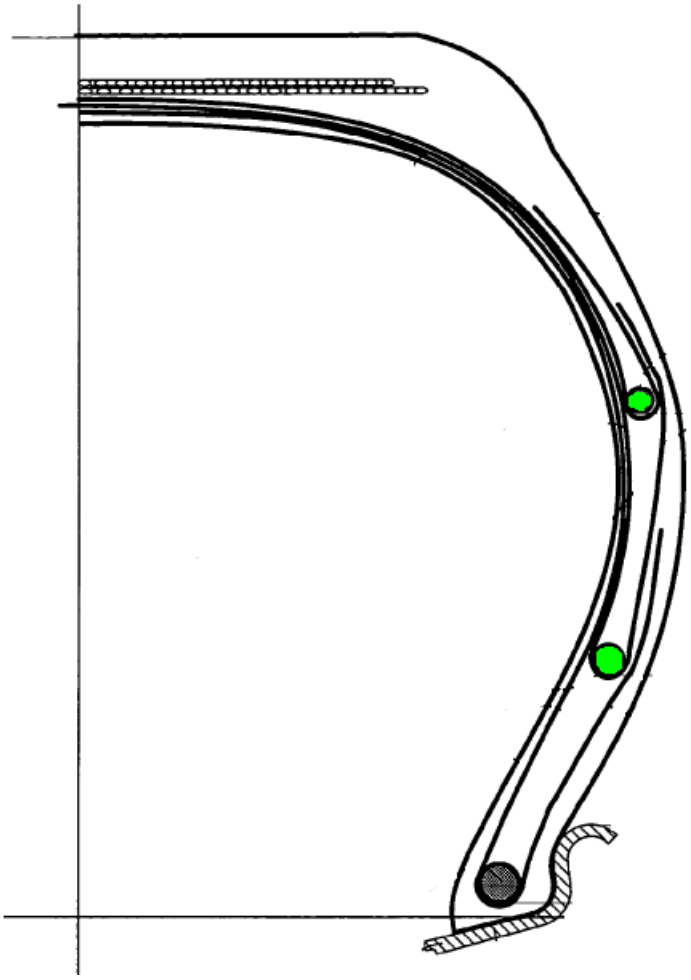


Figure shows bead cores used in a tyre sidewall.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tyre characterised by multiple bead cores in the bead portion of the tyre	B60C 15/05

B60C 13/02

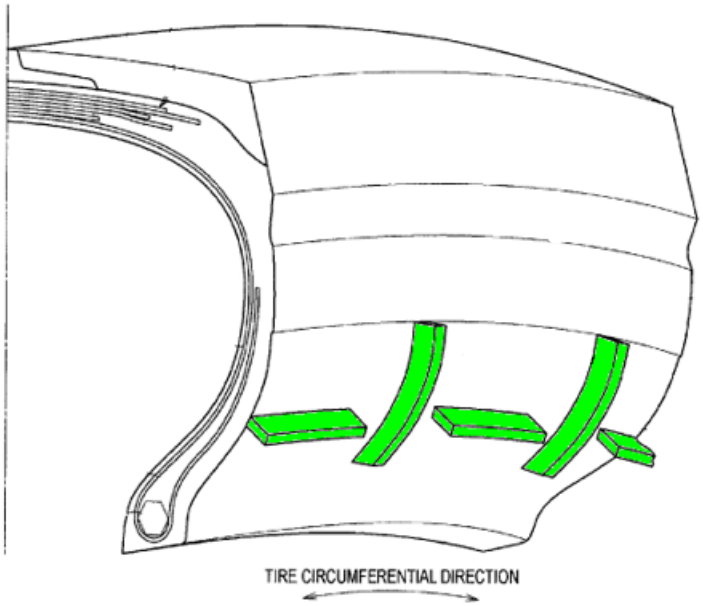
Arrangement of grooves or ribs

Definition statement

This place covers:

Subject matter wherein the sidewall comprises raised projections or recessed portions.

Illustrative example of subject matter classified in this place:



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Sidewall characterised by decorative features	B60C 13/001
Sidewall rubber inserts for run-flat purposes comprising grooves or ribs	B60C 17/0045

B60C 13/023

{preventing watersplash}

Definition statement

This place covers:

Subject matter wherein the sidewall comprises structure for preventing the tyre from splashing mud or water.

B60C 2013/026

{provided at the interior side only}

Definition statement

This place covers:

Subject matter wherein grooves or projections are provided on the interior surface of the tyre sidewall.

B60C 13/04

having annular inlays or covers, e.g. white sidewalls

Definition statement

This place covers:

Subject matter wherein the sidewall structure comprises a filled section or an applique of material in a colour other than black or a protective coating layer.

Illustrative example of subject matter classified in this place:

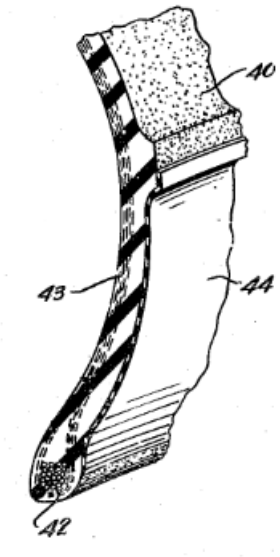


Figure shows a tyre with annular white sidewall veneer (44) covering the lower portion of black sidewall (40).

B60C 2013/045

{comprising different sidewall rubber layers}

Definition statement

This place covers:

Subject matter wherein the side wall is made of different rubber layers.

Illustrative example of subject matter classified in this place:

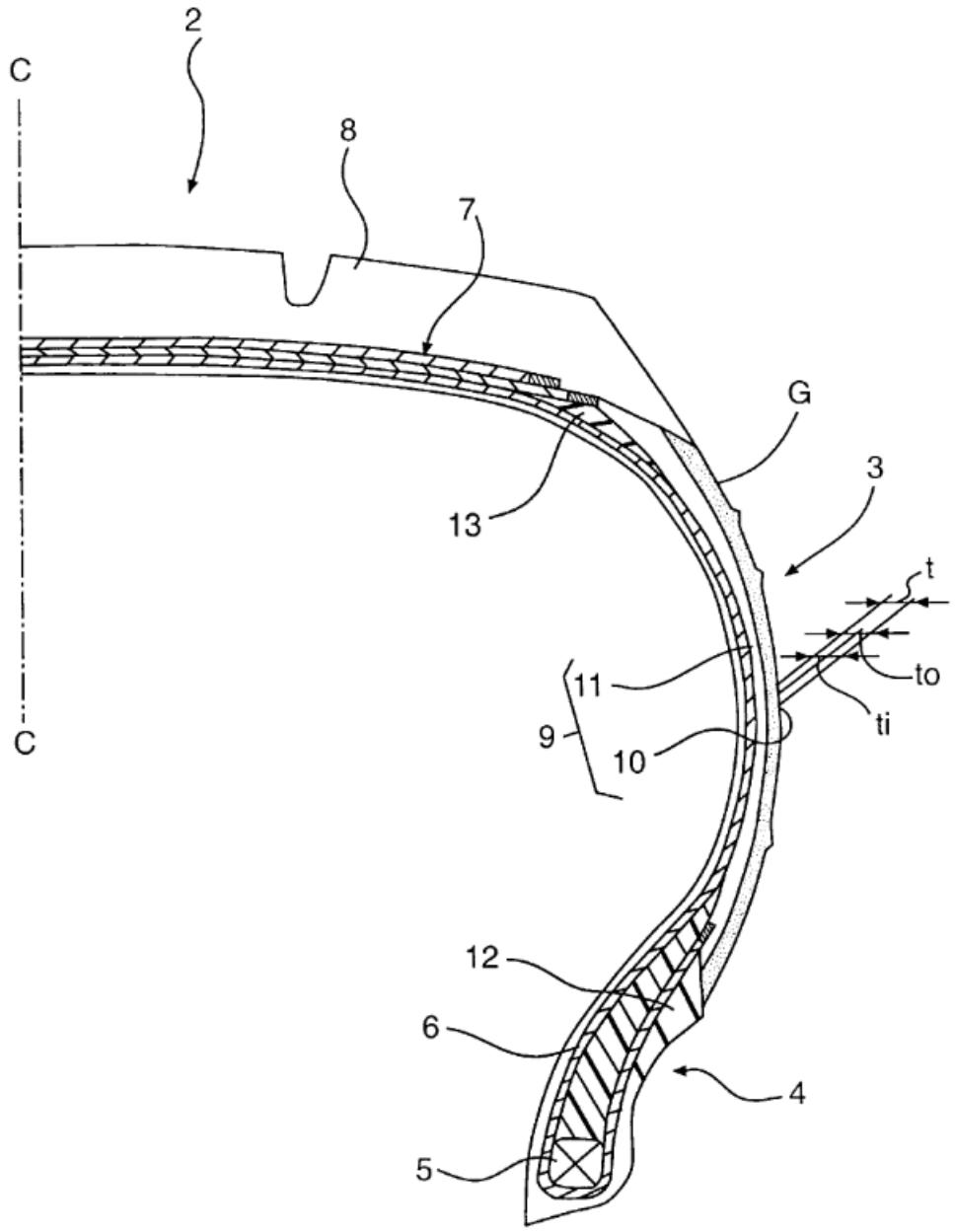


Figure shows a tyre with sidewall rubber layers (10) and (11).

B60C 15/00

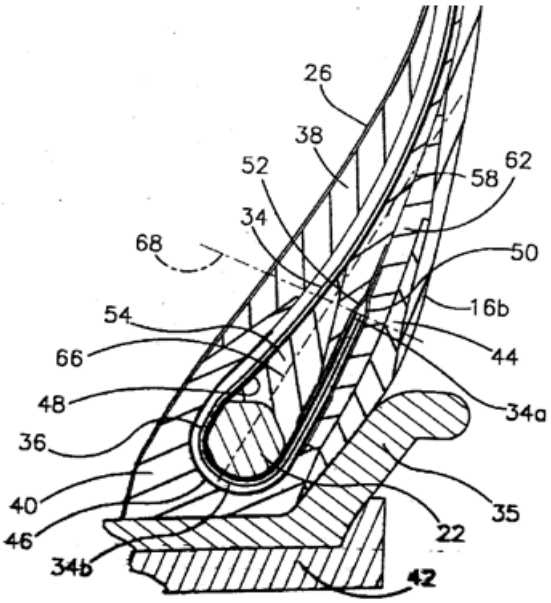
Tyre beads, e.g. ply turn-up or overlap

Definition statement

This place covers:

Subject matter that includes the structure of the annular edge of a pneumatic tyre that opens at the rim zone and includes annular reinforcing elements to anchor the tyre or the tyre carcass material to the rim.

Illustrative example of subject matter classified in this place:



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Transverse section of the rim	B60B 21/02
Rims characterised by the form of tyre-seat or flange	B60B 21/10

Special rules of classification

Carcass reinforcements per se are classified under B60C 9/00.

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

tyre beads	the annular edges of the tyre
bead cores or bead wires	the annular reinforcing elements of the beads

B60C 15/0009

{features of the carcass terminal portion}

Definition statement

This place covers:

Subject matter wherein the tyre is characterised by the carcass ply terminal portion, e.g. the shape of the terminal portion, the terminating location of the carcass ply turn-up, or the manner in which the carcass ply folds around or interfaces with annular reinforcing elements in the bead.

Illustrative example of subject matter classified in this place:

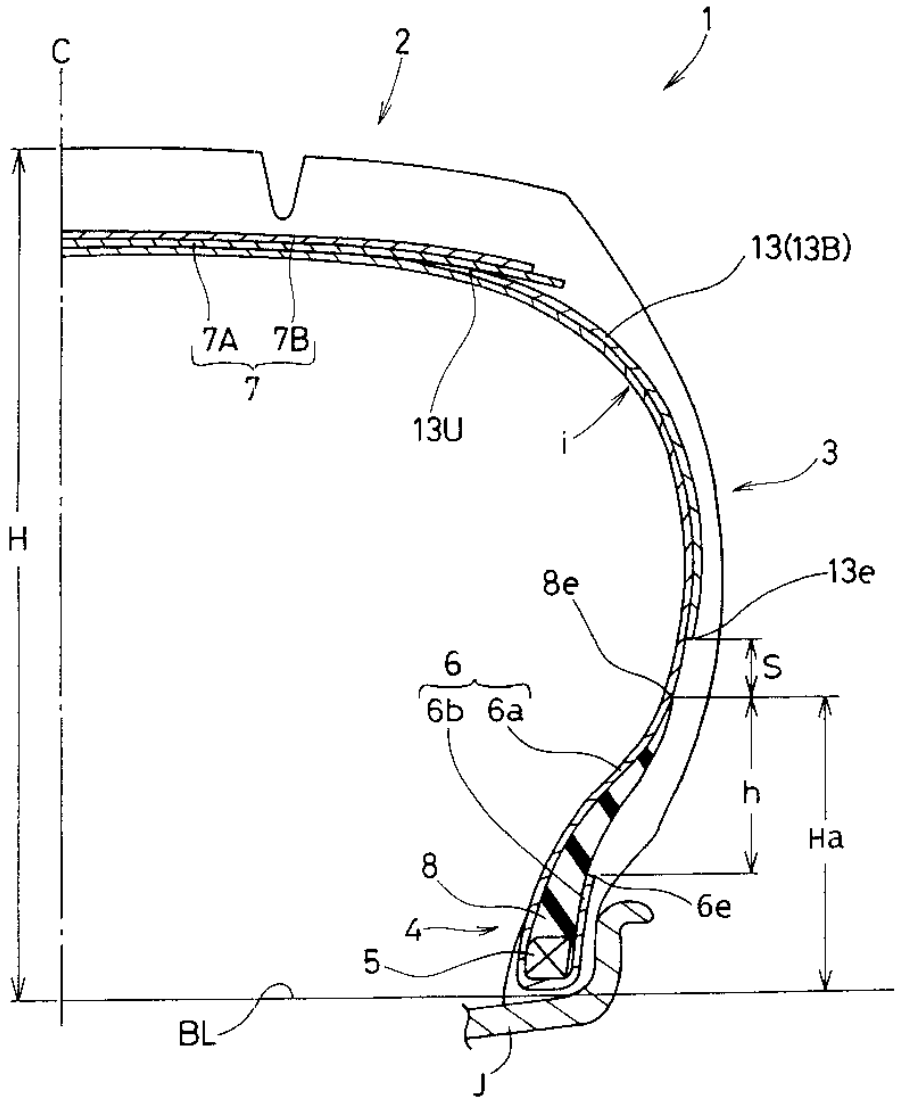


Figure shows carcass terminal portion (6b) having end (6e).

B60C 15/0018

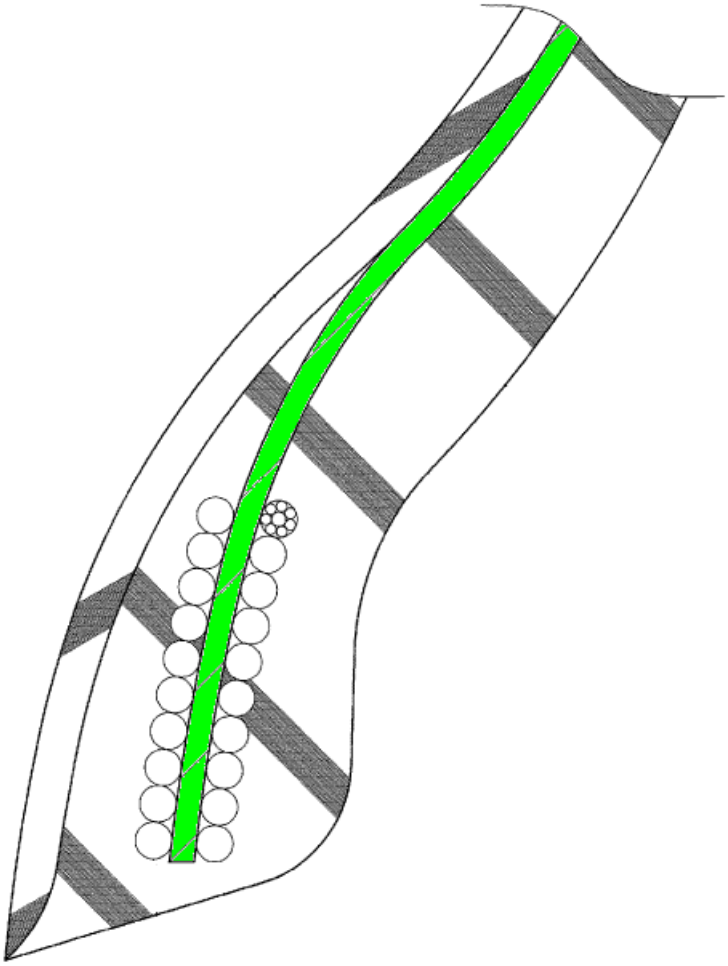
{not folded around the bead core, e.g. floating or down ply}

Definition statement

This place covers:

Subject matter wherein the bead portion of the tyre includes annular reinforcing elements to anchor the tyre or the tyre carcass layers, wherein the carcass layers terminate within the bead portion without being folded around any annular reinforcing element.

Illustrative example of subject matter classified in this place:



B60C 15/0027

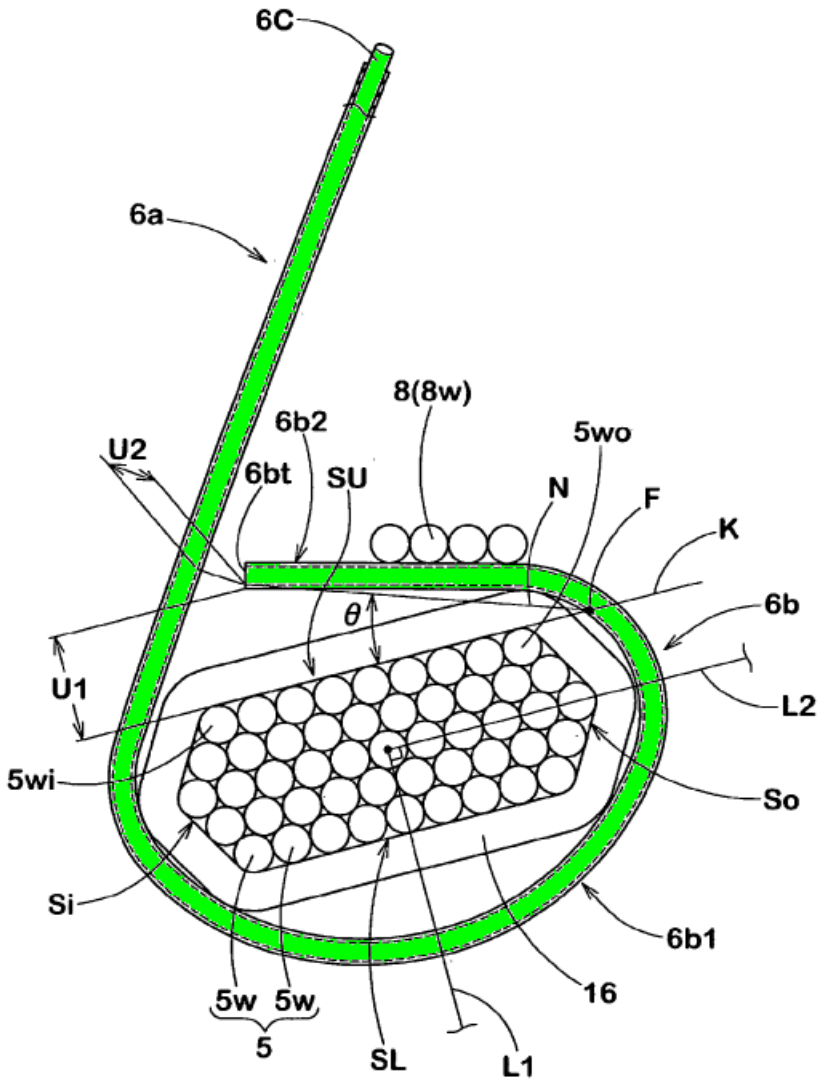
{with low ply turn-up, i.e. folded around the bead core and terminating at the bead core}

Definition statement

This place covers:

Subject matter wherein the carcass ply folds around and terminates at an annular reinforcing element.

Illustrative example of subject matter classified in this place:



B60C 15/0036

{with high ply turn-up, i.e. folded around the bead core and terminating radially above the point of maximum section width}

Definition statement

This place covers:

Subject matter wherein the carcass ply folds around an annular reinforcing element and a terminal end of said ply extends radially outwards of the maximum section width of the tyre.

B60C 15/0045

{with ply turn-up up to the belt edges, i.e. folded around the bead core and extending to the belt edges}

Definition statement

This place covers:

Subject matter wherein the carcass ply folds around an annular reinforcing element and a terminal end of said ply extends at least as far as the edge of a belt reinforcing layer.

B60C 15/0054

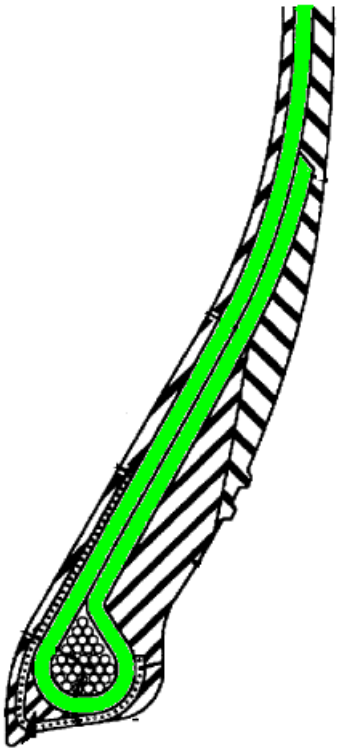
{with ply turn-up portion parallel and adjacent to carcass main portion}

Definition statement

This place covers:

Subject matter wherein the carcass ply folds around an annular reinforcing element and a terminal end of said ply extends parallel and adjacent to the carcass main portion.

Illustrative example of subject matter classified in this place:



B60C 15/0063

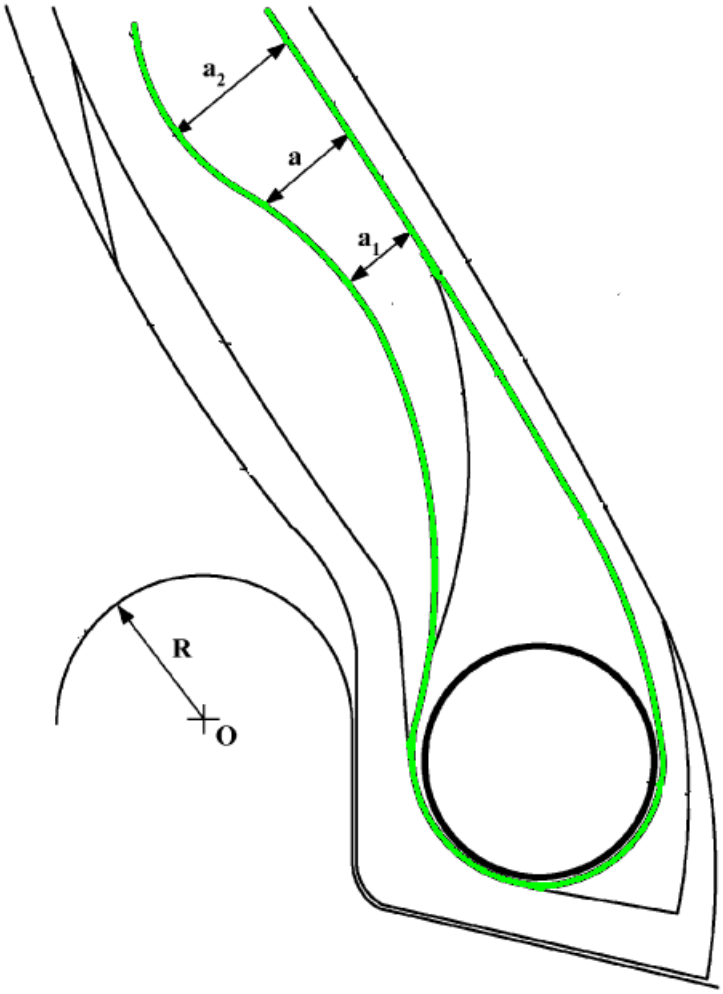
{with ply turn-up portion diverging from carcass main portion}

Definition statement

This place covers:

Subject matter wherein the carcass ply folds around an annular reinforcing element and the terminal ends of said ply diverge from the carcass main portion.

Illustrative example of subject matter classified in this place:



B60C 15/0072

{with ply reverse folding, i.e. carcass layer folded around the bead core from the outside to the inside}

Definition statement

This place covers:

Subject matter wherein the carcass plies are turned about an annular reinforcing element in a direction from the axial outer wall of the bead portion of the tyre to the inner wall of the bead portion of the tyre. This direction is the reverse of the more conventional disposition of carcass plies about the annular reinforcing elements.

B60C 15/0081

{the carcass plies folded around or between more than one bead core}

Definition statement

This place covers:

Subject matter wherein the carcass plies are folded around or between multiple annular reinforcing elements.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tyre bead containing multiple bead cores	B60C 15/05

B60C 2015/009

{Height of the carcass terminal portion defined in terms of a numerical value or ratio in proportion to section height}

Definition statement

This place covers:

Subject matter wherein the carcass ply turned about the annular reinforcing element is of such length as to extend along the side portion of the carcass a specified absolute extent or an extent that is relative to other tyre dimensions, e.g. the maximum height of the tyre.

B60C 15/02

Seating or securing beads on rims (sealing means between beads and rims of tubeless tyres B60C 5/16; means for securing solid tyres on rims B60C 7/24)

Definition statement

This place covers:

Subject matter whereby resilient tyres are held secured to vehicle wheels or rims.

References

Limiting references

This place does not cover:

Sealing means between beads and rims of tubeless tyres	B60C 5/16
Means for securing solid tyres on rims	B60C 7/24

Informative references

Attention is drawn to the following places, which may be of interest for search:

Rims	B60B 21/00
Rims characterised by the form of tyre-seat or flange	B60B 21/10

B60C 15/0209

{Supplementary means for securing the bead}

Definition statement

This place covers:

Subject matter wherein the rim or tyre bead comprises additional means engageable with a corresponding tyre bead or rim to secure the tyre to a bead flange on the rim.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Rim comprising appurtenances, e.g. lining bands	B60B 21/12

B60C 15/023

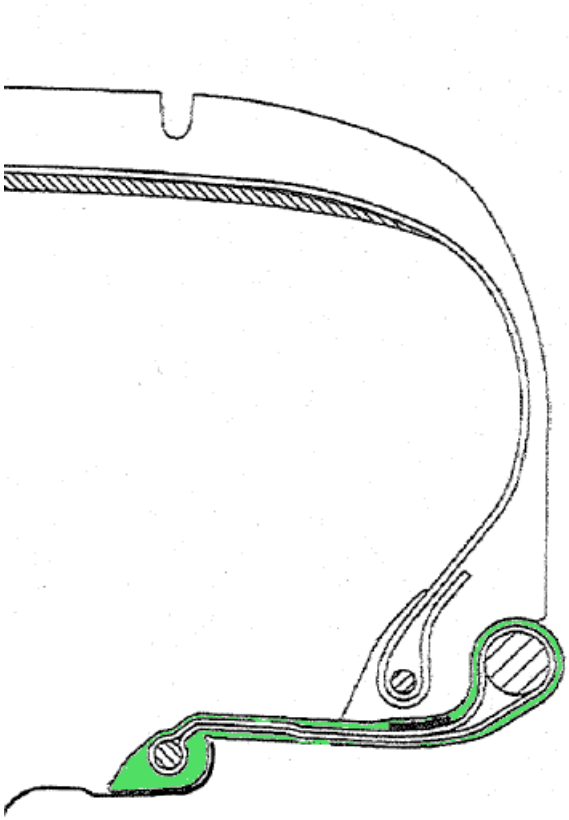
{the bead being secured by bead extensions which extend over and wrap around the rim flange}

Definition statement

This place covers:

Subject matter wherein supplementary means has projections that wrap around and engage with the rim flange.

Illustrative example of subject matter classified in this place:



B60C 15/0233

{Securing tyres without beads; Securing closed torus or tubular tyres}

Definition statement

This place covers:

Subject matter wherein a tyre without annular edges, i.e. without bead portions, is secured to a rim or wheel.

Illustrative examples of subject matter classified in this place:

1.

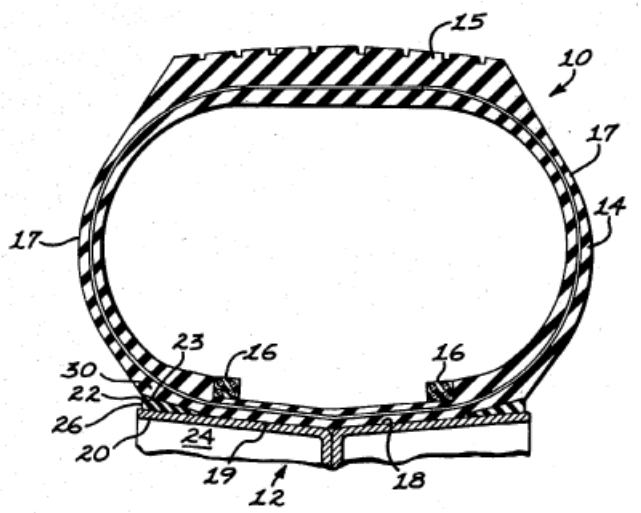


Figure 1 shows closed torus tyre secured to a rim.

2.

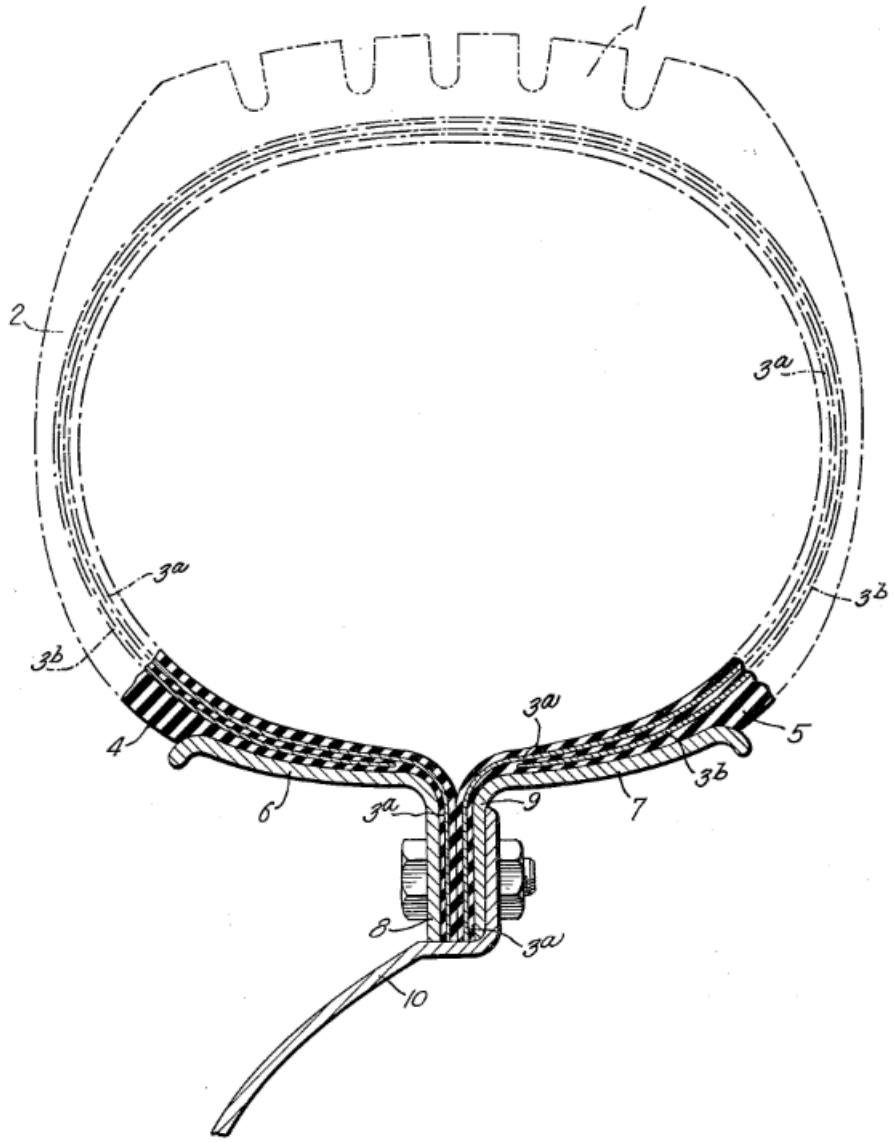


Figure 2 shows a tyre having radially inner ends secured to the rim by being sandwiched between rim parts.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tyre having closed or toroidal transverse section	B60C 3/02

B60C 15/0236

{Asymmetric bead seats, e.g. different bead diameter or inclination angle (asymmetric transverse section B60C 3/06)}

Definition statement

This place covers:

Subject matter wherein a bead seat on one side of the tyre differs in diameter, inclination angle or shape from a bead seat on the other side of the tyre.

References

Limiting references

This place does not cover:

Asymmetric transverse section	B60C 3/06

Informative references

Attention is drawn to the following places, which may be of interest for search:

Asymmetric bead reinforcement	B60C 2015/0696

B60C 15/024

Bead contour, e.g. lips, grooves, or ribs

Definition statement

This place covers:

Subject matter wherein the hub or rim contacting portion of the tyre is characterised by the overall outer contour or by additional frictional enhancing means to ensure grip between rim contacting portion of the tyre and the rim.

B60C 15/0242

{with bead extensions located radially outside the rim flange position, e.g. rim flange protectors}

Definition statement

This place covers:

Subject matter wherein the bead is characterised by projecting portions or extensions in the region radially outside the rim flange contact portion of the bead, e.g. rim flange protectors.

Illustrative example of subject matter classified in this place:

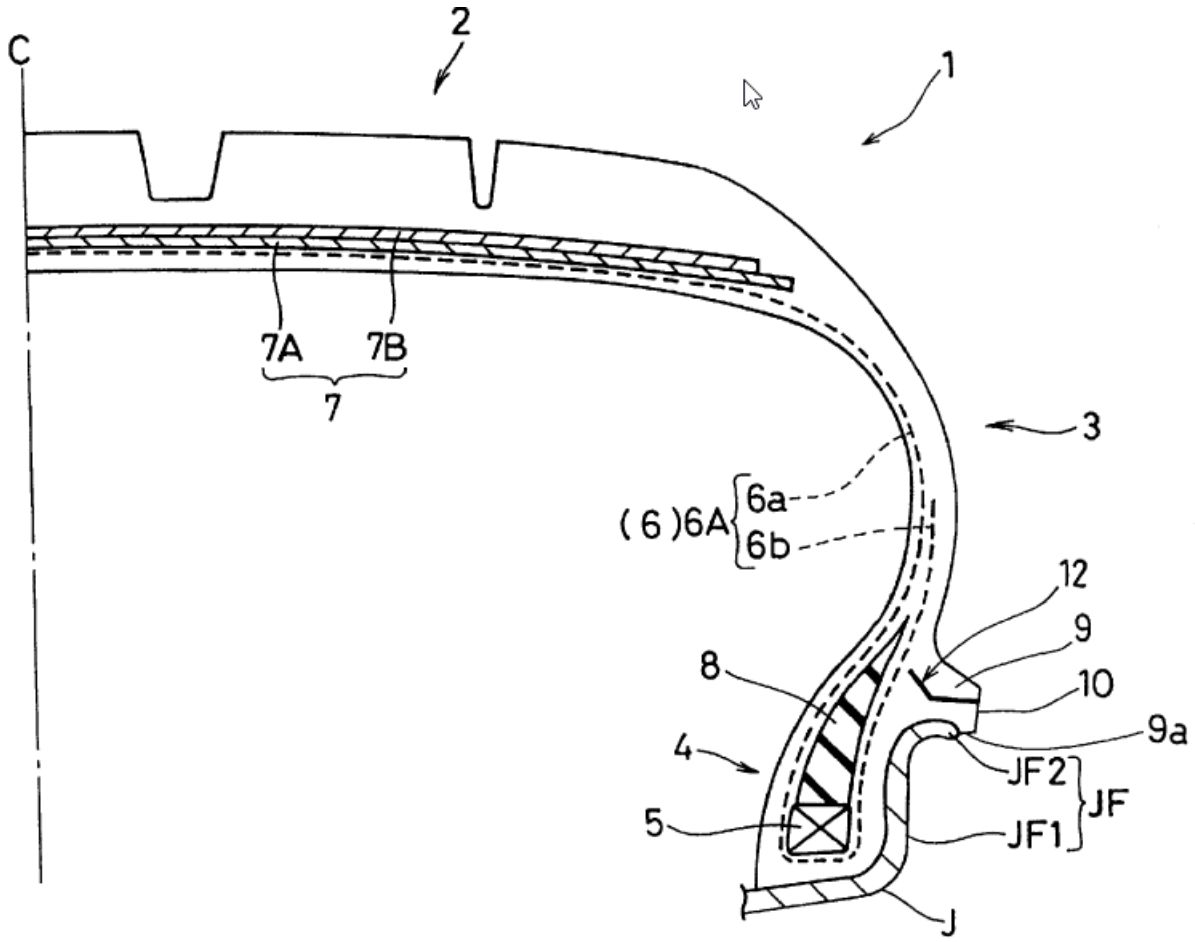


Figure shows extension being radially outside the rim flange.

B60C 2015/0245

{Bead lips at the bead toe portion, i.e. the axially and radially inner end of the bead}

Definition statement

This place covers:

Subject matter wherein the bead is characterised by the bead contour of the axially and radially inner end of the bead.

B60C 15/0247

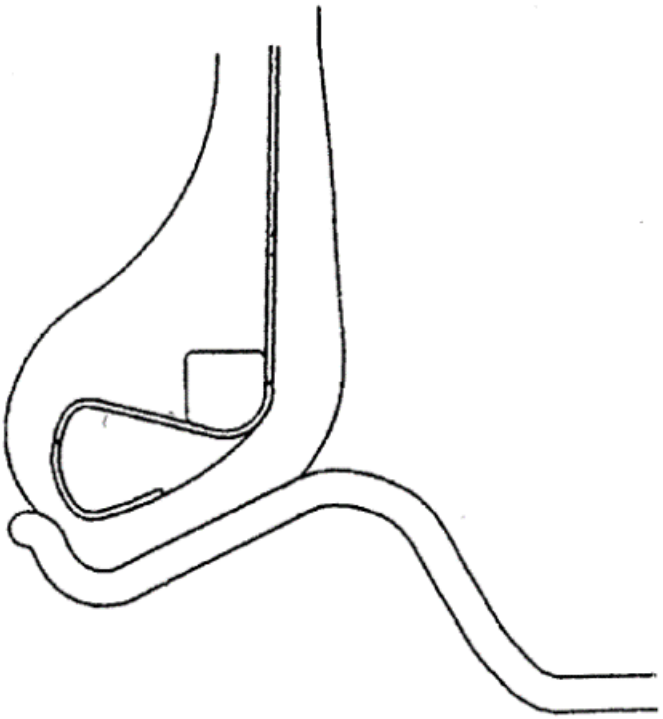
{with reverse bead seat inclination, i.e. the axially inner diameter of the bead seat is bigger than the axially outer diameter thereof}

Definition statement

This place covers:

Subject matter wherein the bead is seated such that the axially inner diameter of the bead seat is greater than the axially outer diameter thereof. This arrangement is the reverse of the more conventional disposition of a bead seat.

Illustrative example of subject matter classified in this place:



B60C 15/028

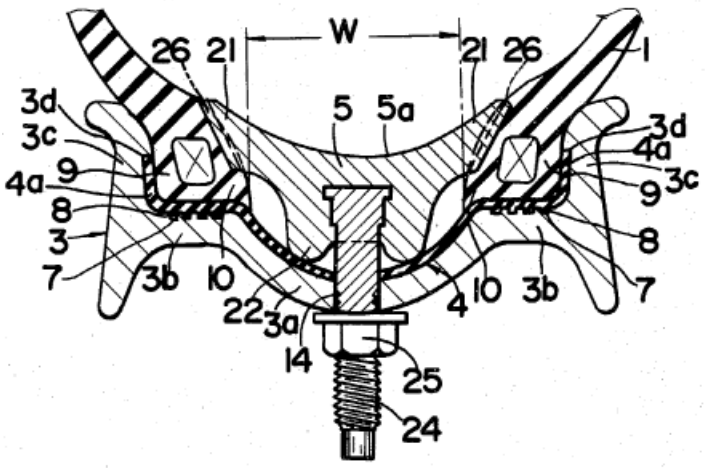
Spacers between beads (emergency load-supporting means B60C 17/00)

Definition statement

This place covers:

Subject matter wherein interior spacers, clamps or spreaders act laterally or laterally and downwardly to clamp adjacent portions of the tyre against flanges on the rim.

Illustrative example of subject matter classified in this place:



References

Limiting references

This place does not cover:

Emergency load-supporting means	B60C 17/00

Informative references

Attention is drawn to the following places, which may be of interest for search:

Rim comprising bead clamping elements	B60B 21/125

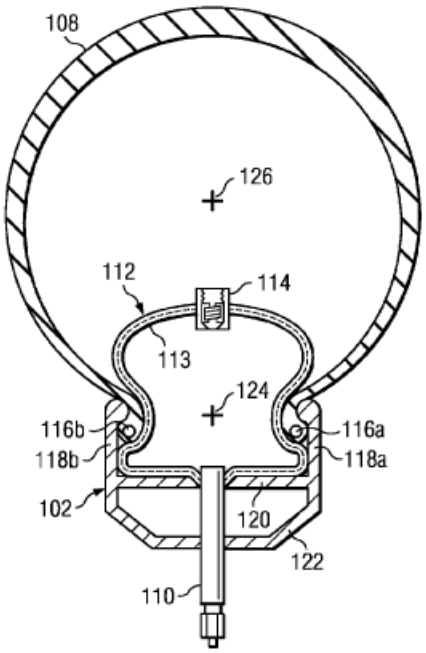
B60C 15/032

inflatable

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



B60C 15/04

Bead cores

Definition statement

This place covers:

Subject matter wherein the bead portion of the tyre is characterised by the annular reinforcing element, e.g. size, shape or material thereof.

Illustrative example of subject matter classified in this place:

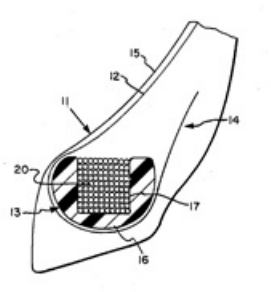


Figure shows a bead core structure.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Producing bead-rings or bead-cores for tyres	B29D 30/48

B60C 2015/042

{characterised by the material of the core, e.g. alloy}

Definition statement

This place covers:

Subject matter wherein the bead is characterised by the material of the annular reinforcing element.

B60C 2015/044

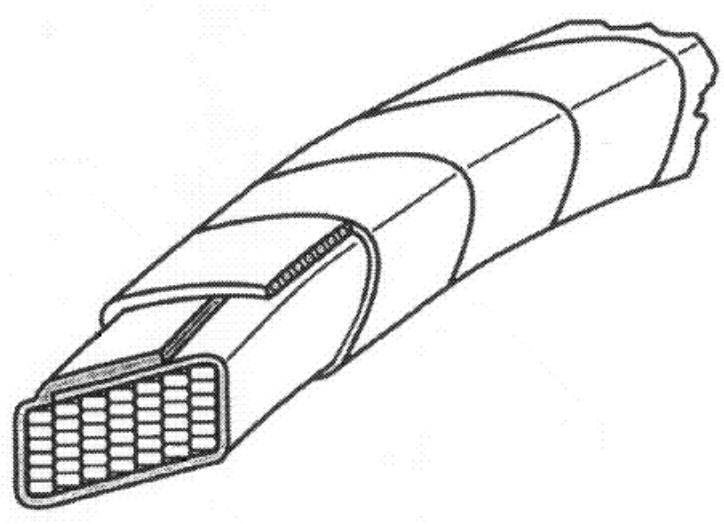
{characterised by a wrapping layer}

Definition statement

This place covers:

Subject matter wherein annular reinforcing element is encased in or wrapped by a layer.

Illustrative example of subject matter classified in this place:



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Reinforcement layers folded around bead core, i.e. flipper	B60C 15/0632

B60C 2015/048

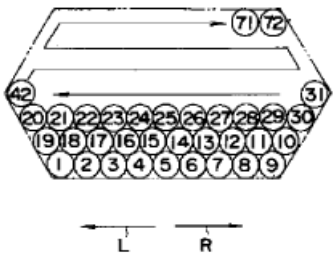
{Polygonal cores characterised by the winding sequence}

Definition statement

This place covers:

Subject matter wherein the bead core is formed by annular winding of a reinforcing element wherein the winding structure or sequence is specified.

Illustrative example of subject matter classified in this place:



B60C 15/05

multiple, i.e. with two or more cores in each bead

Definition statement

This place covers:

Subject matter wherein the rim contacting portion of the tyre contains two or more annular reinforcing elements.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tyre sidewalls comprising additional bead cores	B60C 13/009
Carcass plies folded around or between multiple bead cores	B60C 15/0081

B60C 15/06

Flipper strips, fillers, or chafing strips {and reinforcing layers for the construction of the bead}

Definition statement

This place covers:

Subject matter wherein the bead is characterised by reinforcing or elastomeric cushion layers other than the carcass ply and the annular reinforcing element.

Illustrative example of subject matter classified in this place:

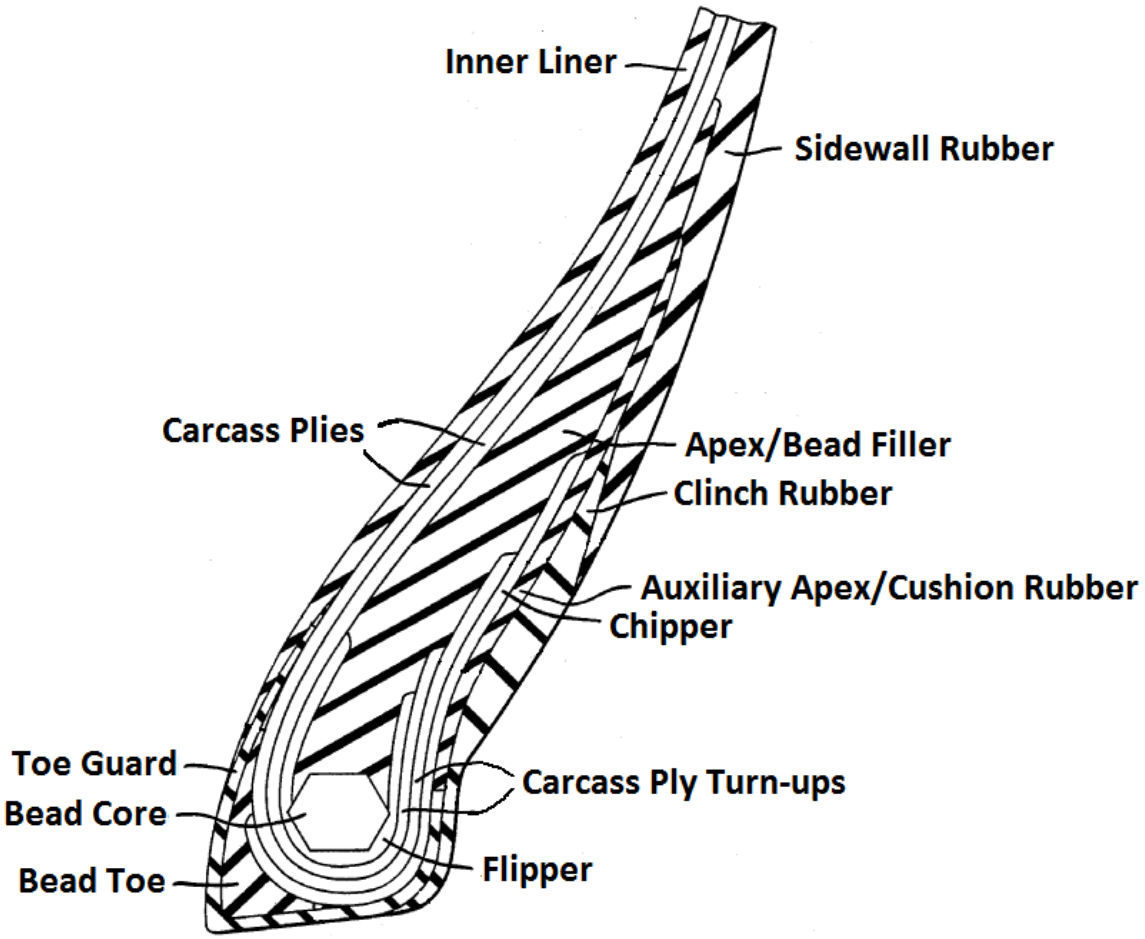


Figure shows a tyre bead portion showing terminology and position of commonly used cushion and reinforcement layers.

B60C 15/0603

{characterised by features of the bead filler or apex}

Definition statement

This place covers:

Subject matter wherein the bead is provided with a wedge shaped or triangular insert that is generally disposed radially above the bead core in such a way the carcass ply is wound around the bead core so that the turned-up portion of the carcass ply is separated from the main carcass portion by the wedge shaped or triangular insert.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Compositions of the apex rubber	B60C 2001/0058

B60C 15/0607

{comprising several parts, e.g. made of different rubbers}

Definition statement

This place covers:

Subject matter wherein the bead filler or bead apex is characterised by multiple parts or layers.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Bead cores comprise additional cushion rubber layers, including adjacent to the carcass ply turn-up portion	B60C 2015/0617

Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

- "bead filler" and "bead apex"

B60C 2015/061

{Dimensions of the bead filler in terms of numerical values or ratio in proportion to section height}

Definition statement

This place covers:

Subject matter wherein the dimensions of the bead filler are specified in terms of an absolute extent or an extent that is relative to other tyre dimensions, e.g. the maximum height of the tyre.

B60C 2015/0614

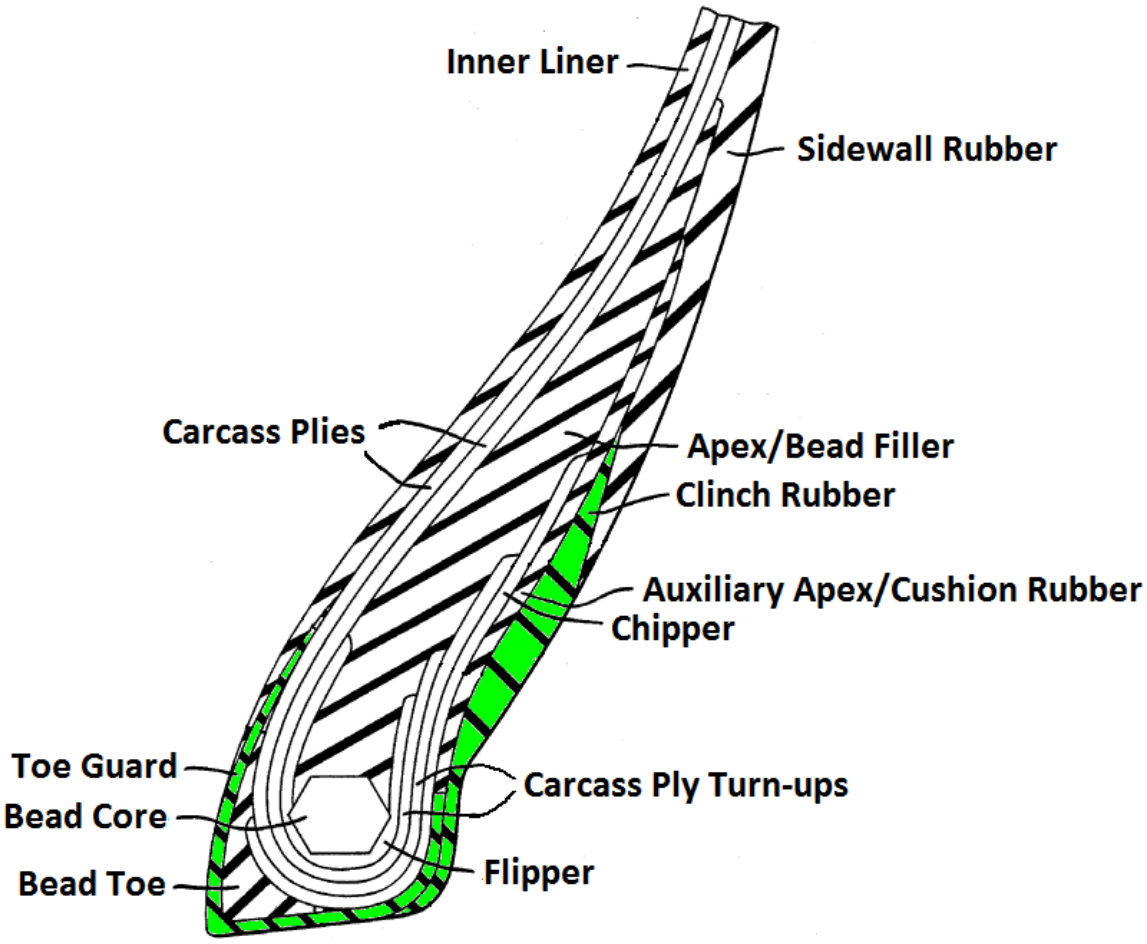
{characterised by features of the chafer or clinch portion, i.e. the part of the bead contacting the rim}

Definition statement

This place covers:

Subject matter wherein the bead portion is characterised by the portion of the bead intended to come into direct contact with the rim, i.e. chafer.

Illustrative example of subject matter classified in this place:



Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

chafer	bead portion of the tyre that makes direct contact with the rim

Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

- "chafer", "clinch", "toe guard" and "abrasion strip"

B60C 2015/0617

{comprising a cushion rubber other than the chafer or clinch rubber}

Definition statement

This place covers:

Subject matter wherein the bead portion is characterised by additional elastomeric cushion layers other than the bead filler and rim contacting layer.

B60C 2015/0621

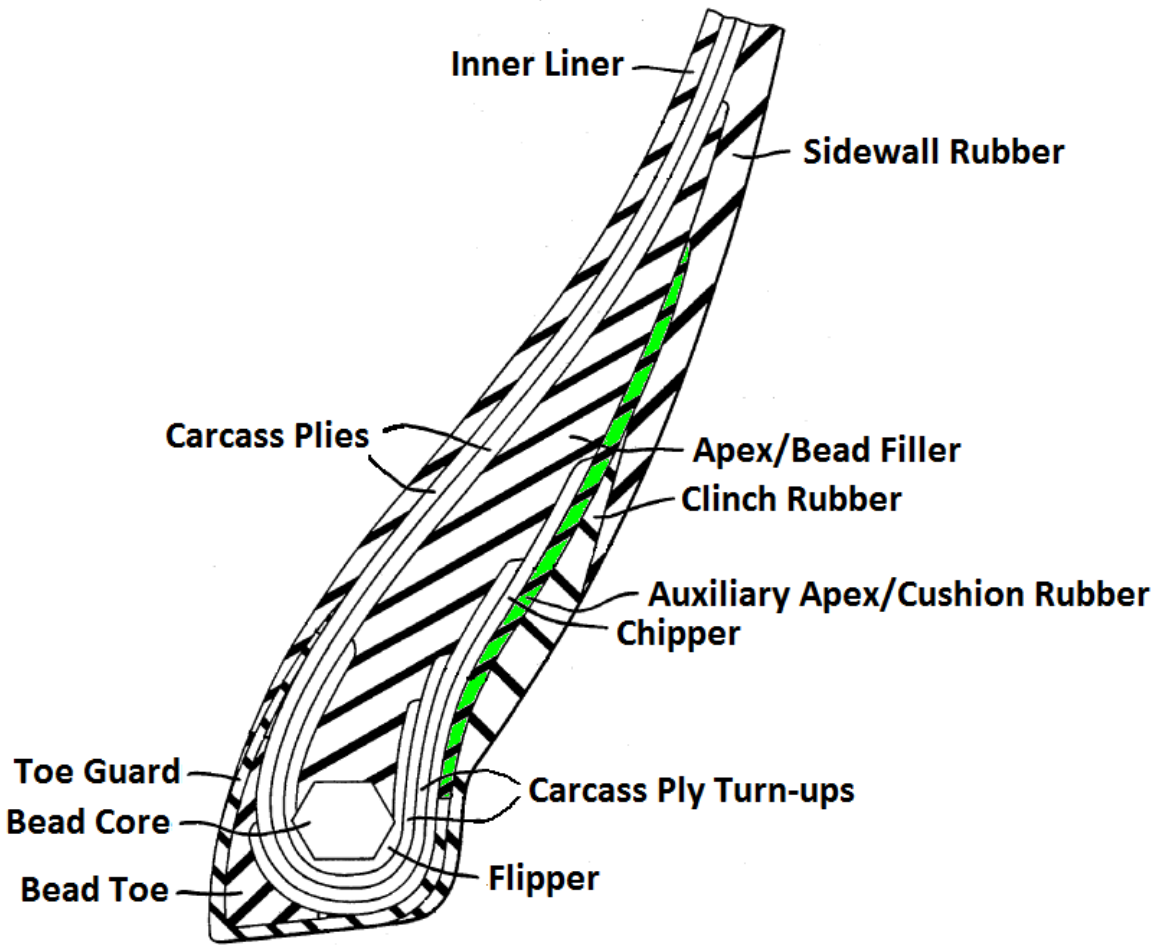
{adjacent to the carcass turnup portion}

Definition statement

This place covers:

Subject matter wherein the additional cushion layer is adjacent the turn-up portion, generally on the side of the turn-up portion opposite the bead filler.

Illustrative example of subject matter classified in this place:



B60C 2015/0625

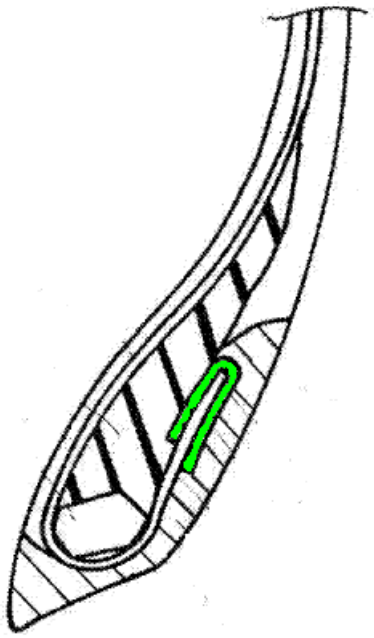
{provided at the terminal edge portion of a carcass or reinforcing layer}

Definition statement

This place covers:

Subject matter wherein there is an additional cushion layer provided at the terminal end of the carcass ply turn up portion or an additional reinforcing layer, e.g. a chipper.

Illustrative example of subject matter classified in this place:



B60C 15/0628

{comprising a bead reinforcing layer}

Definition statement

This place covers:

Subject matter wherein the bead portion is characterised by a cord reinforced elastomeric layer other than the carcass ply and the bead anchoring reinforcing element.

B60C 15/0632

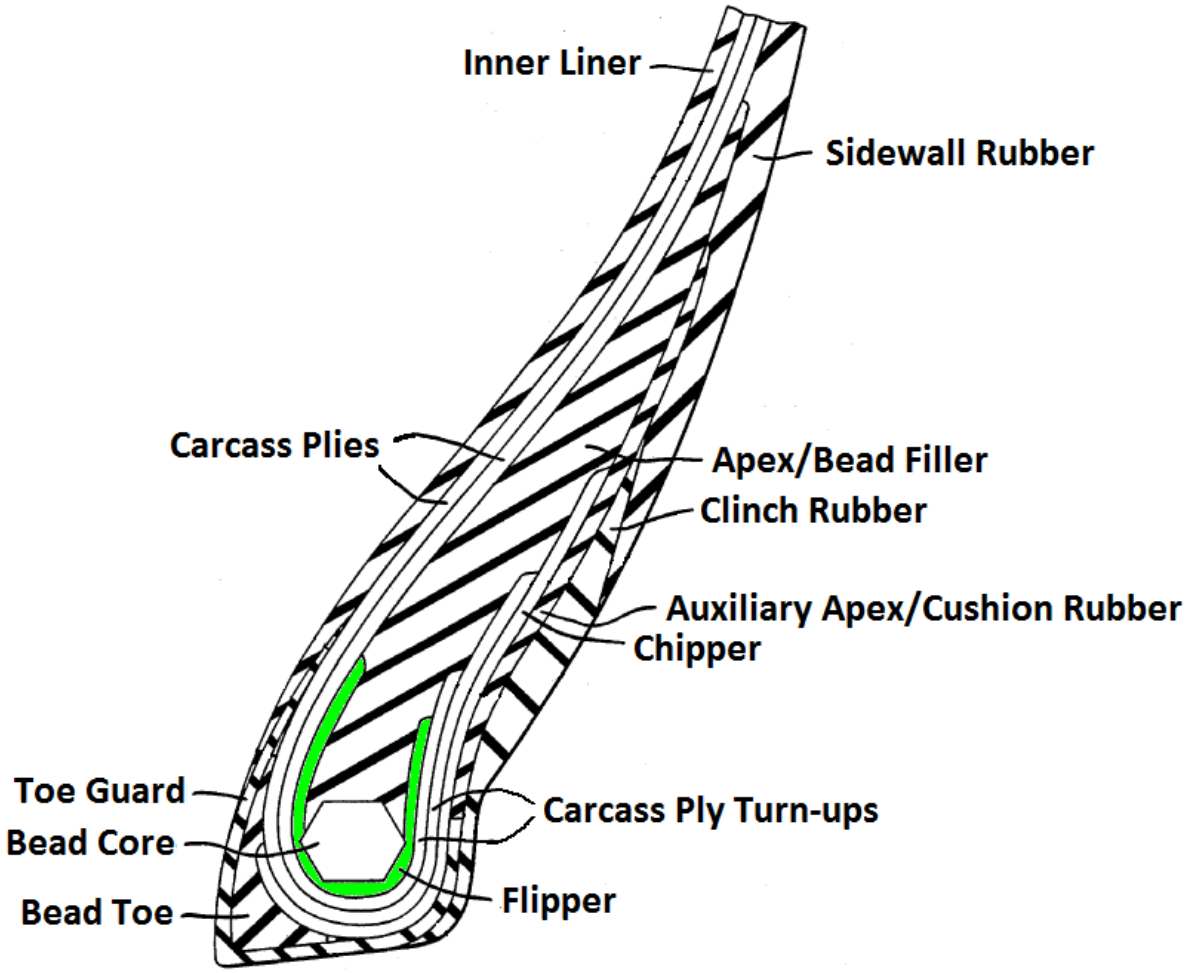
{using flippers in contact with and wrapped around the bead core and, at least partially, in contact with the bead filler}

Definition statement

This place covers:

Subject matter wherein the bead portion is characterised by a cord reinforced layer folded directly around the bead anchoring reinforcing element and between the bead anchoring reinforcing element and the carcass material, such layer is generally referred to as a flipper.

Illustrative example of subject matter classified in this place:



B60C 15/0635

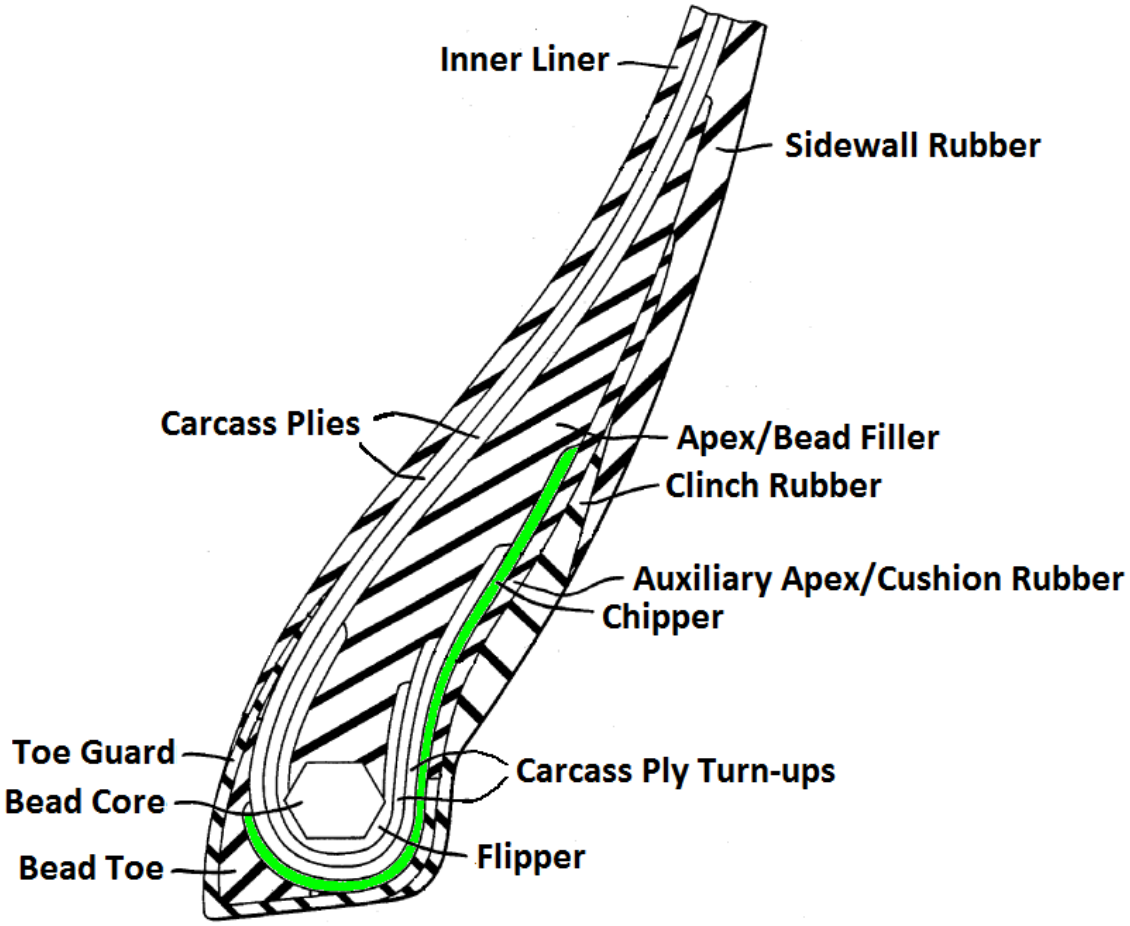
{using chippers between the carcass layer and chafer rubber wrapped around the bead}

Definition statement

This place covers:

Subject matter wherein bead portion is characterised by a cord reinforced layer wrapped around the bead core and between the carcass material and the rim contacting layer, i.e. chipper.

Illustrative example of subject matter classified in this place:



Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

chafer	bead portion of the tyre that makes direct contact with the rim
chipper	a cord reinforced layer wrapped around the bead core and between the carcass material and the rim contacting layer

B60C 2015/0696

{Asymmetric bead reinforcement, e.g. arrangement of bead reinforcing layer or apex}

Definition statement

This place covers:

Subject matter wherein the arrangement or structure of reinforcement, filler or cushion layers in one bead portion is different from that of the opposing bead portion.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Asymmetric transverse section of tyre	B60C 3/06
Asymmetric bead seats	B60C 15/0236

B60C 17/00

Tyres characterised by means enabling restricted operation in damaged or deflated condition; Accessories therefor

Definition statement

This place covers:

Subject matter wherein the pneumatic tyre or inner tube is provided with means that permit the resultant assembly to continue operation when the inflation pressure in the pneumatic tyre or inner tube drops substantially below normal or when the pneumatic tyre or inner tube is punctured or otherwise damaged.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tyres having multiple separate inflatable chambers	B60C 5/20
Tyres having additional shear belt layers	B60C 9/18
Puncture preventing arrangements and sealant layers	B60C 19/12
Repairing of plastic articles, e.g. tyres	B29C 73/00
Auto-repairing devices or arrangements, e.g. by introducing sealing compositions into the tyre	B29C 73/16
Incorporating auto-repairing or self-sealing arrangements into tyres	B29D 30/0685

B60C 17/0009

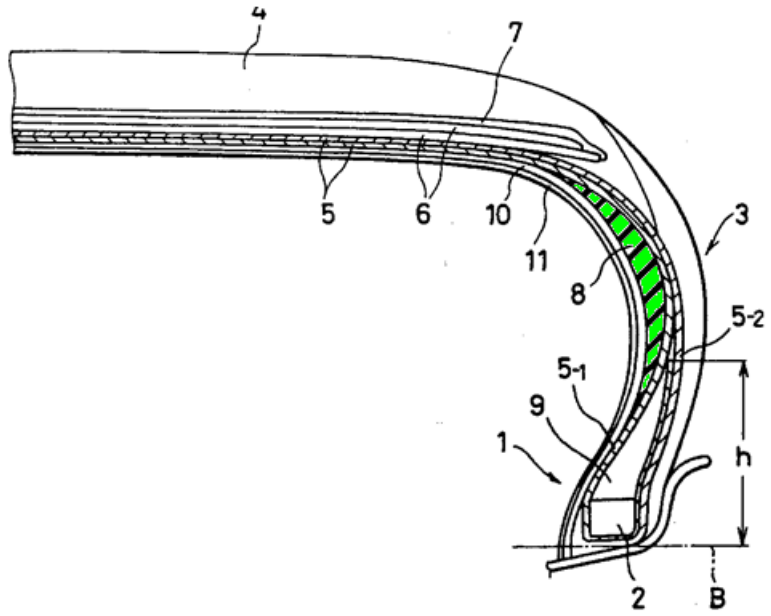
{comprising sidewall rubber inserts, e.g. crescent shaped inserts}

Definition statement

This place covers:

Subject matter wherein the structural stiffness of a pneumatic tyre sidewall is enhanced by a reinforcing insert that compensates for potential loss of pneumatic stiffness by deflation.

Illustrative example of subject matter classified in this place:



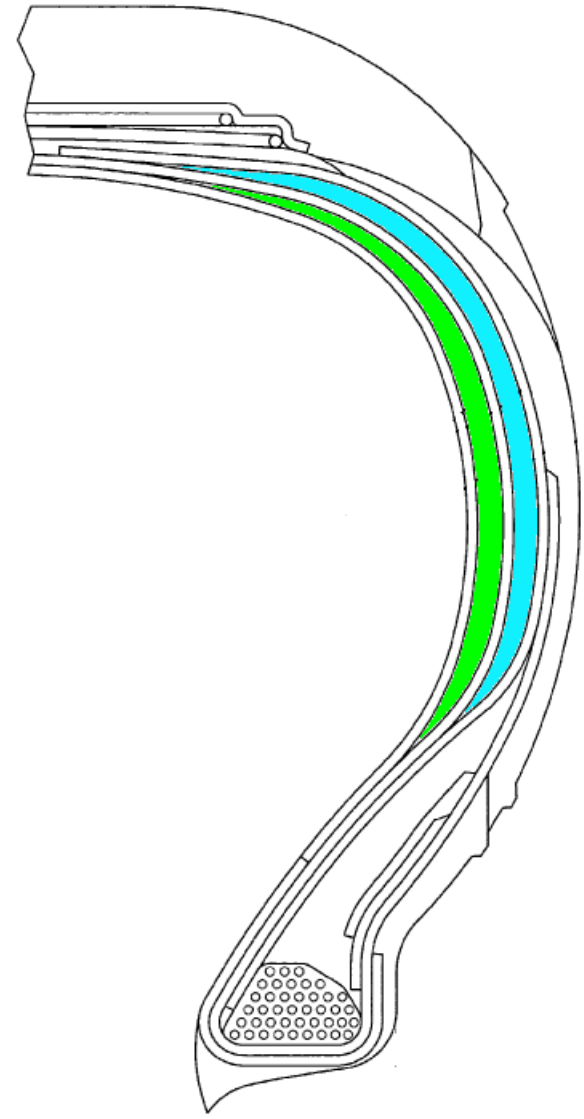
B60C 17/0018

{two or more inserts in each sidewall portion}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



B60C 17/0027

{comprising portions of different rubbers in a single insert}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:

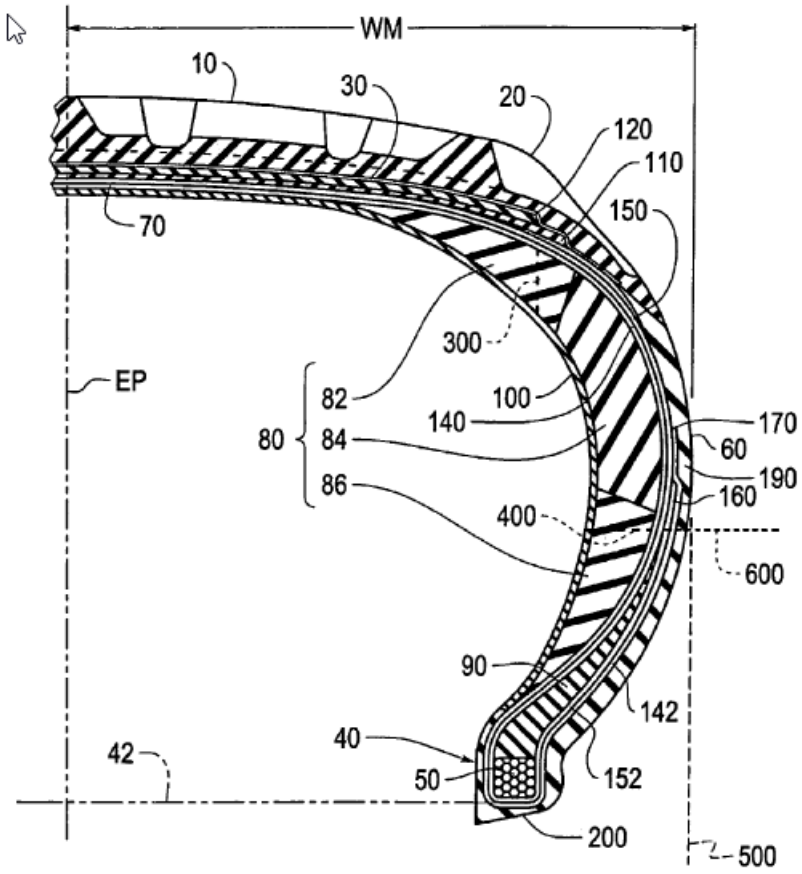


Figure shows differently hashed portions for different rubbers.

B60C 17/0036

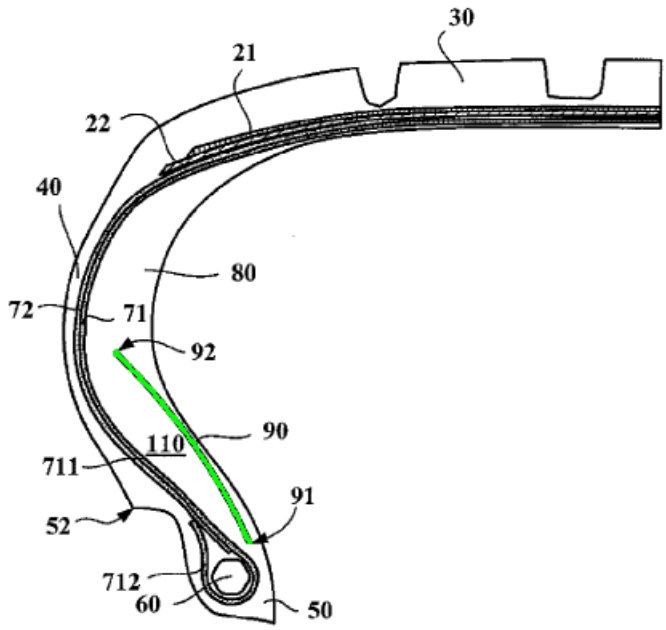
{comprising additional reinforcements}

Definition statement

This place covers:

Subject matter wherein the sidewall reinforcing insert comprises additional reinforcing layers, e.g. a cord reinforced layer.

Illustrative example of subject matter classified in this place:



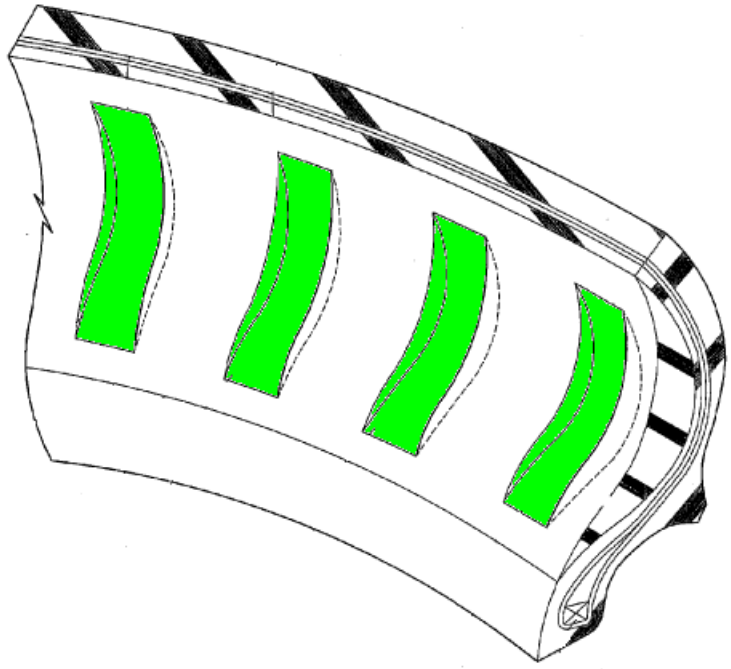
B60C 17/0045

{comprising grooves or ribs, e.g. at the inner side of the insert}

Definition statement

This place covers:

Illustrative example of subject matter classified in this place:



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Arrangement of grooves or ribs in the sidewall	B60C 13/02

B60C 2017/0081

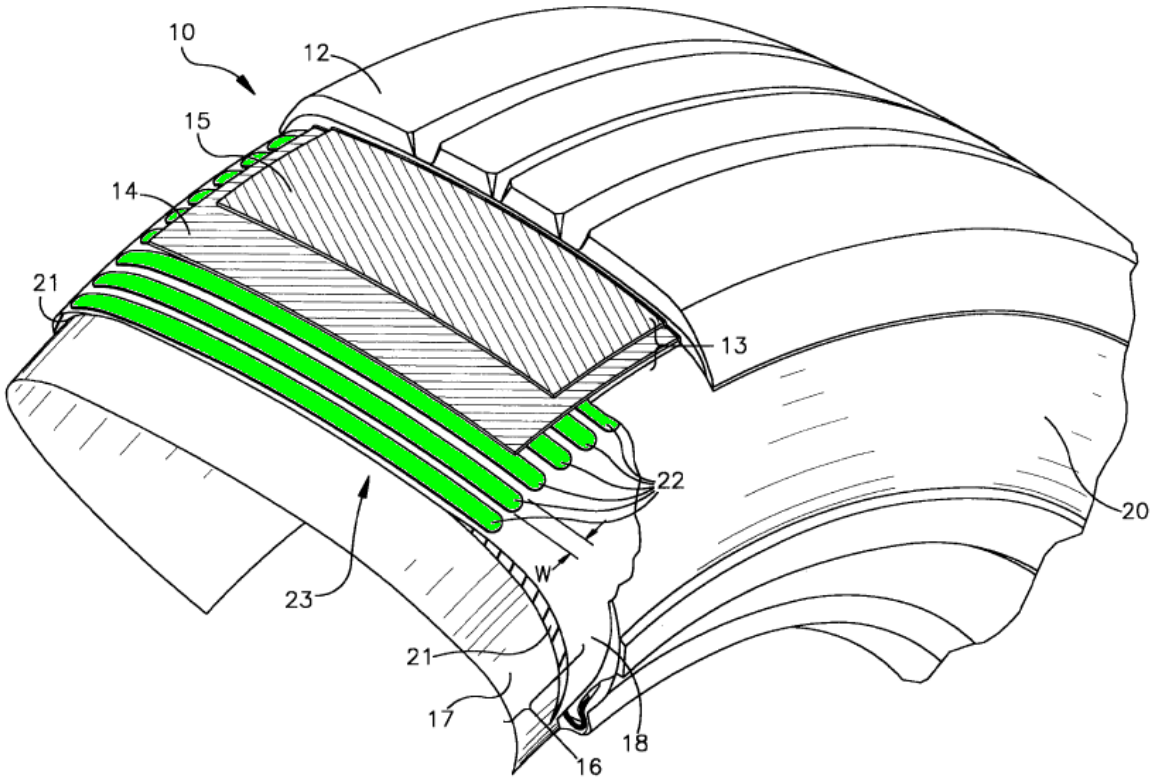
{comprising special reinforcing means in the crown area}

Definition statement

This place covers:

Subject matter wherein the crown region of the tyre is provided with special reinforcing means to support the tyre structure in the deflated condition.

Illustrative example of subject matter classified in this place:



Special rules of classification

The regular structure or arrangements of belts or breaker, crown-reinforcing or cushioning layers should be classified in B60C 9/18 – B60C 9/30.

B60C 17/009

{comprising annular protrusions projecting into the tyre cavity}

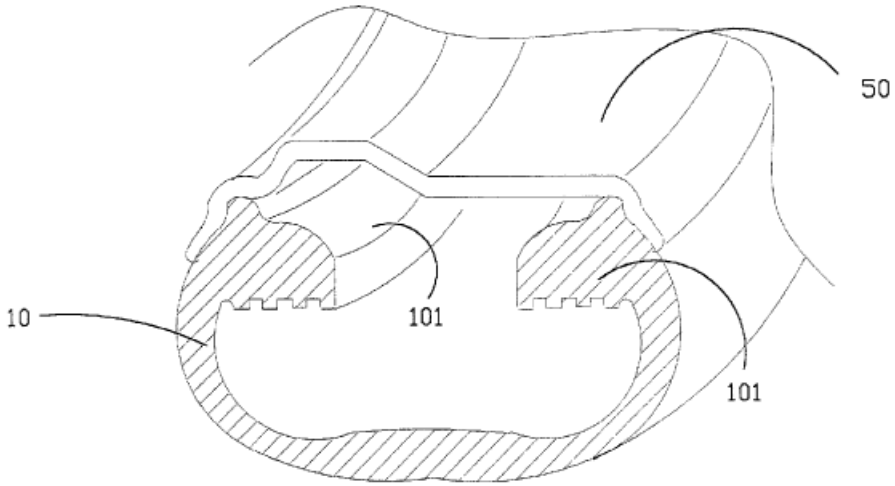
Definition statement

This place covers:

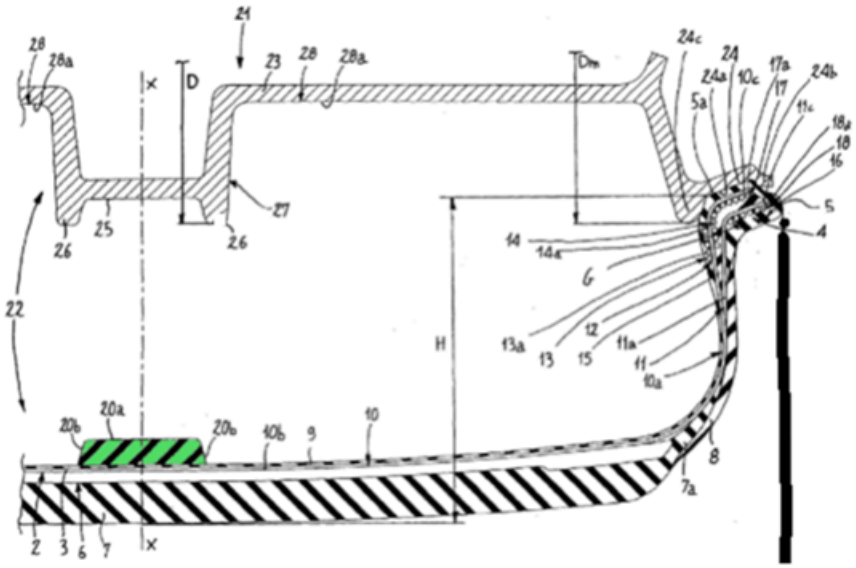
Subject matter wherein the tyre structure is provided with annular protrusions formed on or attached to the tyre in order to enable operation in the damaged or deflated condition.

Illustrative examples of subject matter classified in this place:

1.



2.



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tyres utilising non-inflatable supports that become load-supporting in an emergency	B60C 17/04

B60C 17/01

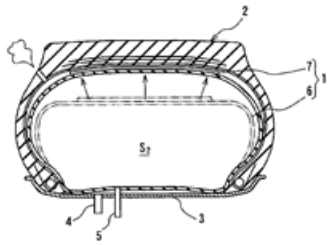
utilising additional inflatable supports which become load-supporting in emergency

Definition statement

This place covers:

Subject matter wherein the additional means that permits the assembly to continue operations is a pneumatic member that is located in the chamber of the pneumatic tyre and supports the pneumatic tyre when the tyre is damaged or loses inflation pressure.

Illustrative example of subject matter classified in this place:



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Inflatable inserts for pneumatic tyres	B60C 5/02
Tyres with multiple separate inflatable chambers	B60C 5/20
Inflatable bead spacers or spreaders	B60C 15/032

B60C 17/02

inflated or expanded in emergency only

Definition statement

This place covers:

Subject matter wherein an inflatable member carried in the tyre chamber is inflated to support the tyre in response to loss of air pressure.

B60C 17/04

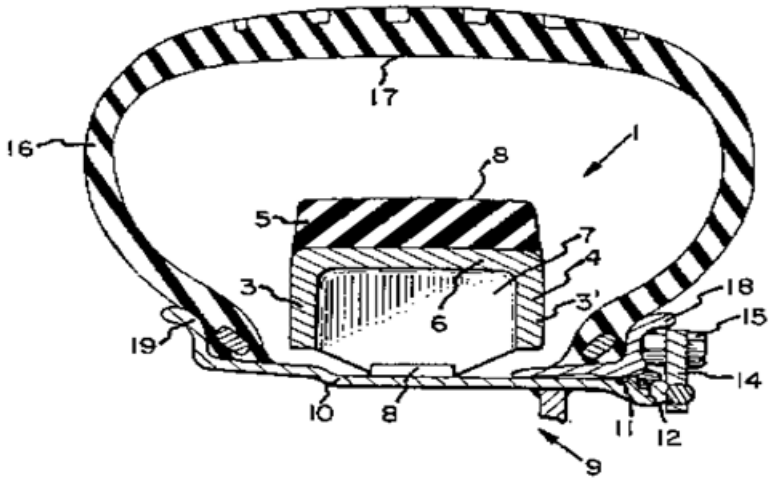
utilising additional non-inflatable supports which become load-supporting in emergency

Definition statement

This place covers:

Subject matter wherein the support means is distinct from the tyre and permits the tyre assembly to continue operation when its inflation pressure drops. The support means is an integral part of the tyre and is located within the tyre cavity.

Illustrative example of subject matter classified in this place:



B60C 17/08

Means facilitating folding of sidewalls, e.g. run-flat sidewalls

Definition statement

This place covers:

Subject matter wherein the tyre includes sidewalls which are foldable on themselves at predetermined adjacent sidewall portions to sustain the tyre to permit continued operation of the tyre upon loss of inflation pressure during use.

Illustrative example of subject matter classified in this place:

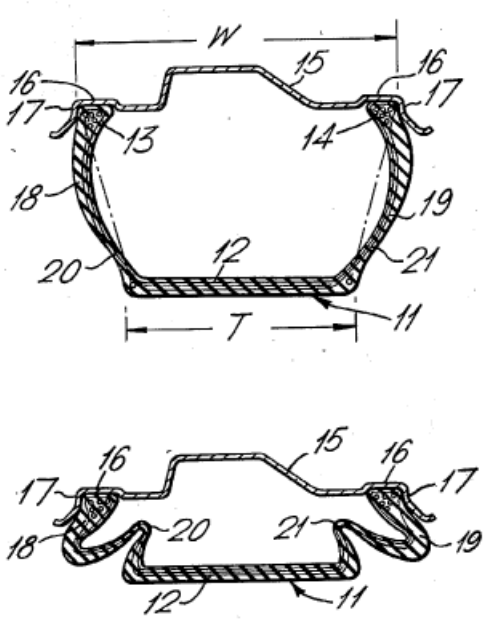


Figure shows sidewall structure facilitating folding.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Means facilitating folding of sidewalls for storage purposes	B60C 3/08

B60C 17/10

Internal lubrication

Definition statement

This place covers:

Subject matter wherein the support means that enables restricted operation of the tyre in a damaged or deflated condition comprises a lubricating or cooling composition which is disposed in the pneumatic tyre chamber.

Illustrative example of subject matter classified in this place:

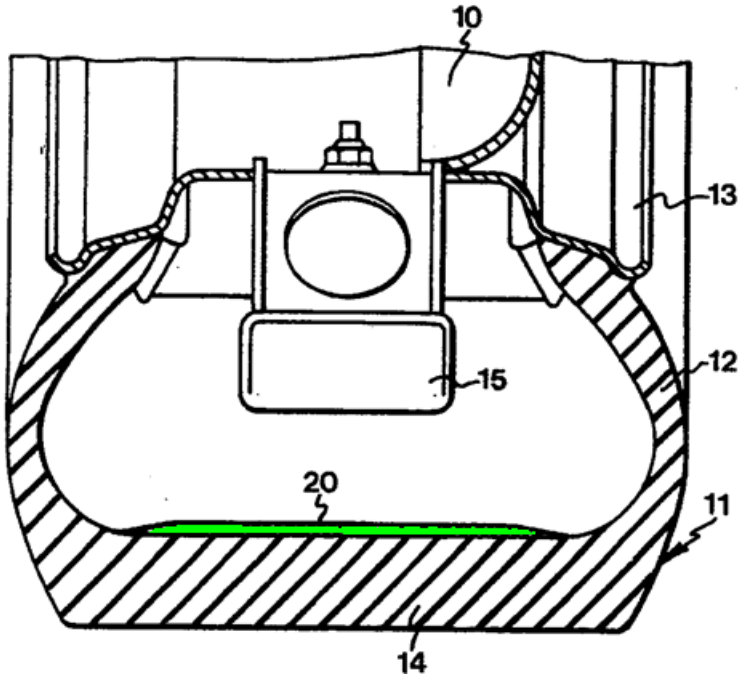


Figure shows lubricant layer (20).

B60C 19/00

Tyre parts or constructions not otherwise provided for

Definition statement

This place covers:

Constructional details or features related to:

- tyres that need special mounting;
- noise attenuating means integral with the tyre;
- balancing means attached to the tyre;
- tyre sensors other than pressure sensors;
- tyre warning devices generating noise;
- electric charge dissipating means integral with the tyre;
- puncture sealing means integral with the tyre.

References

References out of a residual place

Examples of places in relation to which this place is residual:

Monitoring of tyre pressure	B60C 23/02
Non-skid devices	B60C 27/00, B60B 39/02
Auto-repairing devices or arrangements, e.g. by introducing sealing compositions into the tyre	B29C 73/16

Informative references

Attention is drawn to the following places, which may be of interest for search:

Simulation or design methods for tyres	B60C 99/006
Testing of tyres	G01M 17/02

B60C 19/001

{Tyres requiring an asymmetric or a special mounting}

Definition statement

This place covers:

Subject matter wherein the tyre is characterised by the intended mounting position in relation to the vehicle, e.g. front vs. rear, inboard vs. outboard sides or camber angle.

Illustrative examples of subject matter classified in this place:

1.

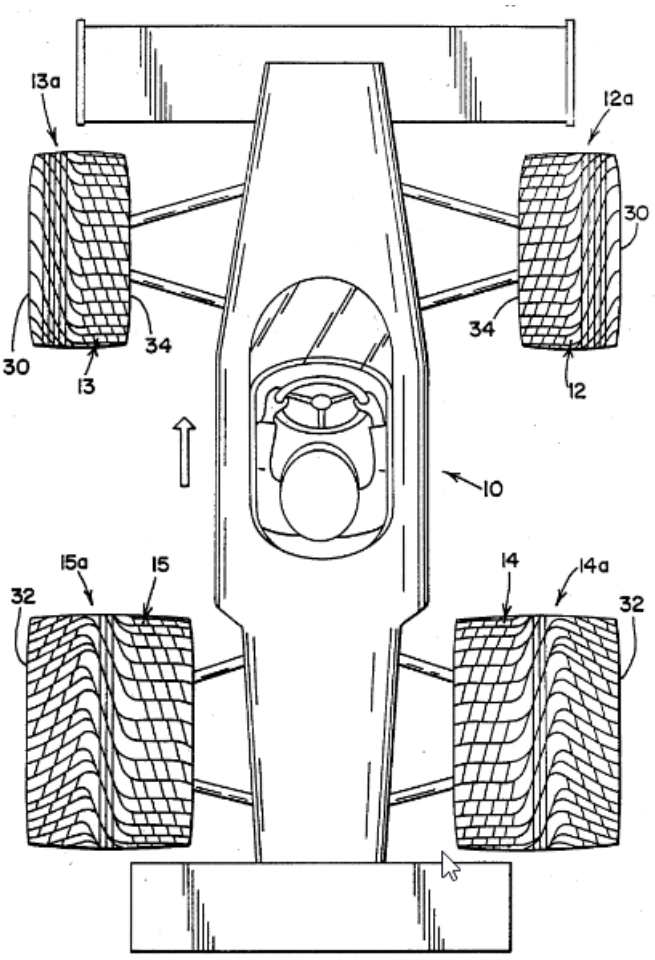


Figure 1 illustrates tyres configured for particular front and rear mounting positions.

2.

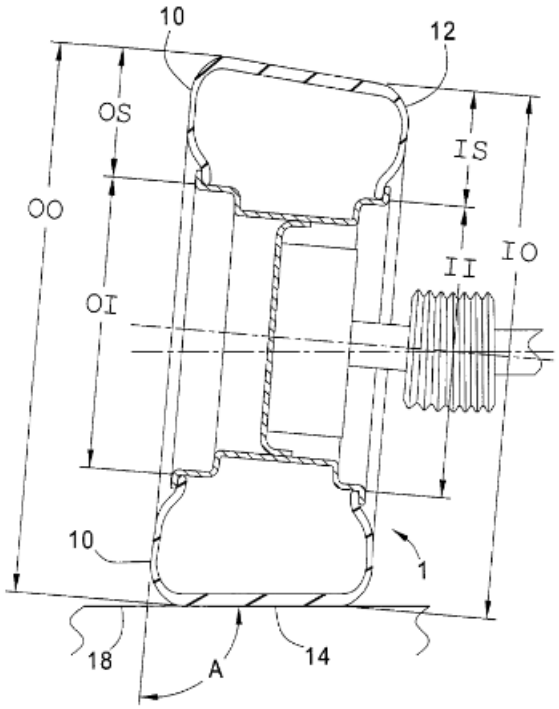


Figure 2 illustrates a tyre configured for an intended camber angle.

Special rules of classification

Tyres characterised only by a directional tread having intended rotational direction should be classified under B60C 11/0302.

Tyres characterised only by an asymmetric tread having intended mounting position in relation to vehicle (i.e. inboard and outboard sides) should be classified under B60C 11/0304.

B60C 19/002

{Noise damping elements provided in the tyre structure or attached thereto, e.g. in the tyre interior}

Definition statement

This place covers:

Subject matter wherein a noise damping or absorbing means is provided in or attached to the tyre structure.

Illustrative example of subject matter classified in this place:

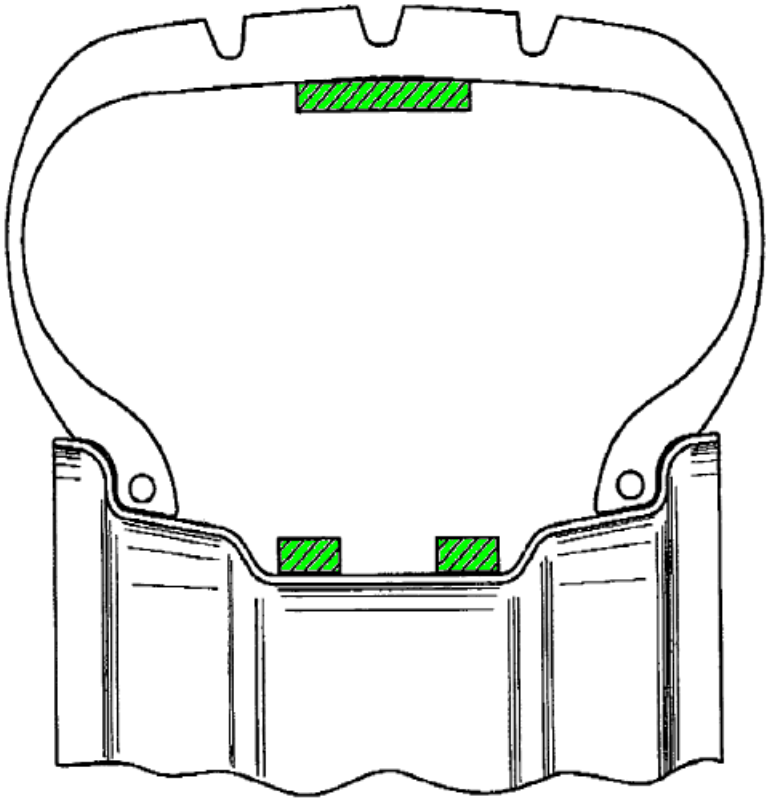


Figure shows noise damping element attached to both the tyre and rim.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Attachment of a noise dampening member to the rim/wheel	B60B 21/12, B60B 2900/133

B60C 19/003

{Balancing means attached to the tyre}

Definition statement

This place covers:

Subject matter wherein the tyre is provided with means integral therewith or permanently associated therewith or attached thereto for statically or dynamically balancing the tyre.

B60C 2019/004

{Tyre sensors other than for detecting tyre pressure}

Definition statement

This place covers:

Sensors located in the tyre without specific disclosure related to what the sensor is particularly used for.

Sensors that specifically do not measure pressure or temperature.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Attachment of a pressure or temperature sensor to the tyre	B60C 23/0493

B60C 2019/008

{Venting means, e.g. for expelling entrapped air}

Definition statement

This place covers:

Subject matter wherein the tyre structure is provided with means for venting air that may become entrapped between layers during tyre manufacture, e.g. gas bleeder cords.

B60C 19/04

Tyre with openings closeable by means other than the rim; Closing means therefor

Definition statement

This place covers:

Subject matter wherein means, other than a rim, close an opening in a tyre casing through which an inner tube may be inserted or close an opening in a tubeless tyre casing. The means may interlock with, attach to or form an integral part of the tyre casing.

B60C 19/08

Electric-charge-dissipating arrangements

Definition statement

This place covers:

Subject matter wherein means are provided integral or permanently associated with the resilient tyre in order to conduct an electrical current in, on or through the resilient tyre.

B60C 19/082

{comprising a conductive tread insert}

Definition statement

This place covers:

Subject matter wherein an electrically conductive means is provided in the tread portion.

B60C 19/084

{using conductive carcasses}

Definition statement

This place covers:

Subject matter wherein the carcass ply is electrically conductive, e.g. conductive reinforcing element or ply coat.

B60C 19/086

{using conductive sidewalls}

Definition statement

This place covers:

Subject matter wherein an electrically conductive means is provided in the sidewall.

B60C 19/088

{using conductive beads}

Definition statement

This place covers:

Subject matter wherein an electrically conductive means is provided in the bead portion of the tyre.

B60C 19/12

Puncture preventing arrangements

Definition statement

This place covers:

Subject matter wherein the pneumatic tyre or inner tube is provided with a self-healing feature to seal breaks made in the pneumatic tyre or inner tube, e.g. a sealant layer or a puncture-resistant feature to prevent breaks in the pneumatic tyre or inner tube, e.g. armour layer.

Illustrative example of subject matter classified in this place:

1.

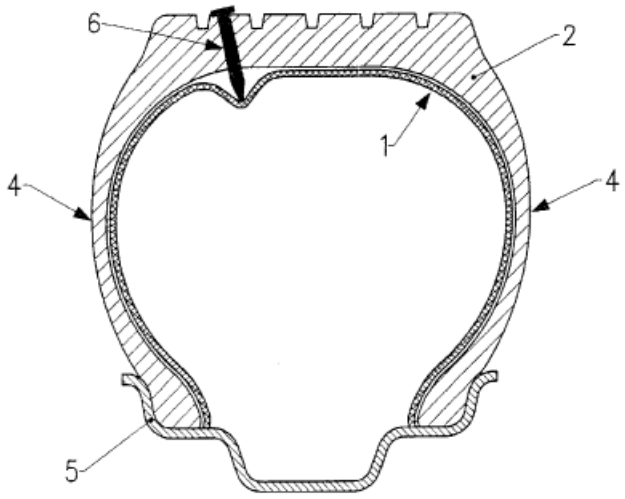


Figure above shows a tyre having an armour layer (1) for preventing puncture.

2.

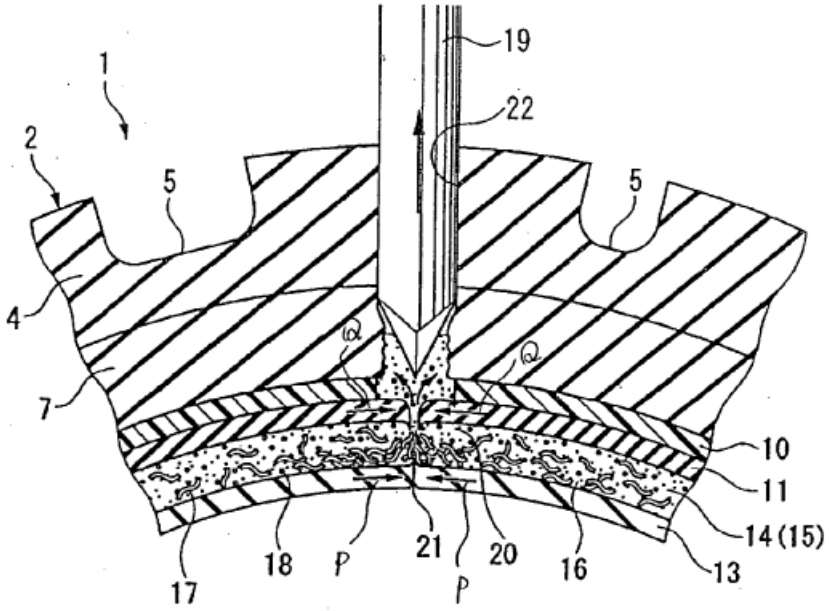


Figure shows a tyre having a sealant layer (14).

References

References out of a residual place

Examples of places in relation to which this place is residual:

Inflatable inserts having reinforcing means	B60C 5/08
Reinforcements or ply arrangement of pneumatic tyres	B60C 9/00

Informative references

Attention is drawn to the following places, which may be of interest for search:

Sealing compositions per se	B29C 73/163
Devices for introducing sealing compositions into the tyre	B29C 73/166

B60C 19/122

{disposed inside of the inner liner}

Definition statement

This place covers:

Subject matter wherein the puncture sealing or puncture preventing feature is disposed on the inner surface of the tyre.

B60C 19/125

{disposed removably on the tyre}

Definition statement

This place covers:

Subject matter wherein the puncture sealing or puncture preventing feature is removable.

B60C 19/127

{for inner tubes}

Definition statement

This place covers:

Subject matter wherein the puncture sealing or puncture preventing feature is configured for an inner tube.

B60C 23/00

Devices for measuring, signalling, controlling, or distributing tyre pressure or temperature, specially adapted for mounting on vehicles; Arrangement of tyre inflating devices on vehicles, e.g. of pumps or of tanks; Tyre cooling arrangements

Definition statement

This place covers:

Devices that are adapted for mounting on vehicles and are operational while the vehicle is moving.

Automatically distributing tyre pressure.

Monitoring tyre pressure status:

- Directly by measuring tyre air pressure.
- Indirectly by monitoring tyre deformation.

Monitoring tyre temperature status.

Arrangement of tyre inflating pumps.

Arrangement of air tanks.

Tyre cooling arrangements.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tyre parts or constructions not otherwise provided for	B60C 19/00
Devices for introducing sealing compositions into articles	B29C 73/166
Producing pneumatic tyres or parts thereof	B29D 30/06
Tyre inflating devices, supplying air for tyre inflation	B60S 5/04
Air pumps per se	F04
Tyre valves	F16K 15/20
Check valves for inflatable bodies, e.g. tyres	F16K 15/207
Tanks per se	F17C
Measuring in general	G01
Measuring distance traversed on the ground by vehicles	G01C 22/00
Housings for sensors	G01D 11/245
Devices for measuring tyre pressure (e.g. hand held pressure gauges)	G01L 17/00
Testing of tyres	G01M 17/02
Remote signalling in general	G08
Antennas for use in vehicles	H01Q 1/32

Tyre mounted electrical circuits

Sensors measuring tyre wear	B60C 11/243
Tyre sensors other than for detecting tyre pressure	B60C 2019/004
Attaching fasteners to tyres	B29D 2030/0072
Directly attaching monitoring devices to tyres	B29D 2030/0077
Attaching monitoring devices by inserting them inside tyre cavities	B29D 2030/0083
Tyre sensors for brake control	B60T 8/1725
Sensors mounted on wheel or tyre	B60W 2422/70
Tyre mounted RFID devices	G06K 19/07764
Tyre mounted antennas	H01Q 1/2241

Powering electrical circuits

Mechanical power producing mechanisms	F03G 7/00
Transponder powered from received waves	G01S 13/75
Supplying or distributing electric power by electromagnetic waves	H02J 50/00 - H02J 50/90
Electric generators per see	H02K

Rotary generators associated with wheels	H02K 7/1846
Piezoelectric generators in general	H10N 30/30

Wireless transmission of measurements

Pressure measurements for remote indication	G01L 19/086
Registering or indicating the working of vehicles and communicating information to a remotely located station	G07C 5/008
Transmission of measured signals using a wireless link	G08C 17/00
Near field transmission systems	H04B 5/00
Radio transmission systems	H04B 7/00

Sensors per se

Temperature sensors	G01K
Pressure and force sensing	G01L

B60C 23/001

{Devices for manually or automatically controlling or distributing tyre pressure whilst the vehicle is moving}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Devices for introducing sealing compositions into articles	B29C 73/166

B60C 23/00305

{Wheel circumventing supply lines, e.g. not through or about the axles}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.

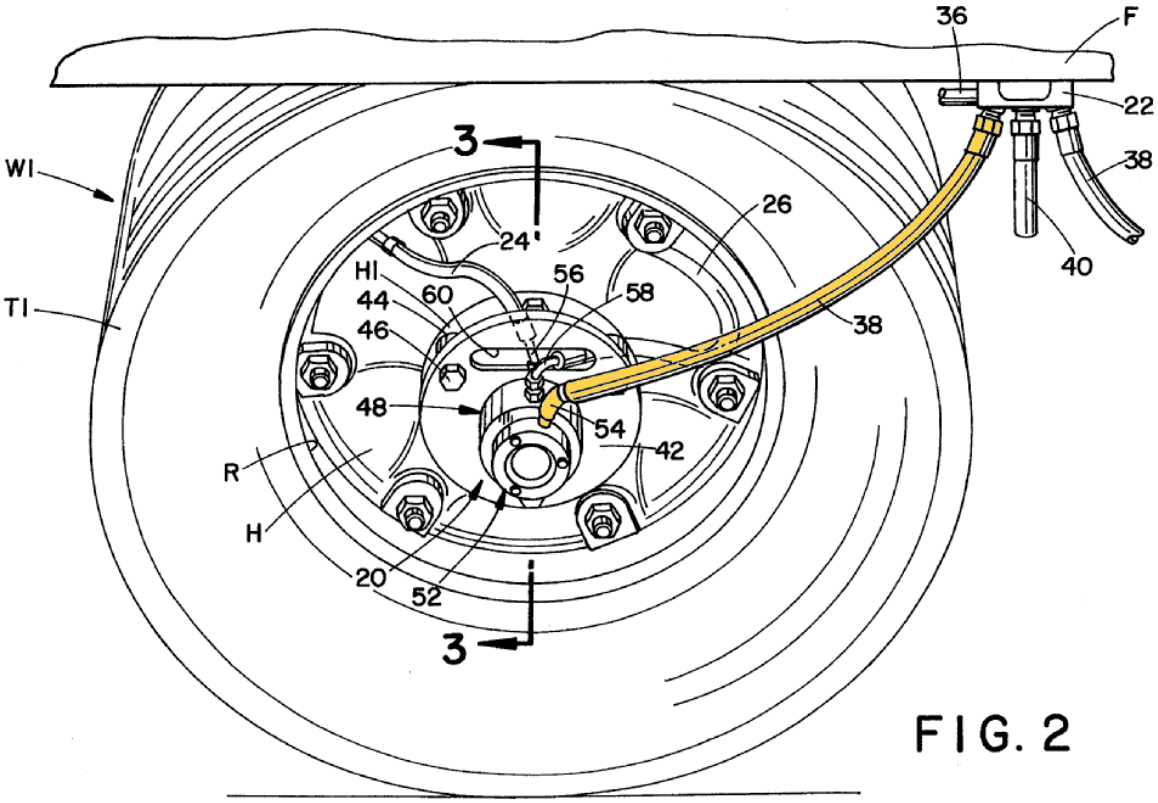


FIG. 2

B60C 23/00318

{on the wheels or the hubs}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Vehicle wheels	B60B
Hubs	B60B 27/00

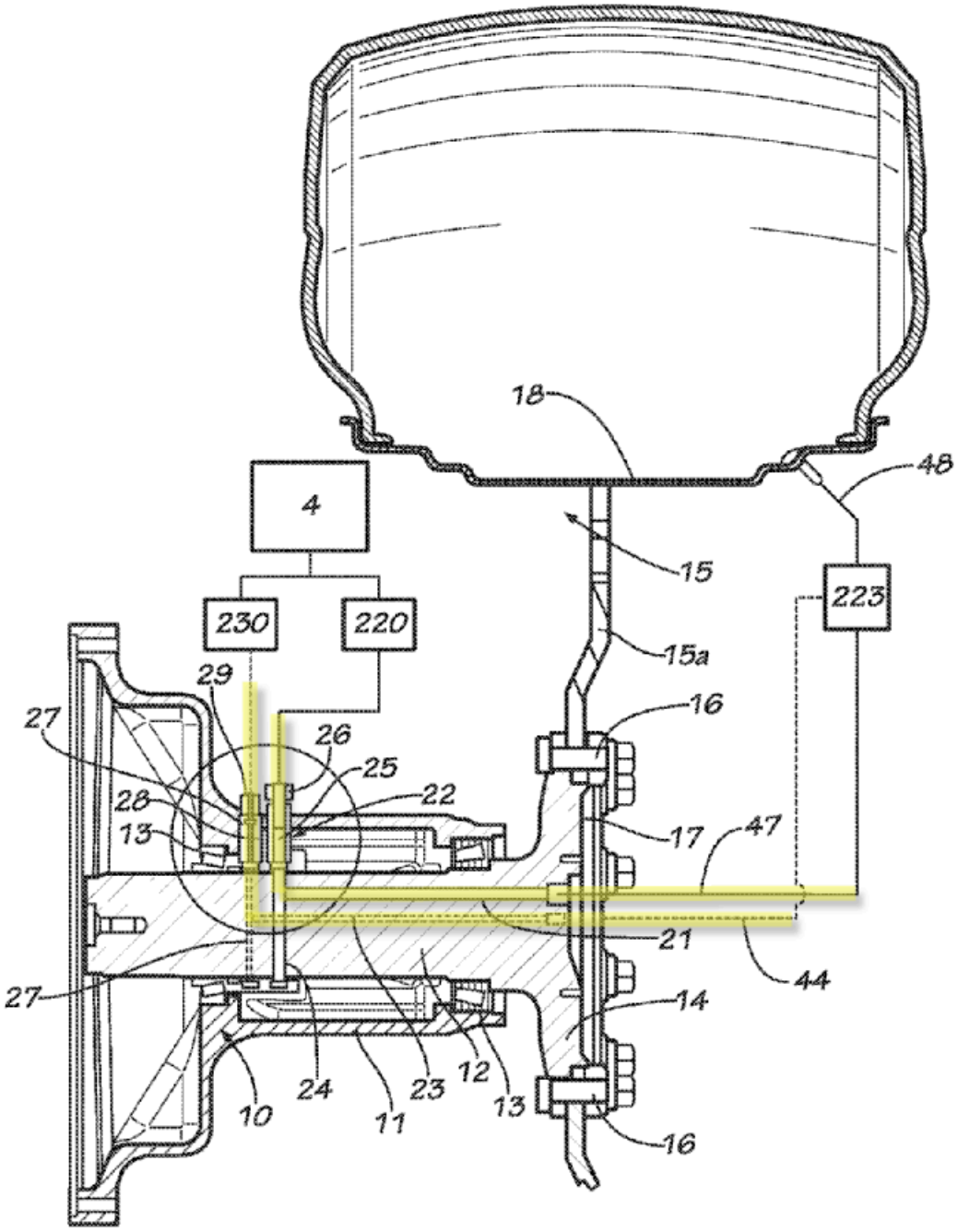
B60C 23/00347

{comprising two or more feedthrough}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



B60C 23/00354

{Details of valves}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Valves; taps; cocks; actuating-floats; devices for venting or aerating	F16K

B60C 23/004

{the control being done on the wheel, e.g. using a wheel-mounted reservoir}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Pumps operated by a running wheel	B60C 23/12

B60C 23/005

{Devices specially adapted for special wheel arrangements}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Devices for manually or automatically controlling or distributing tyre pressure whilst the vehicle is moving	B60C 23/001
Signalling devices actuated by tyre pressure	B60C 23/02
Signalling devices actuated by deformation of the tyre	B60C 23/06

B60C 23/0493

{for attachment on the tyre}

Definition statement

This place covers:

Subject matter concerning the constructional details for the attachment of a monitoring or signalling device to a tyre or encasement of the device within the tyre.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Sensor not used for detecting temperature or pressure	B60C 2019/004

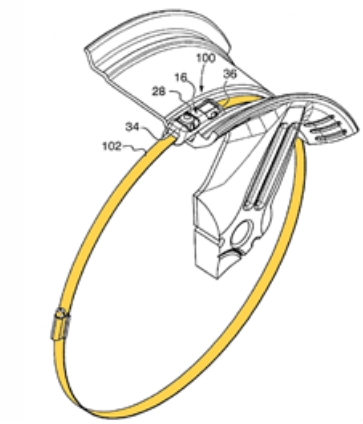
B60C 23/04985

{using straps surrounding the rims}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



B60C 23/06

Signalling devices actuated by deformation of the tyre {, e.g. tyre mounted deformation sensors or indirect determination of tyre deformation based on wheel speed, wheel-centre to ground distance or inclination of wheel axle}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Wear-indicating arrangements	B60C 11/24

B60C 23/10

Arrangement of tyre-inflating pumps mounted on vehicles

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Devices for manually or automatically controlling or distributing tyre pressure whilst the vehicle is moving	B60C 23/001

B60C 23/12

operated by a running wheel

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Wheel mounted reservoirs	B60C 23/004

B60C 23/121

{the pumps being mounted on the tyres}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tyre parts or constructions not otherwise provided for	B60C 19/00
Attaching fasteners to tyres, e.g. patches, in order to connect devices to tyres	B29D 2030/0072

B60C 23/126

{the pumps being mounted on the wheel rims}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Vehicle wheels	B60B

B60C 23/127

{the pumps being mounted on the hubs}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Hubs	B60B 27/00

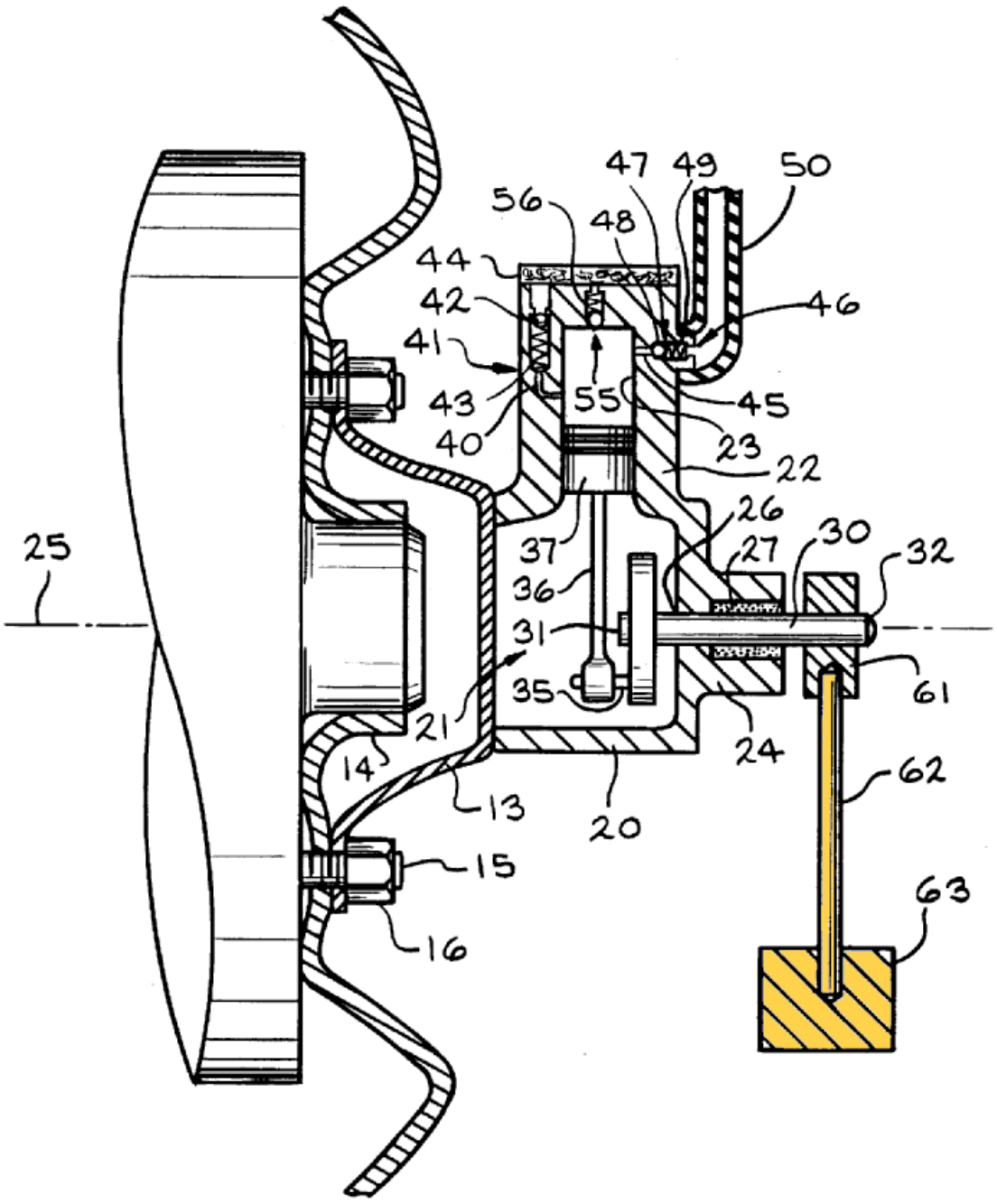
B60C 23/131

{activated by force of gravity}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



B60C 23/133

{activated by centrifugal force}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.

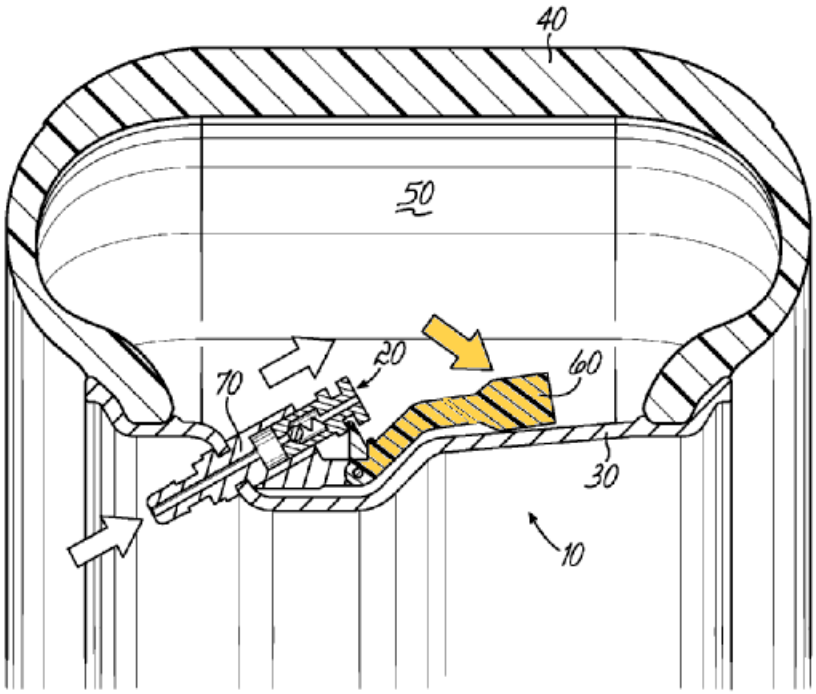
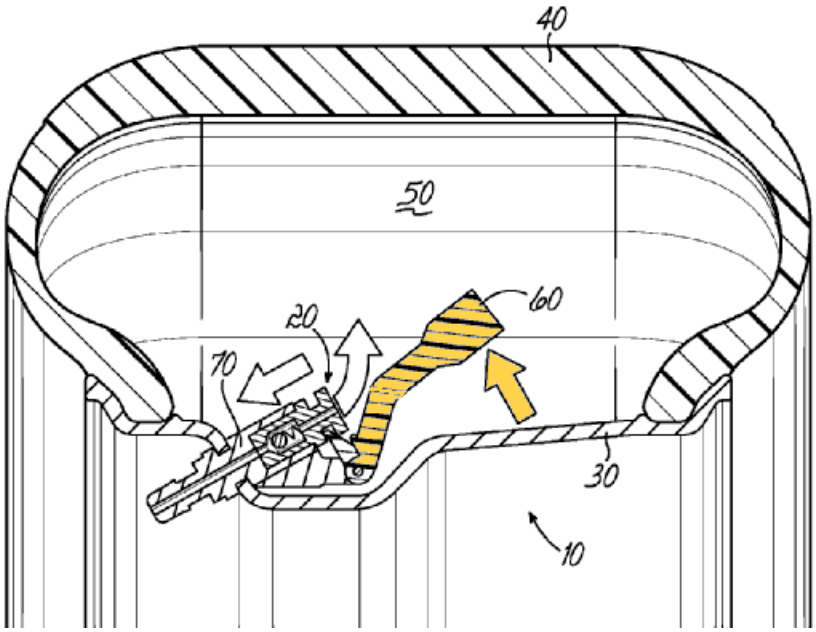


FIG. 1



B60C 23/135

{activated due to tyre deformation}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.

Fig. 1

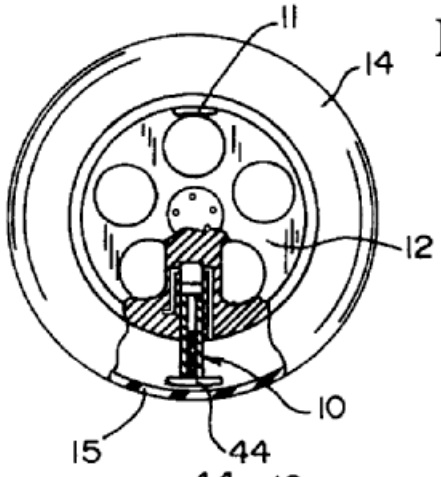


Fig. 2

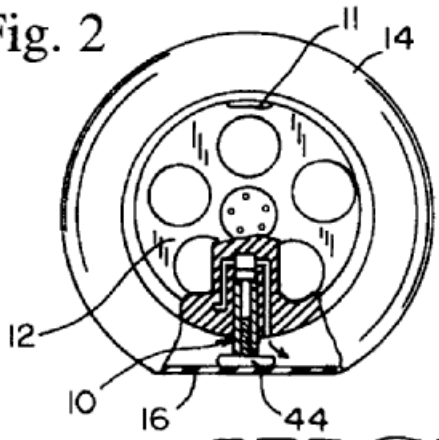


Fig. 3

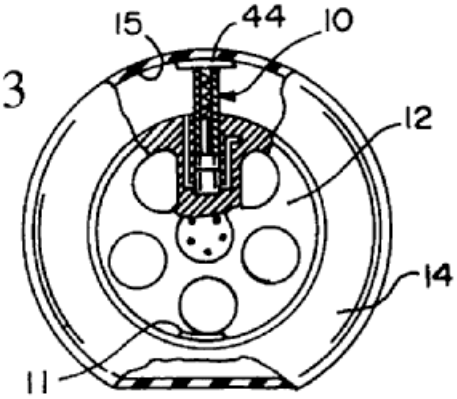


Fig. 4

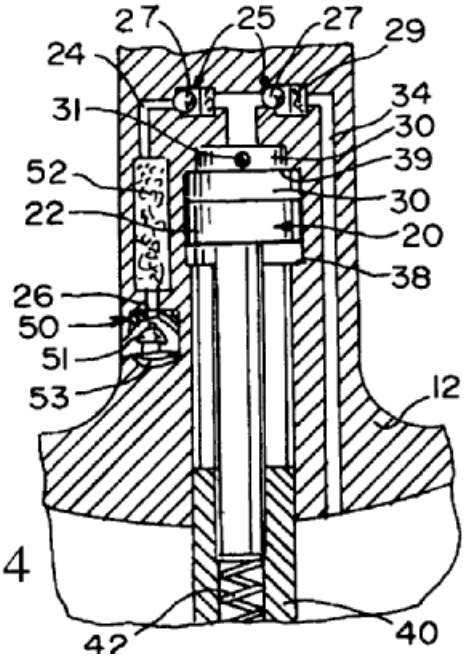
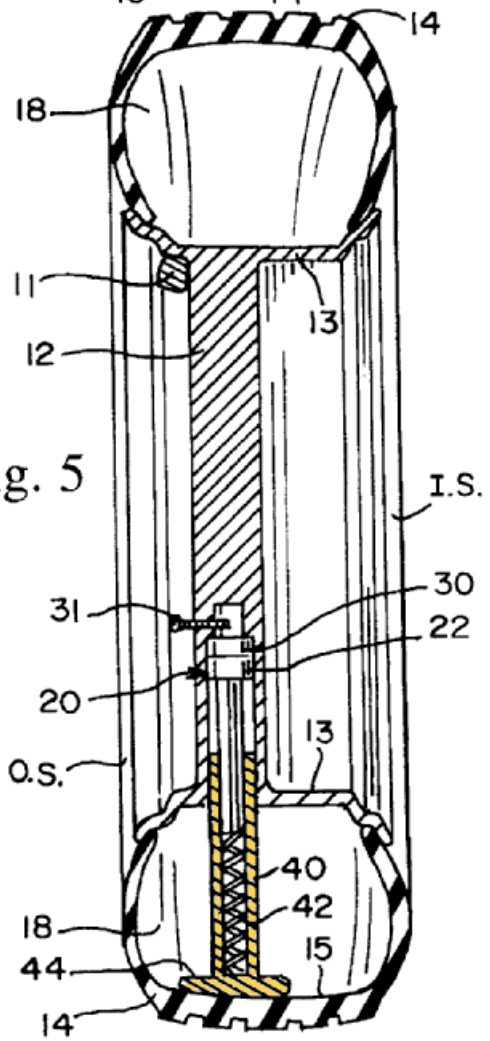


Fig. 5



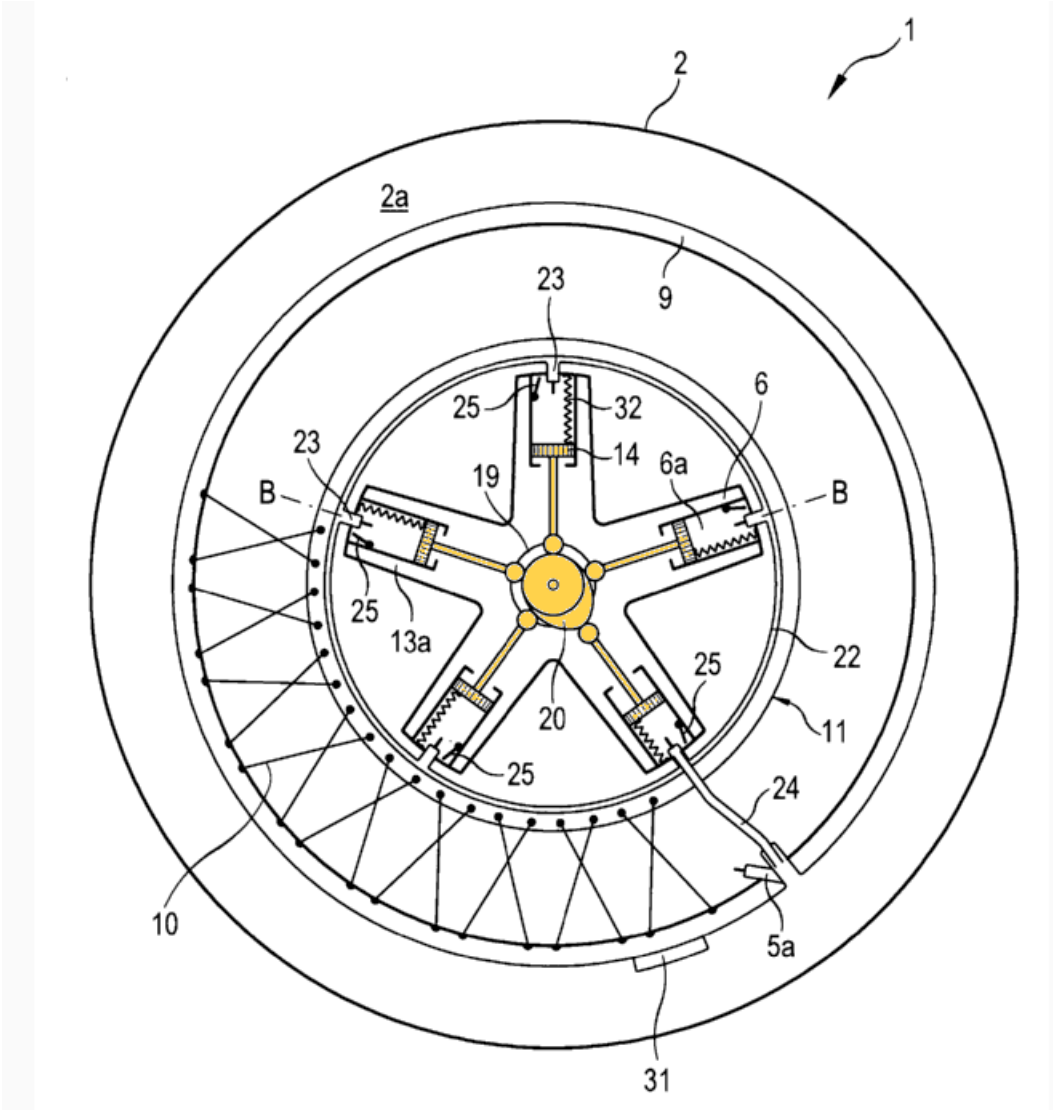
B60C 23/137

{comprising cam driven pistons}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



B60C 25/00

Apparatus or tools adapted for mounting, removing or inspecting tyres (testing of tyres G01M 17/02)

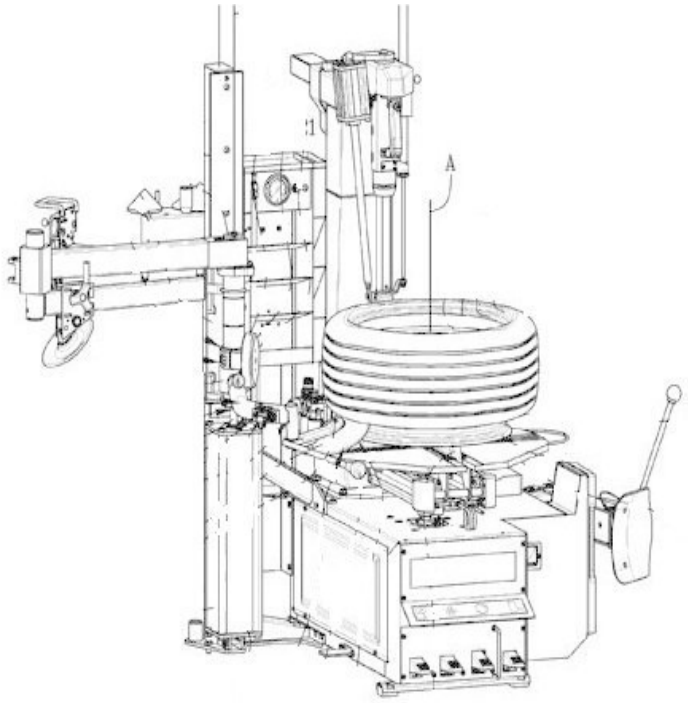
Definition statement

This place covers:

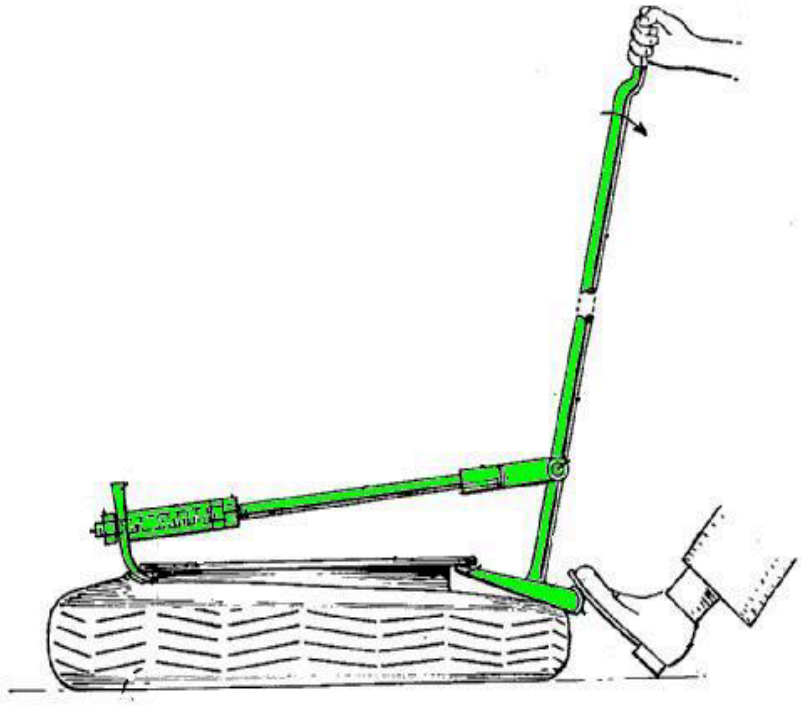
- Hand-tools and machines for mounting or demounting a tyre on/from a rim portion.
- Demounting machines also include separation of tyres from rims by destroying one or both parts.

Illustrative examples of subject matter classified in this place:

1.



2.



References

Limiting references

This place does not cover:

Testing of tyres	G01M 17/02

Informative references

Attention is drawn to the following places, which may be of interest for search:

Rims per se	B60B 21/00
Hand-tools or machines for mounting or demounting wheels to/from a vehicle axle	B60B 29/00
Means for holding wheels or parts thereof	B60B 30/00
Balancing of wheels	G01M 1/045
Compensation of imbalance or matching of tyres	G01M 1/30
Compensation of imbalance by removing material from the tyre tread	G01M 1/34

B60C 25/002

{Inspecting tyres}

Special rules of classification

When classifying in this group, classification is also made in the appropriate subgroups of B60C 25/0548.

B60C 25/01

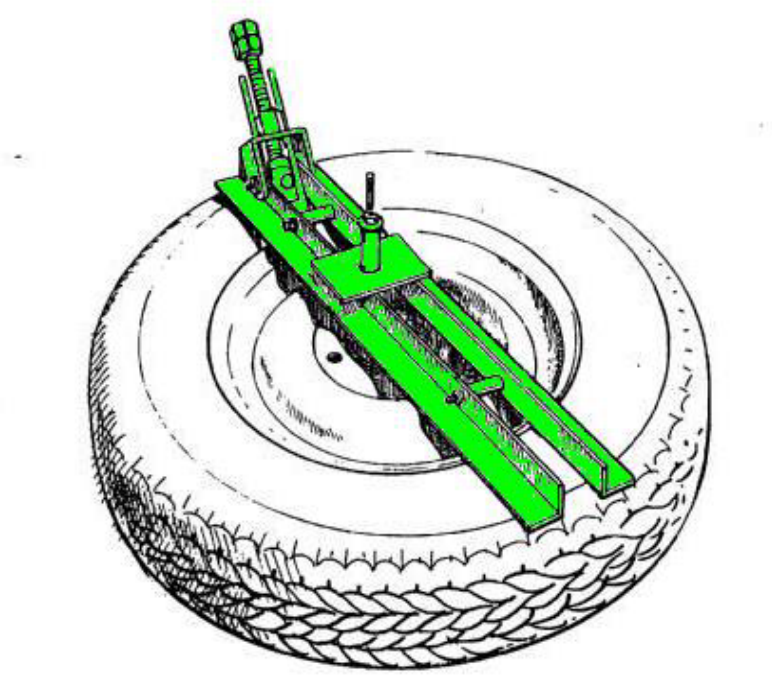
for removing tyres from or mounting tyres on wheels

Definition statement

This place covers:

Devices for manually mounting or demounting tyres to/ from rims.

Example:



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Machines for mounting or demounting tyres to/ from rims	B60C 25/05

B60C 25/02

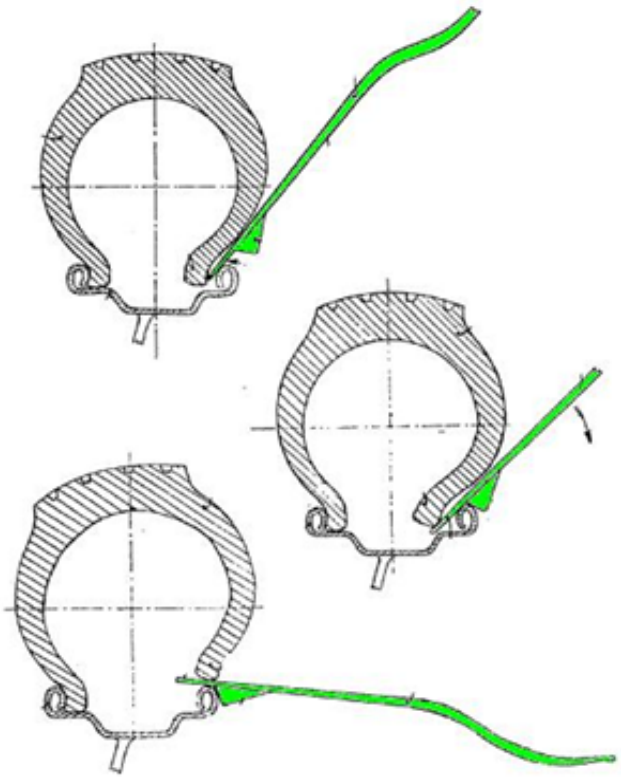
Tyre levers or the like, e.g. hand-held

Definition statement

This place covers:

Tyre levers or similar hand-tools for manually mounting or demounting tyres to/ from rims.

Example:



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Machine operated tyre levers	B60C 25/05

B60C 25/025

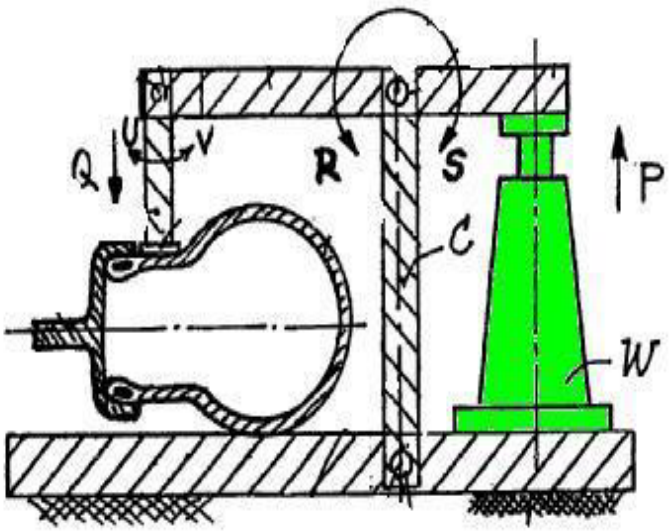
{with a jack}

Definition statement

This place covers:

Hand-tools provided with a jack for manually mounting/demounting tyres to/from rims

Example:



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Machine operated devices	B60C 25/05

B60C 25/04

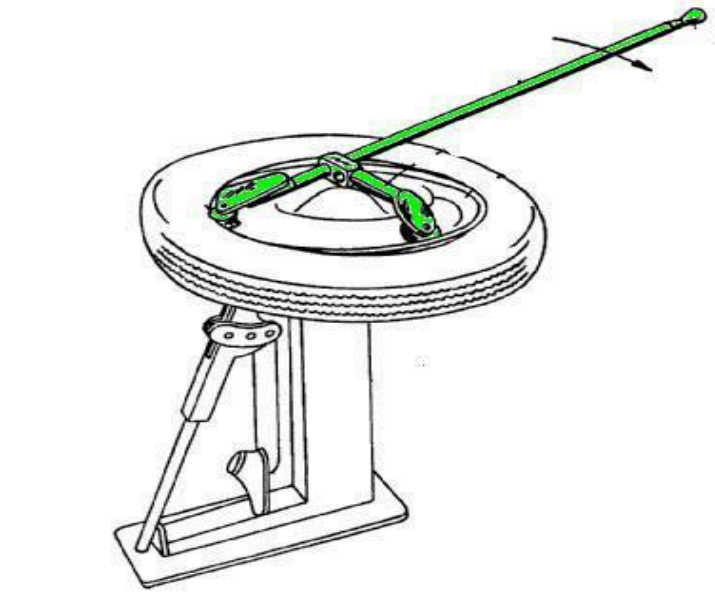
pivotal about the wheel axis, or movable along the rim edge, e.g. rollable

Definition statement

This place covers:

The hand-tools are pivotable around the wheel axis or movable along the rim edge for manually mounting/demounting tyres to/from rims

Example:



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Machine operated device	B60C 25/05

B60C 25/05

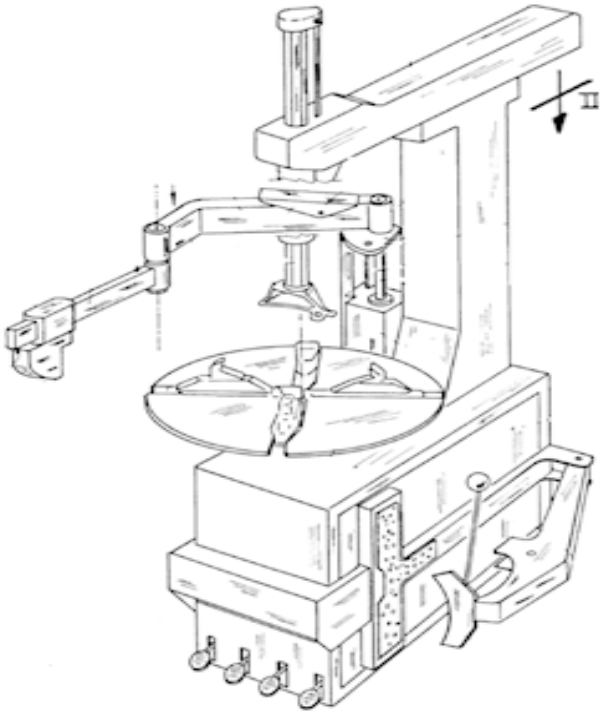
Machines

Definition statement

This place covers:

Machines and motorized apparatus for mounting/ demounting tyres on/ from rims.

Example:



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Hand-tools for mounting/ demounting tyres on/ from rims	B60C 25/01
Means for holding vehicle wheels or parts thereof	B60B 30/00
Matching of tyres with rims, i.e. conjoint balancing	G01M 1/30

B60C 25/12

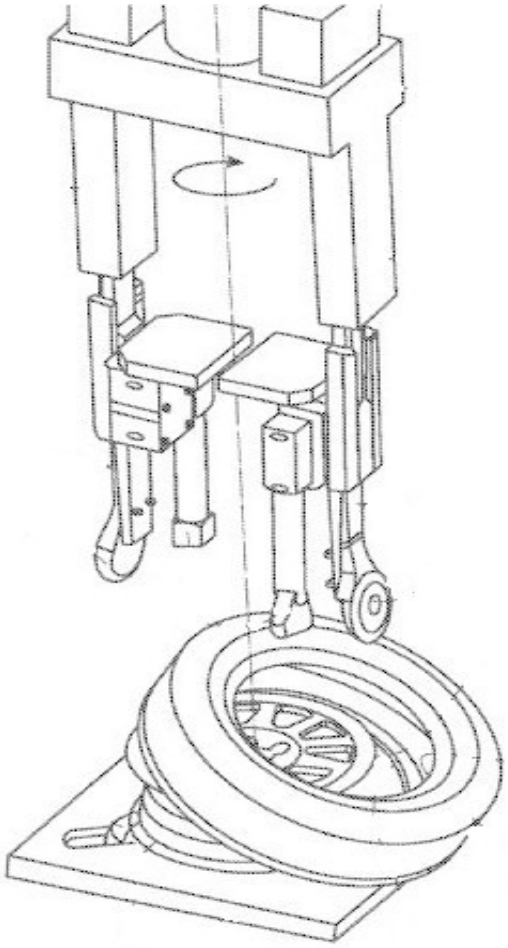
for only seating the beads

Definition statement

This place covers:

Machines for only seating the beads of the tyre.

Example:



Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

seating the beads	bringing the bead portion of the tyre in contact with the inner side of the rim, but not in sealing contact with the rim flange. The bead portions are only within the rim well

B60C 25/122

acting on the tyre tread

Definition statement

This place covers:

Seating of the beads is done by acting on the tyre tread portion.

Example:

Special rules of classification

Classification should be done in B60C 25/14 for locating the bead portions onto the sealing surface of the rim.

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

seating the beads	bringing the bead portion of the tyre in contact with the inner side of the rim, but not in sealing contact with the rim flange. The bead portions are only within the rim well

B60C 25/125

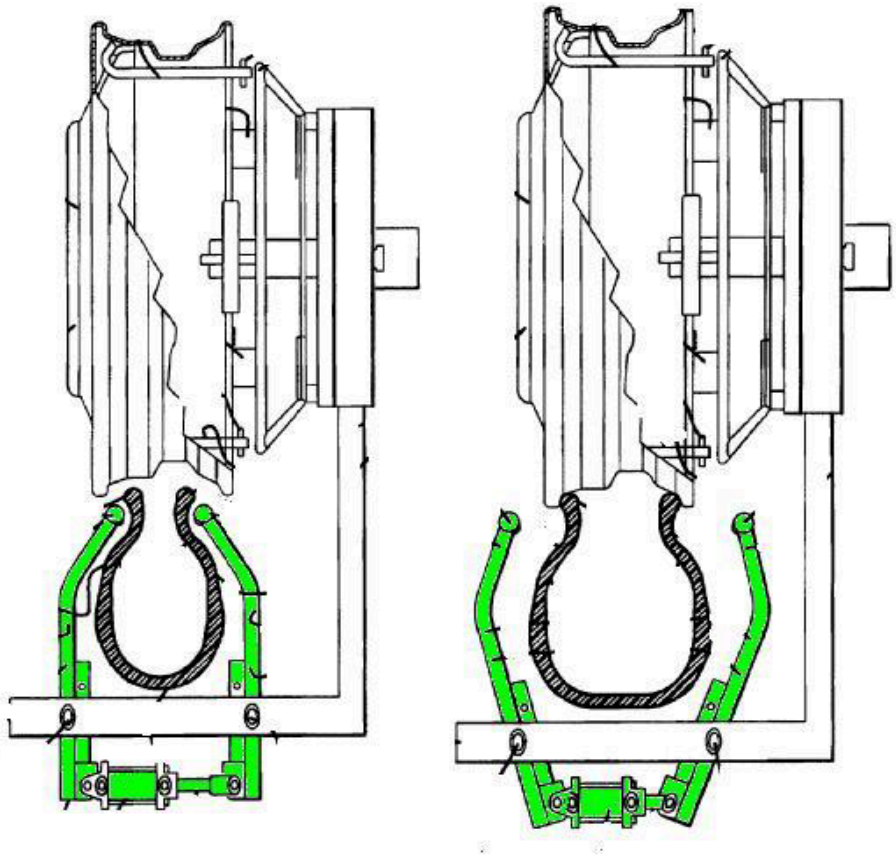
for only breaking the beads

Definition statement

This place covers:

Machines for only breaking the beads.

Example:



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Separating the tyre from the rim by destroying the tyre	B60C 25/0524

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Breaking the beads	dismantling the contact of the bead portion of the tyre from the bead seat of the rim portion

B60C 25/128

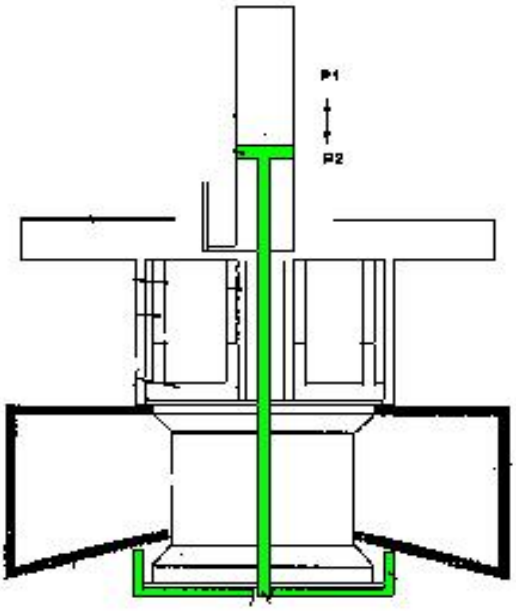
acting axially on the whole circumference of the bead or side wall

Definition statement

This place covers:

Machines for only breaking the beads while acting axially on the whole circumference of the bead portion of the tyre.

Example:



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Separating the tyre from the rim by destroying the tyre	B60C 25/0524

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Breaking the beads	dismantling the contact of bead portion of the tyre from the bead seat of the rim portion

B60C 25/13

acting axially on a part of the bead or side wall only at localised regions of the bead or side wall

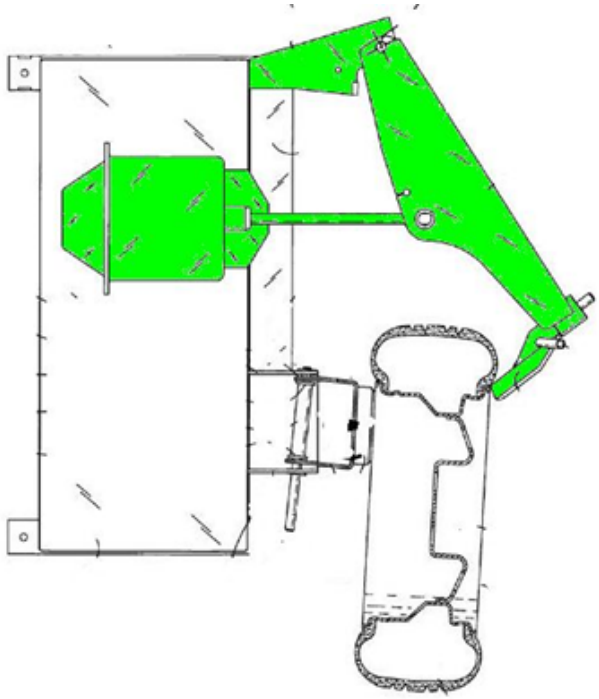
Definition statement

This place covers:

Machines for only breaking the beads while acting axially at localised areas of the bead portion of the tyre.

Normally an additional device is present at the side of a tyre removing machine comprising a tool, e.g. a blade for axially pressing on localized areas of the bead region in order to break the beads.

Example:



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Separating the tyre from the rim by destroying the tyre	B60C 25/0524

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Breaking the beads	dismantling the contact of bead portion of the tyre from the bead seat of the rim portion

B60C 25/132

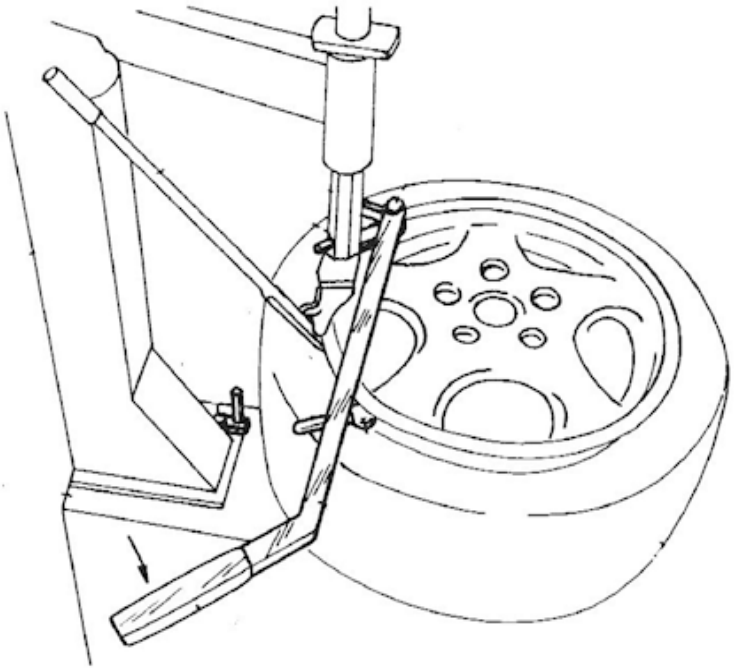
for removing and mounting tyres (for only seating the beads B60C 25/12; for only breaking the beads B60C 25/125 {; for locating provisionally the beads of tubeless tyres against the sealing surfaces of the rims B60C 25/145})

Definition statement

This place covers:

- Machines for mounting/ demounting tyres to/ from rims.
- Pulling the bead portion of the tyre over the rim edge is done by the machine.

Example:



References

Limiting references

This place does not cover:

Machines for only seating the beads	B60C 25/12
Machines for only breaking the beads	B60C 25/125
Machines for locating provisionally the beads of tubeless tyres against the sealing surfaces of the rims	B60C 25/145

B60C 25/135

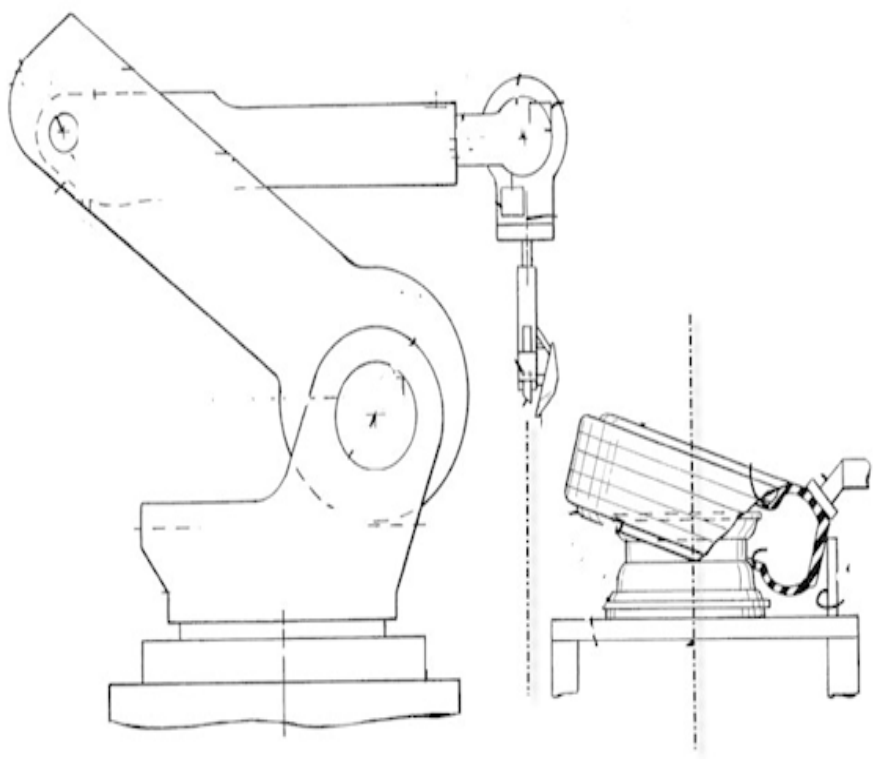
having a tyre support or a tool, movable along wheel axis

Definition statement

This place covers:

Machines wherein the tool, or the support of the tyre is movable along the wheel axis.

Example:



B60C 25/138

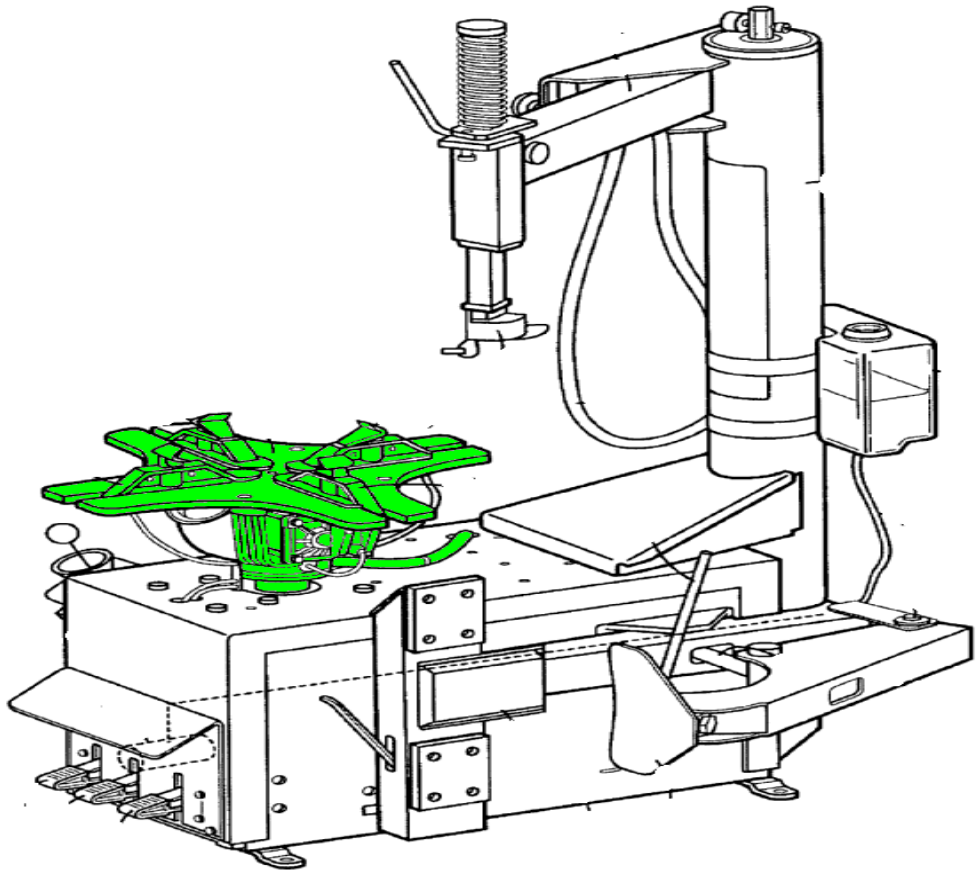
with rotary motion of tool or tyre support

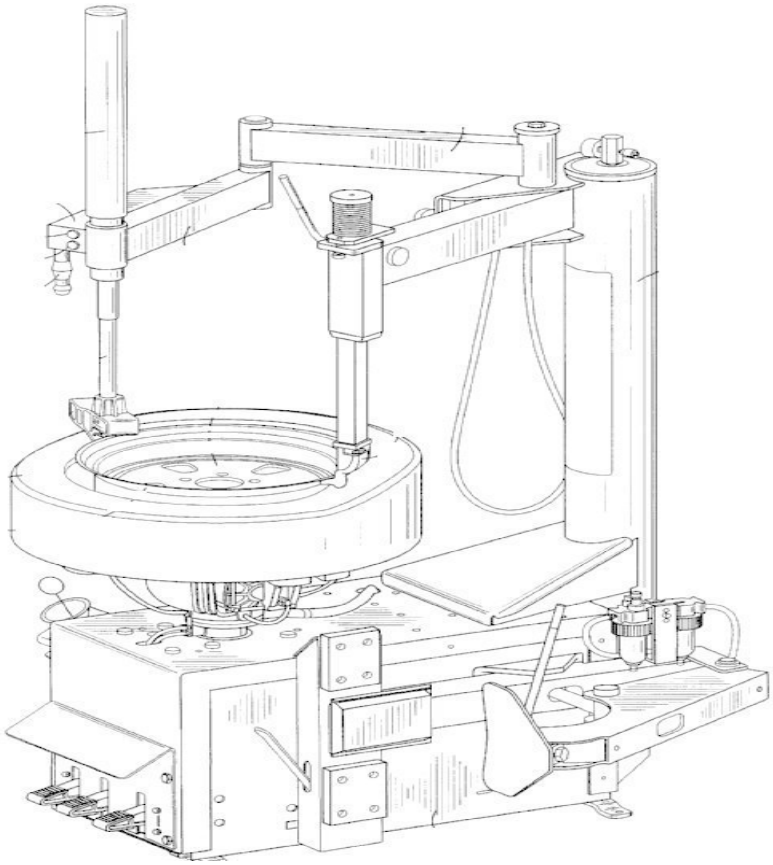
Definition statement

This place covers:

Machines with a rotating support (turntable) for the rim portion or a machine tool providing a rotary motion.

Examples:





References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Means for holding wheels or parts thereof, also with turntables	B60B 30/00

Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

- turntable
- self-centering device
- rotary support
- clamping device

B60C 25/14

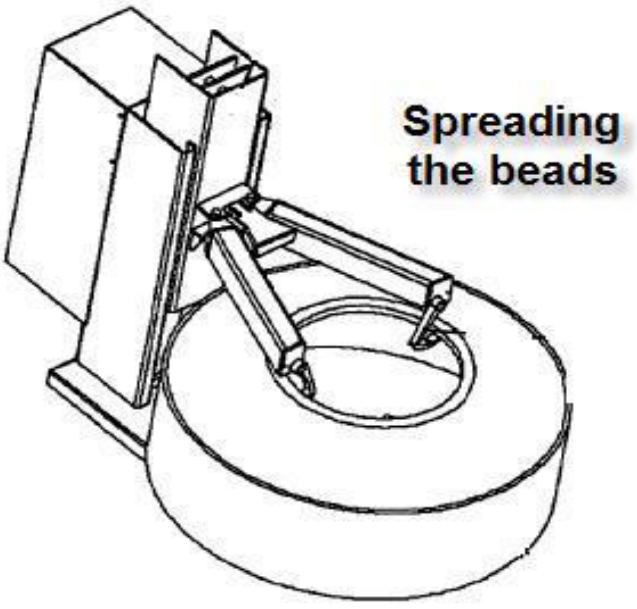
Apparatus or tools for spreading {or locating} tyre beads

Definition statement

This place covers:

- Devices for spreading the tyres.
- Devices for locating the tyre beads in the rim well.

Example:



B60C 25/142

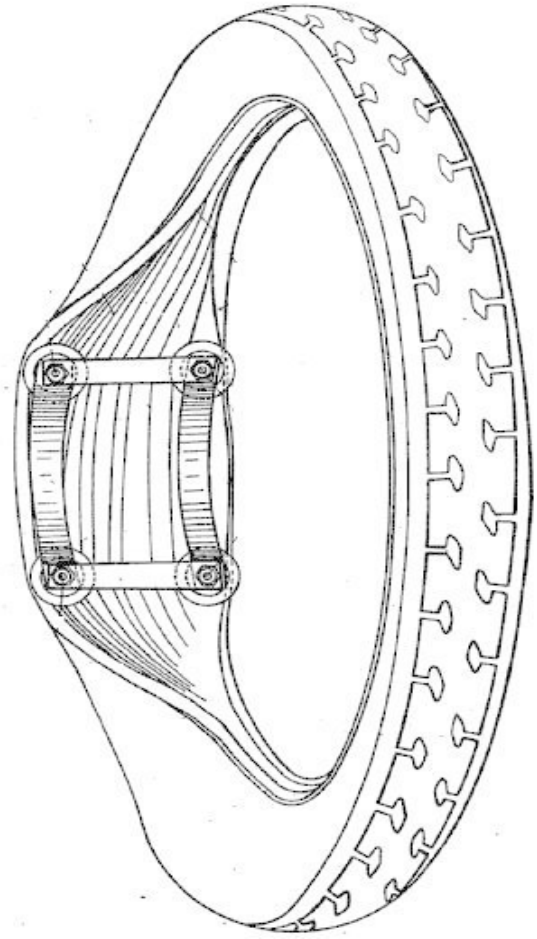
{Devices for tightening or expanding the felly, devices for spreading the tyres}

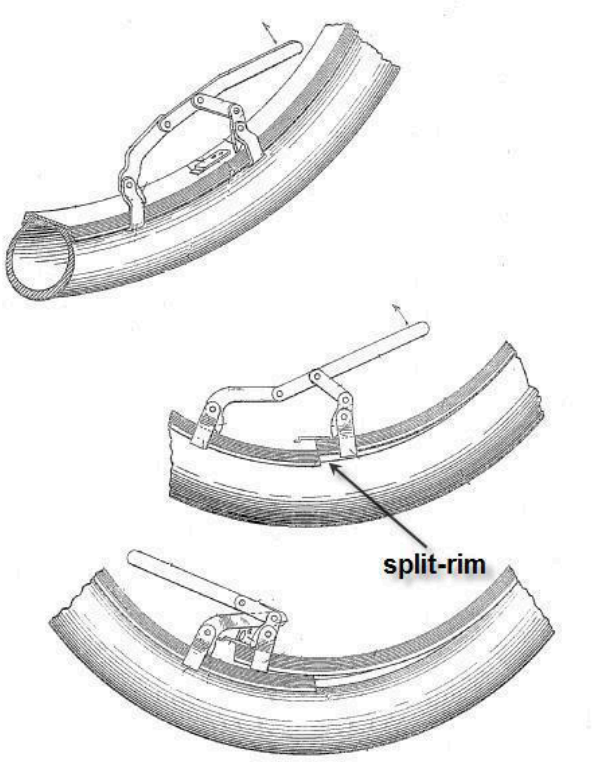
Definition statement

This place covers:

- Devices for spreading the tyres.
- Devices for expanding or tightening split-rims.

Example:





References

Informative references

Attention is drawn to the following places, which may be of interest for search:

inspecting tyres	B60C 25/002

B60C 25/145

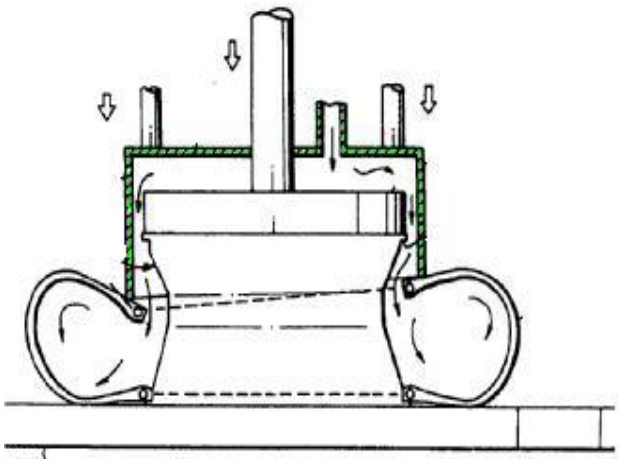
{for locating provisionally the beads of tubeless tyres against the sealing surfaces of the rims, e.g. air filling bell}

Definition statement

This place covers:

Devices for locating the bead portions of the tyre against the sealing surface of the rim portion by applying air pressure.

Example:



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tyre inflation devices	B60S 5/04
Air pumps per se	F04

B60C 25/16

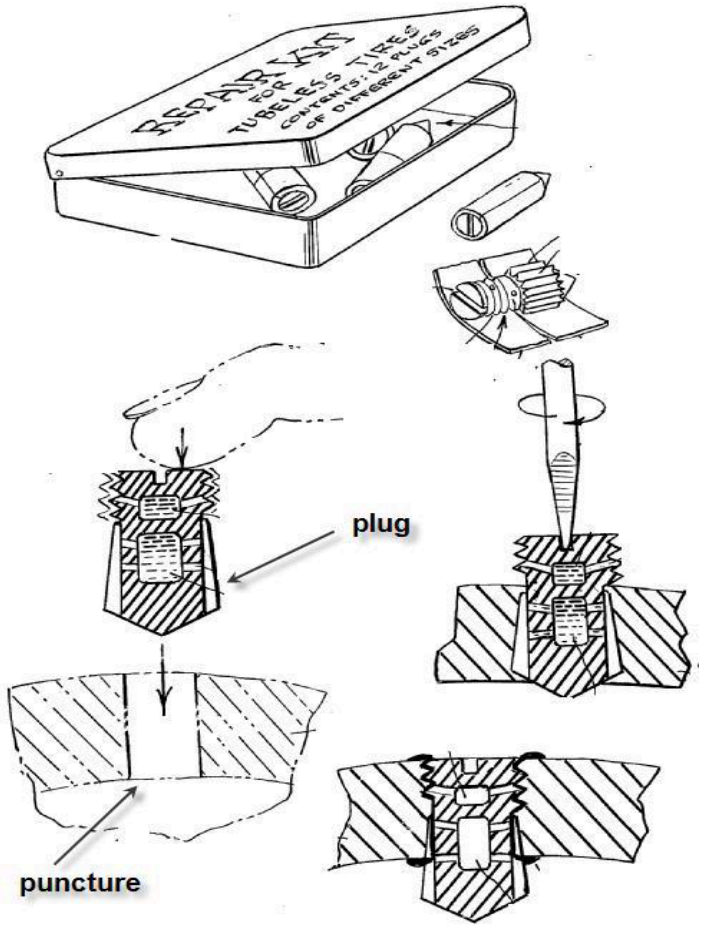
{Tools for repairing damaged tyres}

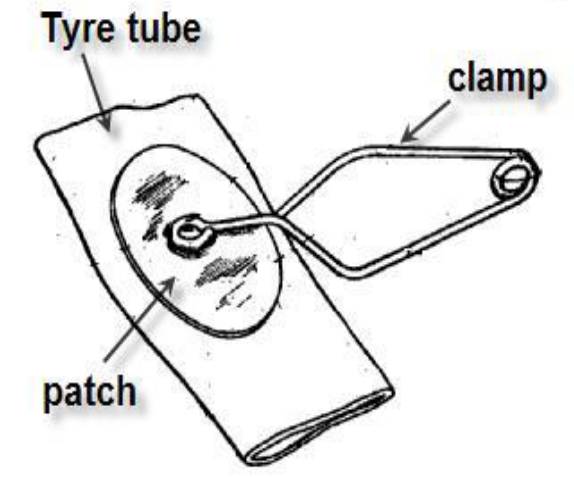
Definition statement

This place covers:

Devices and tools for repairing minor defects on damaged tyres by applying patches, inserting plugs etc.

Example:





References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Patches or plugs per se	B29C 73/10
Applying sealant agents (Tyre-fit systems)	B29C 73/166

Special rules of classification

Tools for repairing tyres are also classified in B29C 73/08 and B29C 73/12.

Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

- patch
- plug

B60C 25/18

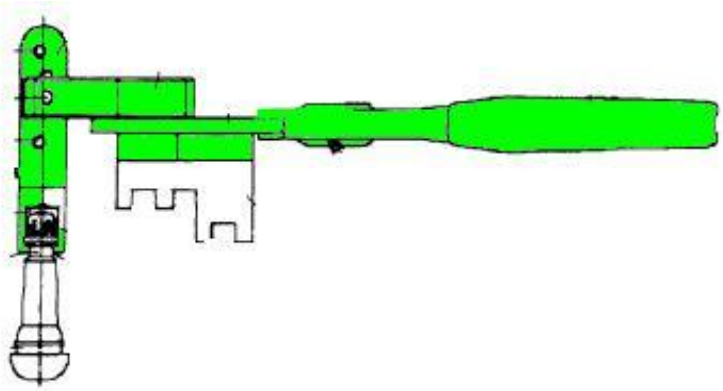
Tools for mounting or demounting air valves

Definition statement

This place covers:

Apparatus and tools for mounting or demounting air valves on/ from wheel rims.

Example:



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Air valves adapted for tyres or rims	B60C 29/00

B60C 27/00

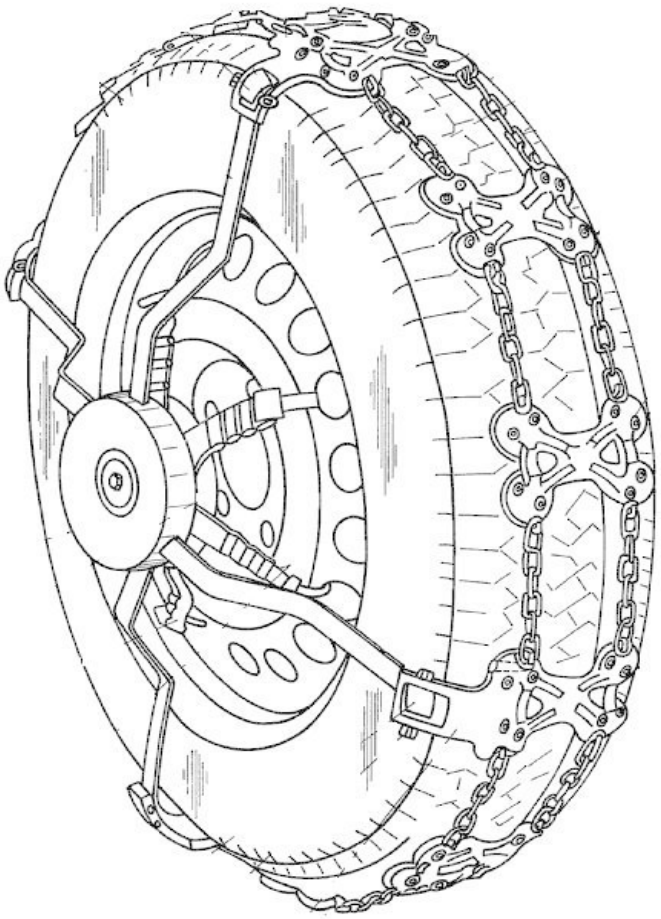
Non-skid devices temporarily attachable to resilient tyres or resiliently-tyred wheels

Definition statement

This place covers:

Non-skid devices temporary attachable to tyre treads of a vehicle in order to enhance the traction of the vehicle.

Example:



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Wheels or wheel attachments designed for increasing traction e.g. spade lugs	B60B 15/00
anti-skid devices mounted to the body frame of the vehicle e.g. rotatable chain wheels	B60B 39/003
particle dispensing devices in front of the tyres	B60B 39/02
endless track devices	B62D 55/00

B60C 27/02

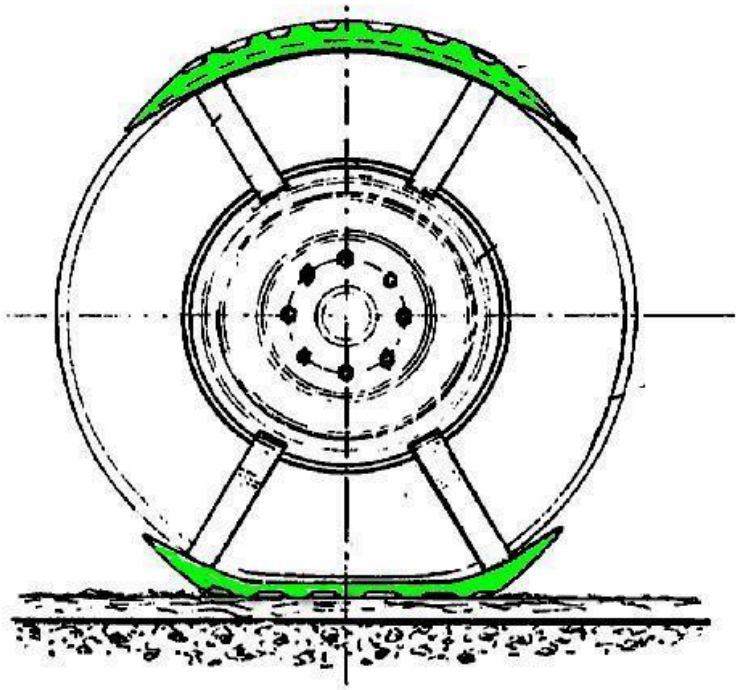
extending over restricted arcuate part of tread (B60C 27/20 takes precedence)

Definition statement

This place covers:

The anti-skid device extends over restricted arcuate parts of the tread without being interconnected in the circumferential direction of the tyre.

Example:



References

Limiting references

This place does not cover:

Ground-engaging plate-like traction elements	B60C 27/20

B60C 27/04

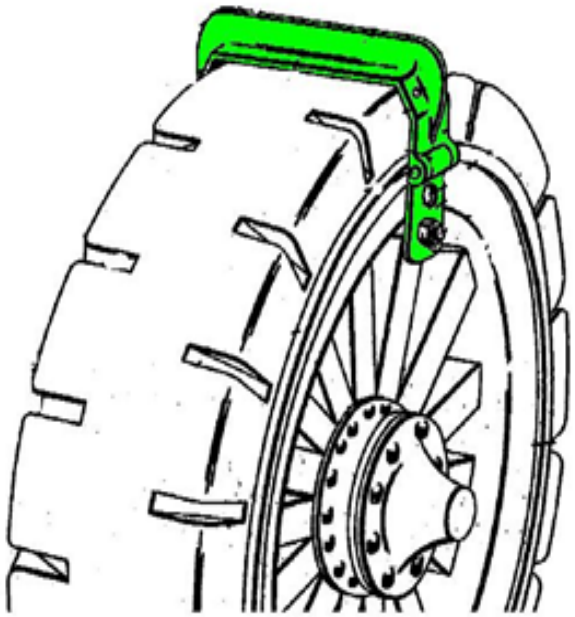
the ground-engaging part being rigid

Definition statement

This place covers:

The ground-engaging part of the anti-skid device is rigid and not elastic.

Example:



Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

- yoke
- cleat
- gripping shoe
- traction shoe

B60C 27/045

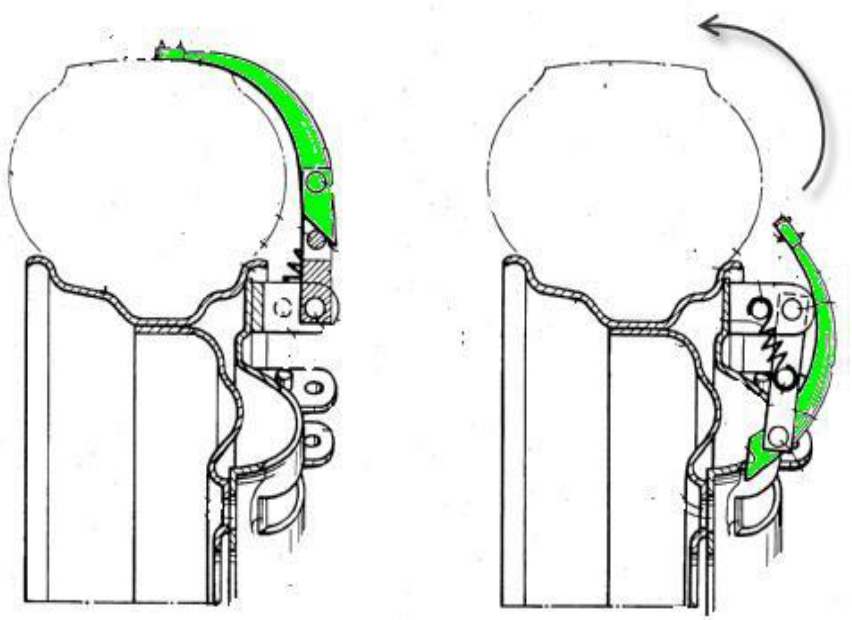
{involving retractable devices (fixing of spade lugs B60B 15/00)}

Definition statement

This place covers:

Retractable devices for increasing the traction of the tyre, wherein the device comes into contact with the tread of the tyre.

Example:



References

Limiting references

This place does not cover:

Retractable devices which do not come in contact with the tread but stay besides the tyre	B60B 15/00

B60C 27/06

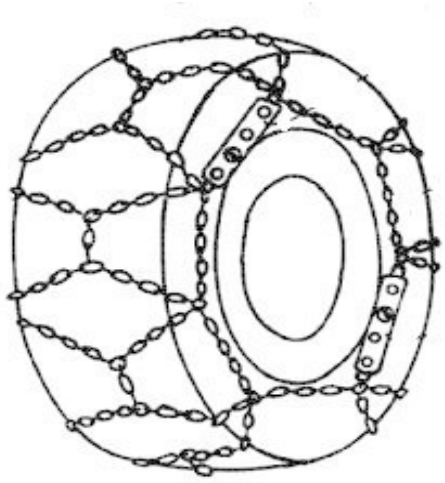
extending over the complete circumference of the tread, e.g. made of chains {or cables} (B60C 27/20 takes precedence)

Definition statement

This place covers:

Anti-skid devices extending over the whole circumference of the tread portion of the tyre.

Example:



References

Limiting references

This place does not cover:

Devices comprising ground-engaging plate-like elements	B60C 27/20

Informative references

Attention is drawn to the following places, which may be of interest for search:

Devices with traction enhancing elements at localised parts of the tread without any connection between these parts on the circumference of the tyre	B60C 27/02

B60C 27/08

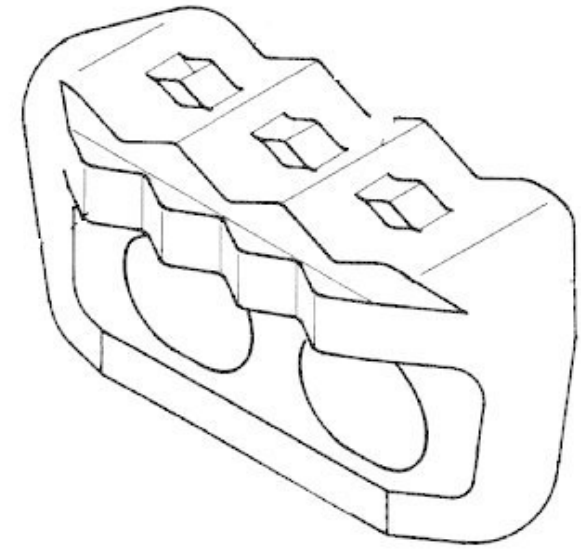
involving lugs or rings taking up wear {, e.g. chain links, chain connectors }

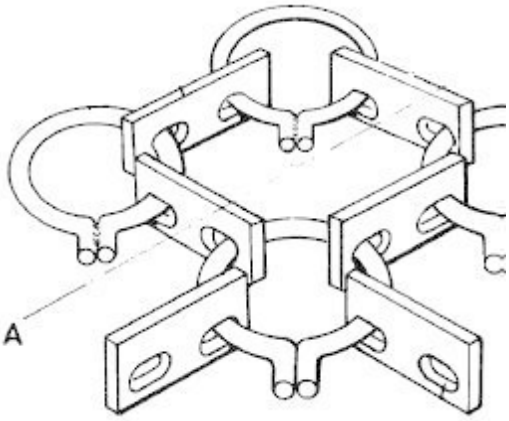
Definition statement

This place covers:

All different parts of the traction enhancing part of the anti-skid device such as chain links, chain connectors, stud links, etc.

Example:





References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Chain elements per se, e.g. for hoisting equipment	F16G 15/00

B60C 27/10

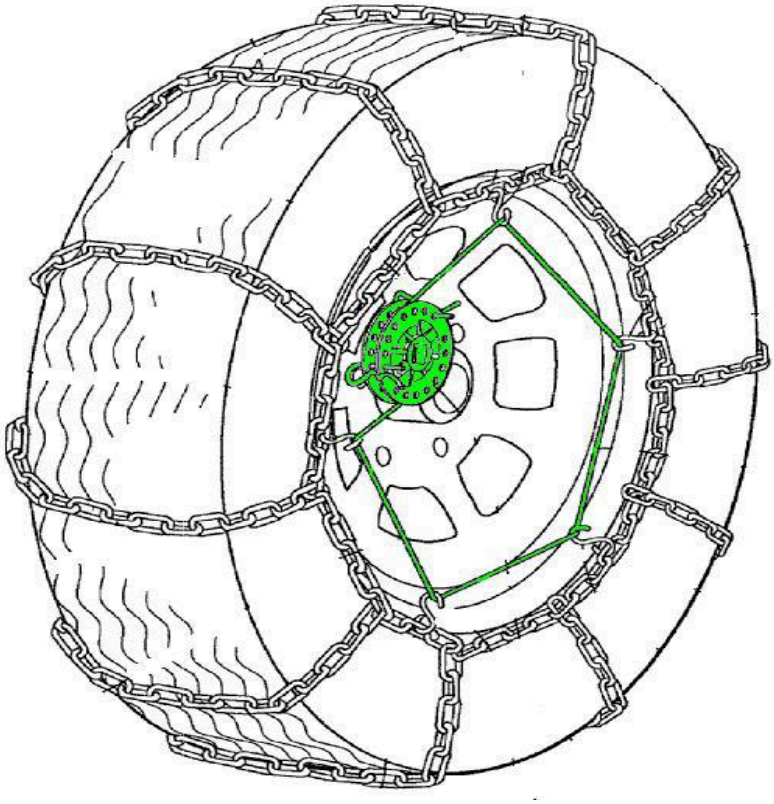
having tensioning means

Definition statement

This place covers:

All parts for tensioning the anti-skid device to the respective tyre or wheel, e.g. pawl and ratchet means, rotatable hooks, etc.

Example:



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Chain shortener for hoisting	F16G 15/00

Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

- pawl
- ratchet
- reel
- turnbuckle

B60C 27/12

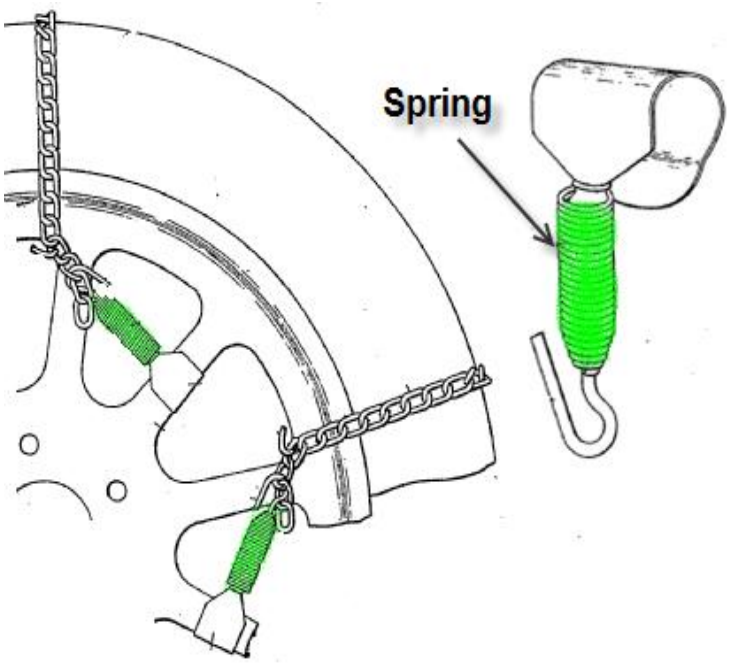
resilient {pretension}

Definition statement

This place covers:

All resilient and elastic tensioning means e.g. comprising springs, elastic rings, elastic blocks of vulcanised rubber, etc.

Example:



B60C 27/14

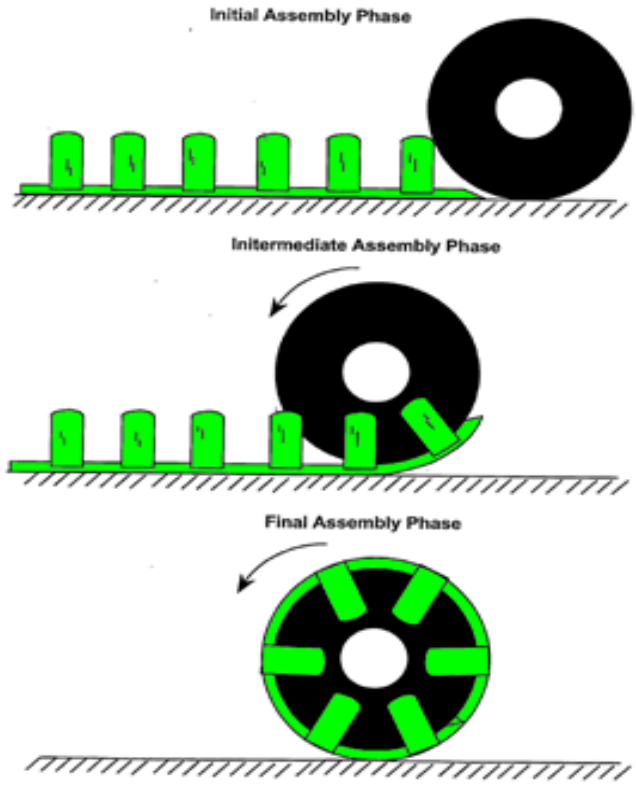
automatically attachable

Definition statement

This place covers:

The anti-skid device is automatically attachable to the tyre of the vehicle.

Example:



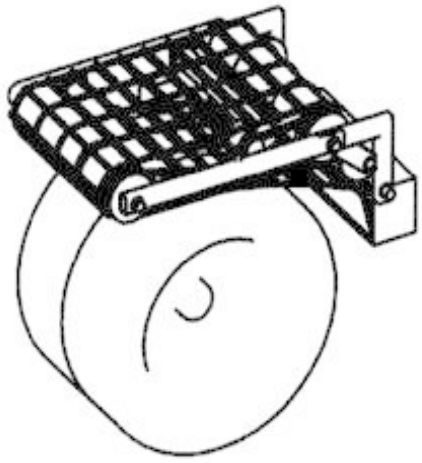
B60C 27/145

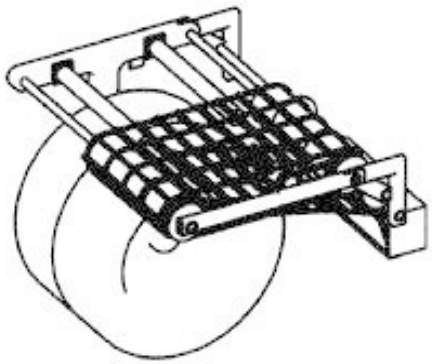
{the anti-skid device being wound around the wheel by its rotation from a point connected to the body frame of the vehicle}

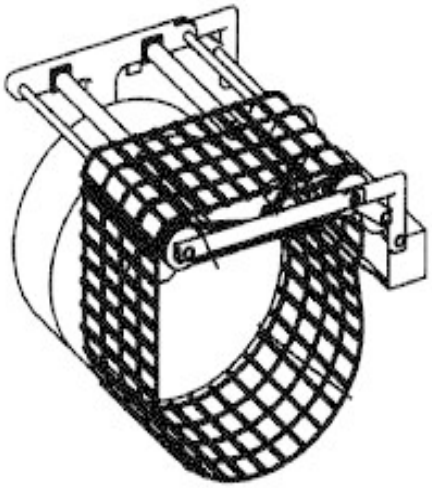
Definition statement

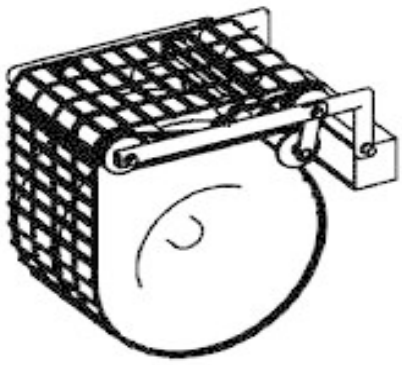
This place covers:

The anti-skid device is applied around the tyre tread from a point connected to the body frame of the vehicle.









References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Vehicle mounted non-skid devices with no fixation or contact to the tyre tread portion	B60B 39/00

B60C 27/16

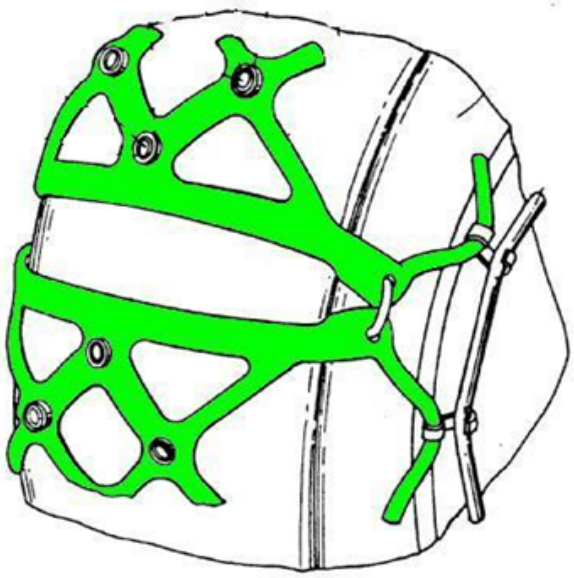
formed of close material, e.g. leather {or synthetic mats}

Definition statement

This place covers:

The traction enhancing elements are formed of close material e.g. rubber material, synthetic mats, leather, etc. extending over enlarged areas of the tread portion.

Example:



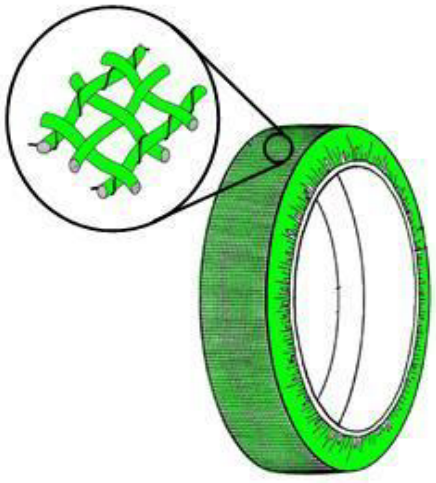
B60C 27/18

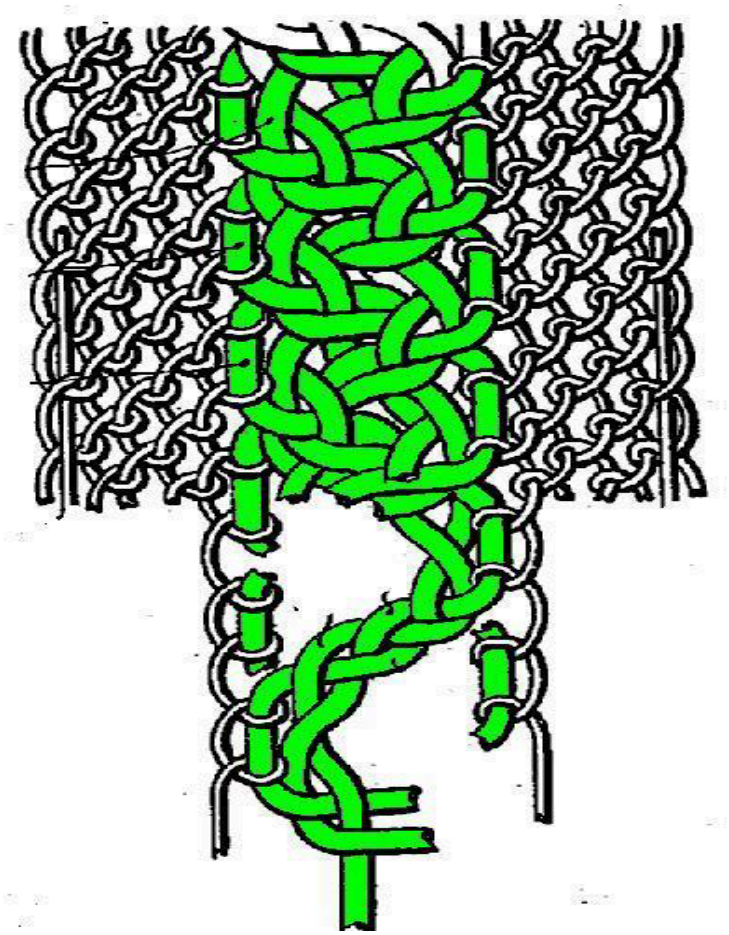
the material being fabric, e.g. woven wire {or textile}

Definition statement

This place covers:

The anti-skid device is made of fabric material, e.g. woven wire, textile filaments, cordura etc.





References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Fabrics per se	D04B 1/00
Patterned fabrics or articles made by weft knitting processes	D04B 1/10
Warp knitting processes or fabrics defined by such processes	D04B 21/00

Synonyms and Keywords

In patent documents, the following words/expressions are often used as synonyms:

- canvas
- cloth
- woven
- non-woven
- textile
- cordura
- warp
- weft
- knit
- twill

B60C 27/20

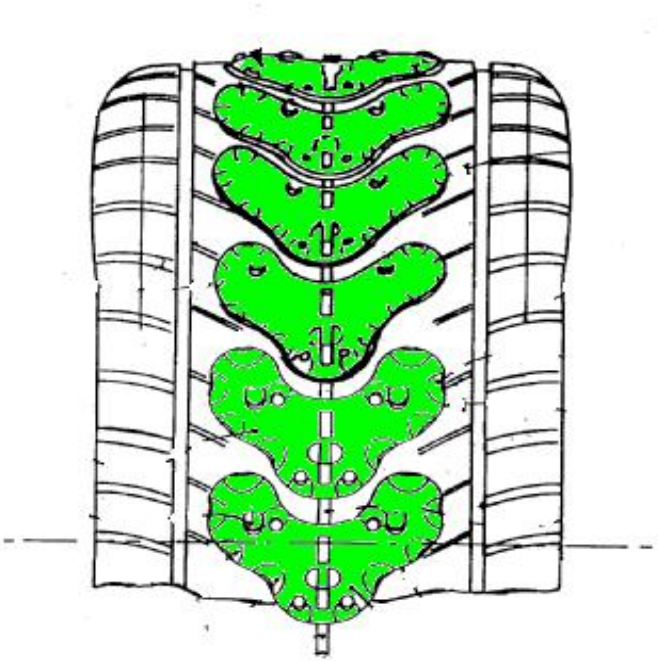
having ground-engaging plate-like elements

Definition statement

This place covers:

The ground-engaging parts being interconnected plate-like elements arranged on the circumference of the tread portion.

Example:



Special rules of classification

Devices extending over restricted arcuate parts of the tread are only classified in B60C 27/02.

Devices on restricted arcuate part of tread with rigid traction enhancing parts are only classified in B60C 27/04.

B60C 27/22

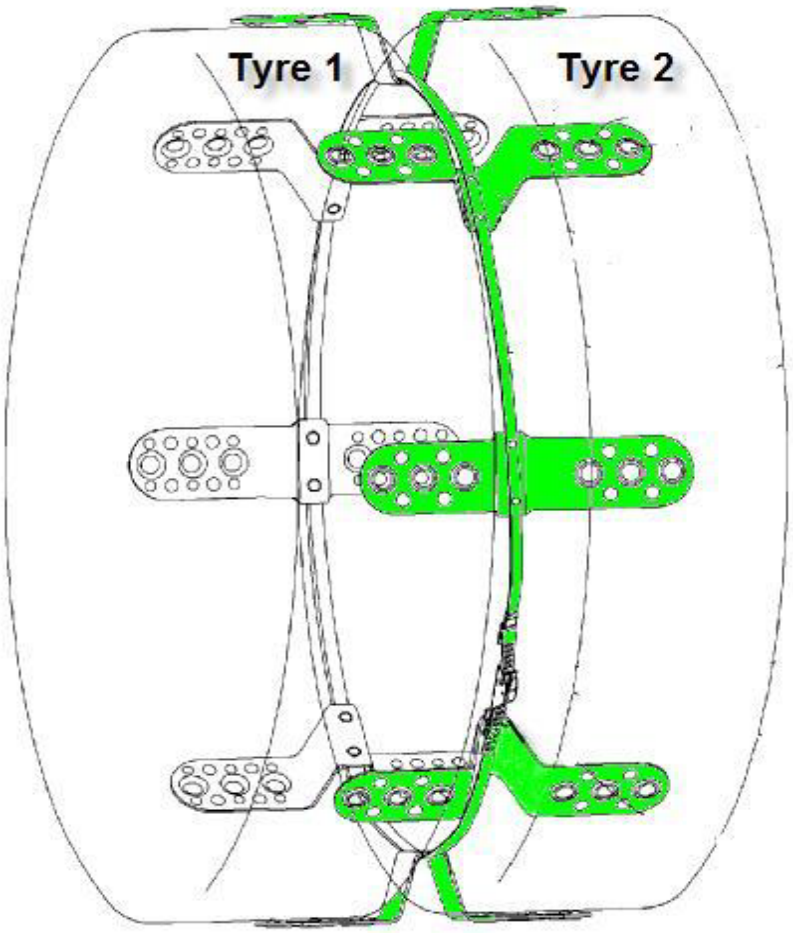
for tandem tyres

Definition statement

This place covers:

Anti-skid devices applicable to tandem tyres on the same axis.

Example:



References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Endless-track units	B62D 55/08
Endless track features between two wheels of different axes	B62D 55/24

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

tandem tyres	tyres located on the same axis one next to the other. Often used by lorries or trucks

B60C 29/00

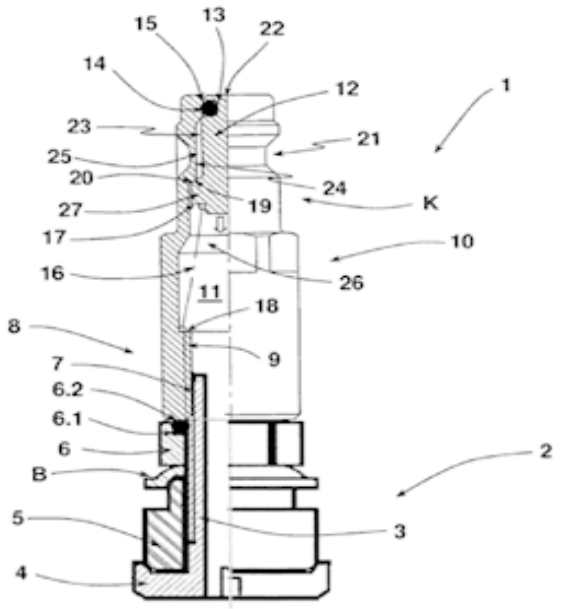
Arrangements of tyre-inflating valves to tyres or rims; Accessories for tyre-inflating valves, not otherwise provided for (tools for mounting or demounting valves B60C 25/18)

Definition statement

This place covers:

- tyre valves per se.
- connection of the valve to the rim or the tyre.
- accessories for valves (hose connections, caps, pressure relief devices).

Example:



References

Limiting references

This place does not cover:

Tools for mounting or demounting valves	B60C 25/18

Informative references

Attention is drawn to the following places, which may be of interest for search:

Devices for measuring tyre pressure mounted in the vehicle	B60C 23/00
Auto-repairing devices or arrangements (e.g. by introducing sealing compositions into the tyre)	B29C 73/16
Supplying air for tyre inflation	B60S 5/04
Pumps actuated by muscle power	F04B 33/00
Valves per se or valve dust caps	F16K
Check valves for inflatable bodies, e.g. tyres	F16K 15/20

Couplings of the quick acting type (e.g. valve connectors)	F16L 37/00
Devices for measuring tyre pressure (e.g. hand-held pressure gauges)	G01L 17/00

B60C 99/00

Subject matter not provided for in other groups of this subclass

Definition statement

This place covers:

- tyres for special use.
- simulation or design methods for tyres.