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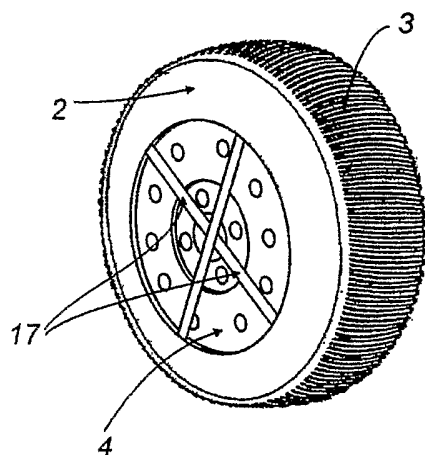
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(54) Title: FABRIC ANTISKID COVER FOR WHEELS



(57) Abstract: Antiskid cover for wheels, comprising a fabric ring-shaped band (2), with a first inner surface in contact with the wheel, and a second outer surface to which an antiskid tread is applied.

DESCRIPTION**FABRIC ANTISKID COVER FOR WHEELS****Technical Field**

The present invention relates to an antiskid cover for wheels, which cover is intended to improve the performance of a vehicle under poor grip conditions, for example in the presence of snow or ice.

State of the Art

At present, in addition to the traditional snow chains, covers are known made from woven fabric which are superimposed on the wheels to improve the road-holding on slipping grounds, such as those covered by snow or ice. These types of covers are fastened on the vehicle's wheel with systems allowing elastic retention assembly.

These known solutions, however, have the problem of a relative efficacy under truly difficult conditions, in particular after a period of use, that can be even relatively short, during which the fabric become worn-out rapidly.

These solutions also exhibit a relatively poor stability, with a consequence that the cover has a tendency to deform and come out of the wheel by centrifugal force during the vehicle's run.

Description of the Invention

A first object of the invention is therefore to overcome the drawbacks of the known solutions.

A second object is to propose a universal antiskid system easily adaptable to different types of wheel and allowing an easy and safe assembly.

The technical task and the specified objects are substantially obtained by providing an antiskid wheel comprising the technical characteristics set forth in one or more of the appended claims.

Further characteristics and advantages of the present invention will appear more clearly from the following

indicative and thus not limiting description of a preferred, but nonexclusive embodiment of the invention, as illustrated in the accompanying drawings, in which:

- Figs. 1 and 2 show external perspective views of a cover, according to the invention, applied to a vehicle's wheel and separate therefrom, respectively;
- Figs. 3 and 4 show external perspective views of a second embodiment of the invention, applied to a vehicle's wheel and separate therefrom, respectively;
- Fig. 5 is cross-section view of a cover according to the invention;
- Figs. 6 to 10 show different embodiments of the tread associated with a cover according to the invention;
- Fig. 11 is a perspective view of an antiskid cover according to the invention;
- Fig. 12 is a top view of the cover of Fig. 11;
- Fig. 13 shows a detail of the device for fixing the cover to the wheel;
- Fig. 14 is a perspective view of an antiskid cover, according to the invention, mounted on a vehicle's wheel;
- Fig. 15 is a prospective view showing the inside of an antiskid cover, according to the invention, mounted on a vehicle's wheel;
- Fig. 16 is a perspective view showing in detail the inner side of the wheel, with the cover mounted thereon, in a preferred embodiment thereof;
- Fig. 17 is a cross-section view of a length of the cover provided with a channel for the passage of the closing cable;
- Fig. 18 shows a preferred embodiment of the side band of the cover;
- Figs. 19a and 19b show respectively the open and closed configurations of a fixing device according to the invention in a preferred embodiment thereof;
- Fig. 20 shows a detail of the device of Figs. 19a, 19b;

- Fig. 21 shows a further embodiment of the fixing device, according to the invention, applied to a wheel-cover; and
- Fig. 22 is an exploded view of the fixing device of Fig. 21.

5 With reference to the attached figures, an antiskid cover 1, according to the present invention, comprises a support band 2 made from either rigid or elastic fabric to which a tread 3 of plastics, preferably elastomeric material, is applied, and possibly having closing straps 7 on its outer
10 side to facilitate the application of the cover 1 to a wheel 4 while ensuring the stability thereof.

In different embodiments, the tread 3 may be made with rubber being either directly vulcanized on the fabric support or successively applied.

15 Shown in Fig. 5 is an exemplary structure of the cover 1 in cross-section view.

In the illustrated example, the fabric band 2 is made up of a support central portion 12 whose sides have portions 13 sewn or anyway joined thereto in the form of rings or
20 crowns made from elastic or rigid textile fabric intended to cover the sides of the wheel 4.

Preferably, the side portions 13 are closed by respective beadings 14, preferably of plastic material.

According to the invention, applied (in a manner to be
25 described later on) on the central portion 12 of the band 2 is a tread generally indicated with 3 and formed in turn by a central portion 15 consisting of antiskid reliefs protruding from a base layer 16 of the same tread.

Fig. 6 illustrates the different ways (numbered 1 to 8)
30 which, according to the invention, can be used to apply the tread to the band 2.

In detail (see in particular Fig. 5), the tread 3 may consist of reliefs 5 (of rectilinear, curved or mixed geometry, depending on the design chosen for the tread)
35 which cross the fabric of the band 2 and are joined to each

other only by the support fabric 12, possibly emerging from the inner side in contact with the tire of the wheel 4 in order to change the adhesion of the tread to the wheel.

5 The reliefs 5 may also be joined to each other by one or two rubber layers 6, 7 which are provided inside and/or outside of the band 2.

Alternatively, the rubber layers connected to the reliefs 5 may consist of discontinuous lengths 8/9 applied respectively inside and/or outside of corresponding regions
10 of the band 2. In this case, the reliefs 5 of the tread are connected to each other only by the support fabric 12.

In a further embodiment, as illustrated in Fig. 7, the tread 3 is applied to the outside of the band 2 without penetrations between the tread's material and the band's
15 fabric.

In order to further improve the antiskid capacity of the cover, there is provided, as illustrated in Figs. 8 and 9, a metal reed or strip 10 being possibly straight or differently shaped, and protruding externally in order to
20 grip, for example, icy road surfaces onto which the rubber could not ensure the necessary road-holding by itself.

In order to ensure the anchorage and the formation of one body with the rubber tread, the reed 10 is incorporated within the reliefs 5 and is retained through suitable
25 connecting windows provided in the reed's part which, upon the mounting stage, remains within the rubber.

The action of the windows prevents the reed from withdrawing out of the rubber seat.

Shown in Fig. 9 is a reed 11 having discontinuous geometry in the part emerging from the rubber, while the reed's part
30 15 inside the tread may still be continuous to maintain the mechanical resistance thereof.

Fig. 10 illustrates an embodiment of the invention in which the band 2 is made from an elastic support fabric that can
35 be stretched in the direction of the circumferential

development of band 2 to take up an extended configuration (A) in which the weft of the fabric become larger to let the tread rubber pass therethrough during the moulding.

Once the tread has been applied, the reliefs 5 making up the tread result thus spaced apart further than when the elastic support returns to the unstressed position (B).

Advantageously, the elasticity of the fabric is of sufficient degree as to allow the wheel's cover to be mounted more easily and make it adhere with a higher force to the same wheel, thereby preventing movements of the same cover onto the wheel. For a best but non-limiting description, it is specified that the fabric which forms the band 2 may be either rigid or elastic, of a weight suitable for use (for example, in the range of 200-400 g/m²), and consisting of any textile, preferably synthetic fibre, possibly including a percentage of elastomer such as rubber or LYCRA (registered trademark) able to improve the elasticity thereof in case of a partially elastic fabric.

As far as the covering of the fabric by the tread is concerned, in the part that will be in contact with the ground, elastomers (rubber) or other plastic materials or metals/rubber composites might be used.

In use, the cover 1 is superimposed onto the tire of a wheel 4 through the cover's aperture 18 located on the wheel's inner side, so as to make the tread 3 correspond to the central region of the tire.

Depending of the type of fabric used, the position of the band 2 will be stabilized by the elastic return of the fabric (if of elastic type) or by providing an edge of the aperture 18 sufficiently extended and provided with the elastic beading 14. Finally, the belts 17, if any, complete and facilitate the application of the cover 1 to the wheel 4.

Referring now to Figs. 11 to 20, a preferred embodiment of antiskid cover 19 is described, comprising a central band

20 of either rigid or elastic fabric, to which a tread 21 of plastics, preferably elastomer material, is joined.

In different embodiments, the tread 21 may be constructed with rubber, either directly vulcanized on the fabric support 20 or applied thereto afterwards.

Moreover, the tread may be formed by antiskid reliefs protruding from a base layer 16 of the same tread, and made from elastomers (rubber) or other plastic materials, or rubber-metal composites.

In order to provide a best description, but not in a limitative sense, there is also specified that the fabric of band 20 is of the same type as the solution previously described, and may be either rigid or elastic, and of a weight suitable for use (for example, in the range of 200-400 g/m²), and consisting of any textile, preferably synthetic fibre, possibly including a percentage of elastomer such as rubber or LYCRA (registered trademark) able to improve the elasticity thereof in case of a partially elastic fabric.

In use, the cover 19 is mounted on a wheel 23 by passing the tire of wheel 23 through an aperture 24 located on the face 29 of cover 19 intended to take up the inside of the wheel (the face in the foreground in Figs. 11 and 14), so as to make the tread 21 correspond to the central region of the tire.

Preferably, the width of the tread 21 is larger than that of the wheel in order to improve the stability of the tire during use.

The complete mounting will be made in a manner conventionally performed for antiskid covers, that is, by slightly rotating the wheel so as to cover also the region firstly in contact with the ground.

Depending on the type of fabric used, the stability of the band 2 onto the wheel is improved by the elastic return of the fabric.

In the illustrated example, the fabric band 20 is made up of a support portion incorporated into the tread, on the sides of which there are provided - sewn thereto, for example - lateral portions or bands 25 made from elastic or rigid fabric, and intended to cover, at least partially, the sides of the wheel.

According to the present invention, in a cover of the type above described, the lateral portions 25 are provided with slits 28 allowing a closing cable 26 to go therethrough for a stable fixing of the cover 19 to a wheel 23 and a quick and easy removal therefrom.

Described with reference to figures 11-20 is a device 27 according to the invention for the fixing and releasing of the cover 1 to/from the wheel 23.

In the illustrated example two devices 27 are provided, one for each side of the cover. It will be appreciated, however, that it is also possible to provide a single fixing device, preferably only on the inner side 29 of the cover.

Each fixing device 27 is made up of a cable-closing choke mechanism that may be preferably fixed to the cover on the outside of the lateral band 25.

The device 27 comprises:

- a first plate 31 fixed to the band 25, possibly to a reinforcement 38 of the latter;
- a second spaced apart plate 32, superimposed on the first plate to create an interspace 33;
- a first choke element 46 located in the interspace 33;
- a second choke element 39 also disposed in the interspace 33 and movable relative to the first;
- a channel 37 defined by the plates 31, 32 and by the surfaces 56 of the elements 34 and 39 of lever 35.

In the described embodiment, the movable element consists of an approximately L-shaped lever pivoting about a pivot 36 and movable between a release position (in dashed line

in Fig. 13) in which the channel 37 formed between the elements 34 and 35 is larger than the diameter of cable 26 (or anyway allowing the sliding thereof), and a fixing position in which the width of the channel 37 is considerably smaller than the diameter of cable 26, the latter resulting thus compressed and retained inside the device 27.

The lever 35 has a surface 39 in contact with the cable 26, and a driving portion 40 easily reachable by a user's hand from the outside of the tire, especially when the device 27 is on the upper part of the wheel.

Advantageously, the lever 35-fixing position corresponds to the pull by the user as he/she holds the portion 40 and moves it up into abutment against a stop-of-rotation pin 45, so that the same user finds it easier to exert the force necessary for closing the mechanism.

As above mentioned, it is possible, according to the invention, to provide the said device on one or both the cover's sides.

Illustrated in Figs. 11, 13, 15 is a device 27 applied on the inner side 29 of the cover, whereas Fig. 14 shows a device 27' on the outer side 30 of the same cover.

For the device on the inner side, one end of the pull cable 26 is fastened to a fixed point of the device, while the other end of the cable, after passing through the slits 28 on the inner side of the cover, is made to go through the channel 37 and subsequently through a cover's hole 24 of access to a transverse passage 43 (Fig. 12), and then out of a hole 44 formed on the outer side 30 of the cover.

With this solution, a user who is on the external side of the wheel can easily pull the cable 26 with a hand to tighten the cover onto the wheel and, then, move the lever 35 with the other hand to block the cable.

Advantageously, the cable-return pull facilitates the stability of closure, while the portion of the cable going

through the tire is not under tension and does not, therefore, affect the seal. Besides, as this portion of the cable is in no way active, it does not affect the stability of the same cover on the wheel.

- 5 In order to make the mounting more reliable and safe, the illustrated embodiment provides also for a second device 27, disposed on the outer side 30 of the cover, as best visible in Fig. 14.

10 Preferably, the device 27 on this side is in opposite position with respect to the inner device 27', so as to avoid any cover's warpings during the run of the vehicle. The operation of the second device is the same as device 27 above described, and corresponding parts thereof in Fig. 14 refer to same numerals already indicated.

- 15 In this case, the user, after fixing the cover on the inner side, can pull the cable 8 which goes through the device 27 and move the lever 35 to the block position, all by operating from the outside of the wheel with easy access to the closing mechanisms.

- 20 Illustrated in Fig. 16 is a preferred embodiment of the cover, in which the inner side 47 of the tread 21 is provided with crosspieces 48 extending from one side to the other of the tread's width and consisting of metal or rubber reeds having the purpose of transversally limiting
25 the cover's elongation.

In a preferred embodiment, schematically illustrated in Fig. 17, it is also possible to provide a protection sheath for the cable 26 passing through the transverse length 43, so that possible slidings of the cover relative to the
30 wheel will not be transferred onto the blocking device and will not affect the tension of the cable and the stability of the closure.

- Preferably, in the example described in Fig. 17, the passage 43 is formed by applying, on the inner side of the
35 tread, a rubber crosspiece 51 provided with a slot 52

disposed in a position corresponding to a void region of the tire 21.

Schematically illustrated in Fig. 18 is a preferred embodiment of the cover's lateral band obtained by
5 applying, on the side margins of tread 21, trapezoidal segments, indicated by 25' in the figure, disposed one after the other along the circumferential development of the tire and each being provided with a slit, on the side of minor radius, to allow the passage of cable 8 and
10 achieve an optimal distribution of the clamping force exerted by the cable 26 on the cover's tread 21.

Preferably, each trapezium 25' has also a region 53 partially overlapping the trapezium located adjacent in anticlockwise direction, so as to prevent the introduction
15 of air during the forward run of the vehicle.

Advantageously, this solution allows a larger opening of the side in which the cover is applied to the wheel and, at the same time, an optimal distribution of the tension on the tread.

20 Figs. 19a and 19b illustrate a preferred embodiment of the fixing device, according to the invention, designated by 27' and wherein, for the sake of simplicity, corresponding parts already described have been designated with reference numbers equal to those previously indicated.

25 The device 27' differs from the foregoing because of the presence, on the profile 39 of lever 35, of a slightly projecting elbow 39', as illustrated in greater detail in Fig. 20.

With this solution, when the lever 35 moves from the open
30 configuration of Fig. 19a to the closed configuration of Fig. 19b, in correspondence of the maximum closeness of elbow 39' to the surface 46 engaging the plate 16, there is a point of maximum compression of cable 26 and an increase of resistance to the rotation, which resistance is overcome
35 through a "snap" movement, perceivable by the user, due to

the relative elasticity of cable 26.

Advantageously, a condition of maximum compression of the cable 26 is followed by one of stability in which the same cable is compressed between the surface 46 and a substantially flat or slightly concave region 54, so that the user can feel by touch the attainment of the closing position and, respectively, the opening of the device.

Finally, it is preferred that the cable 26 be of metal core and fabric sheath type, to ensure both the highest clamping force and a relevant grip by device 27/27'.

Referring now to Figs. 21-22, a second embodiment of the fixing device 60 applied to a cover according to the invention is described.

The device 60 is substantially made up of a mechanism for blocking the closing cable 26 preferably attached to the cover externally of the lateral band 25 and, more precisely, at a trapezoid segment 25' of a type shown in Fig. 18.

In this solution, formed on the closing cable 26 are "olive" shaped thickenings 64, equidistantly disposed at a predetermined distance of 2 centimetres, for example.

The device 60 comprises:

- a first plate 61 attached to a trapezoid segment 25',
- a second plate 62 overlapping and spaced from the first plate 61 to generate an interspace,
- a roller 63 hinged to the first plate 61 and allowing the closing cable 26 to slide,
- a spring 68 made from metal, mounted at one end to a pivot 70 formed on the first plate 61 and having a second end terminating with a flat surface 67; the spring 68 being able to lock the closing cable by abutting against one of the "olives" 64,
- a second steel cable 66 having an "olive" 69 close to one end thereof, said cable being connected to the approximately central region of the elastic element 69 and

disposed within a channel 71 formed entirely through the cover 19,

- an elastic clamping element 65 substantially shaped as an "omega", connected on the first plate 61 and able to counteract the elastic return of the element 68 by abutting
5 against the "olive" 69 formed on the steel cable 66.

One end of the closing cable 26 is attached to a fixed point of the device 60 while the other cable's end, after going through all the slits 28 on the inner side of the
10 cover, is made to pass first through a cover's hole 42 allowing access to a channel 43 and exit afterwards from a hole 44 formed on the outer side 30 of cover 19.

In a similar way, the steel cable is also made to pass first through a cover's hole allowing access to a channel
15 71 and exit afterwards from a hole 73 formed on the outer side 30 of the wheel.

By this solution, upon mounting the cover 19 onto the wheel, a user who is on the external side of the wheel 23 can easily pull the cable 26 with a hand as far as to lock
20 the same closing cable by moving one of the "olives" 64 thereof into abutment against the flat surface 67 of the elastic element 68 and a tooth 74 of plate 61.

Moreover, upon dismounting the cover 19, a user standing on the external side of the wheel 23 can easily pull the
25 release cable 26 and then vertically displace the elastic element 68 as far as to free the olive 64 and release the closing cable 26.

At this point, the elastic clamping element plays an important role inasmuch as - owing to the abutment between
30 the "olive" 69 formed on the steel cable 66 and one end 75 of the said clamping element 65 - it does not allow the elastic return of element 68 upon the locking stage.

The solution shown in Figs. 21 and 22 has the advantage that a user who stands on the external side of the wheel 23
35 is able to easily perform the mounting and dismounting as

well of the cover 19 by pulling two distinct cables 26/66 each of them having one end emerging from the outer side of cover 19.

Advantageously, both in the mounting and dismounting stages
5 of cover 19 the user can feel, by a surmounting of said "olive"-shaped thickenings 64/69, respectively the locking and releasing of the closing cable 26 and of steel cable 66, so that the same user can realize the occurrence of any malfunction of device 60 due, for example, to freezing of
10 the various parts.

Advantageously, the thickenings 64 are also a cause of cable's jerks and vibrations which allow the user to be aware of different lock levels, and to suitably adapt the cover 19 to the conditions of both new and worn-out tires.

15 Moreover, the use of a cable 26 fully made of steel and provided with olives 64 makes it possible to reduce the size of the crossing channel 43 and prevent the inevitable wear of a cable coated by a textile sheath.

The invention thus conceived, which is clearly applicable
20 in the industrial field, may also be subjected to several modifications and variants, all of them falling within the inventive scope; moreover, all the parts can be replaced by technically equivalent elements.

CLAIMS

1. Antiskid cover for wheels, characterized in that it comprises a band (2) made from fabric in the shape of a ring, with a first inner surface in contact with the wheel and a second outer surface from which an antiskid tread (3) is made to project.
2. Cover according to claim 1, wherein the tread (3) is made to cross the fabric layer of the band (2).
3. Cover according to claim 2, wherein the tread (3) comprises antiskid reliefs (5) which are made to cross the fabric and distributed along the circumferential development of the band (2).
4. Cover according to claim 3, wherein said reliefs (5) are joined to a rubber layer (6) disposed on the inner surface of the band.
5. Cover according to claim 3 or 4, wherein said reliefs (5) are joined to a rubber layer (7) disposed on the external surface of the band.
6. Cover according to any of claims 4-5, wherein at least one of said inner or outer rubber layers (6, 7) is discontinuous along the circumferential development of the band.
7. Cover according to claim 1, wherein the tread (3) is applied to the external surface of the band (2).
8. Cover according to any of the preceding claims, wherein, inside one or more said reliefs (5) a rigid antiskid reed (10, 11) projecting externally by a predetermined extent is housed.
9. Cover according to claim 8, wherein said reed (11) is discontinuous at least in its protruding portion.
10. Cover according to any of the preceding claims, wherein said band (2) is made of elastic fabric which is extensible along the circumferential development of the band.
11. Cover according to any of the preceding claims, wherein said tread comprises a raised central portion protruding

from side portions (16) and is applied to a central portion (12) of the band's fabric, the annular band (12) further comprising at least one side portion (13) formed by a crown of fabric joined to an edge of the band (12), in order to laterally cover the wheel, and provided in turn with an elastic beading (14).

12. Cover according to any of the preceding claims, wherein said tread (13) is made from plastics, preferably elastomer material.

13. Cover according to any of the preceding claims, wherein said fabric is made of synthetic textile fibre.

14. Cover according to any of the preceding claims, wherein said fabric exhibits a percentage of elastomers such as rubber, for example.

15. Cover according to any of the preceding claims, comprising belts (17) for closing the band's edge disposed on the outside of the wheel.

16. Cover according to any of the preceding claims, comprising a device to be fixed to the wheel, applied to the cover and engaged by at least a cable (26) passing through one or more slits (28) of said band (25), wherein at least a first end of the cable (26) can be easily held by a user who stands on the external side of the wheel and made to slide into a channel (37) intermediate between a first surface (46) of the device and a second surface (39), which second surface can be driven relative to said first surface between a release position away from said first surface and a fixing position, close to the second surface, in correspondence of which the cable (26) is compressed and retained between said first and second surfaces.

17. Cover according to claim 17, wherein said cable exerts a pull, in said fixing position, on the device (27), said pull contributing to maintain said fixing position.

18. Cover according to claim 17, wherein the second ends of the cable (26) is solid to device (27).

19. Cover according to any of claims 16-18, wherein said first and second surfaces (39, 46) are mounted on a plate (31) fixed to said band.

5 20. Cover according to any of claims 16-19, wherein said first and second surfaces (39, 46) are mounted between two plates (31, 32) fixed to the band (25) and delimiting the channel (37) for the passage of the cable in cooperation with the same surfaces.

10 21. Cover according to any of claims 16-20, wherein said first surface is fixed, and said second surface (39) makes part of a lever (35) accessible by the user and hinged on a swinging pivot (36).

15 22. Cover according to claim 21, wherein said lever (35) can be rotated by moving the surface (39) from the cable (26) fixing position, in which the lever is in abutment against a limit stop and the channel passage has the smallest cross-section, to a first releasing position in which the channel has its cross-section larger than the cable's diameter.

20 23. Cover according to claim 21 or 22, wherein said surface (39) of lever (35) exhibits a slightly protruding elbow (39') to define a point of maximum compression of the cable (26) and a localized increase of resistance, perceivable by the user, to the rotation of the same lever.

25 24. Cover according to claim 22, wherein said surface (39) of lever (35) exhibits a substantially flat or slightly concave region (54), adjacent to elbow (39'), which reaches into the channel (37) immediately after the elbow (39') during the rotation of lever (35) upon the closing
30 movement.

25. Cover according to any of claims 21-24, wherein said lever can be rotated against the action of a return spring.

35 26. Cover according to any of claims 16-25, wherein said device (27) is applied at least to the inner part of the cover with respect to the vehicle's wheel.

27. Cover according to claim 26, wherein the cable (26) leaving the channel (37) goes in succession through a hole (42) on the inner side (29) of the cover and a transverse passage (43) and comes out afterwards from a hole (44) formed on the outer side (30) of the cover.

28. Cover according to claim 27, wherein the passage (43) is formed by applying, on the inner side of the tread, a rubber cross-piece provided with a slot (52).

29. Cover according to any of claims 16-28, wherein two devices (27) are applied facing each other on the inner and outer sides of the cover with respect to the vehicle's wheel in correspondence of a same circumferential portion of the cover.

30. Cover according to any of claims 16-29, wherein at least one of said surfaces (46, 39) is provided with anti-skidding means, such as surface knurlings, for example.

31. Cover according to any of claims 16-30, wherein at least a length of the inner side (47) of the tread (22) is provided with contact elements (48) on the outer surface of the wheel.

32. Cover according to any of claims 16-31, wherein said band (25) comprises a series of trapezoid segments (25') applied to the lateral edges of the tread (21) and disposed one after the other along the circumferential development of the tread, each being provided with a slit on the side of minor radius to allow the passage of the cable (26) and achieve an optimal distribution of the clamping force exerted by the cable (26) on the cover.

33. Cover according to claim 32, wherein each trapezium (25') exhibits also a region (53) of partial superimposition on the adjacent trapezium successively disposed in anticlockwise direction, in order to prevent the introduction of air during the forward run of the vehicle.

34. Cover according to claim 16, comprising:

a closing cable (26) provided with thickenings (64) equidistantly disposed,

- a first plate (61) fixed to a side band (25') of the cover;

5 - a second plate (62) superimposed and spaced from the first plate (61) to create an interspace for the passage of the cable (26);

- a metal spring (68) fixed by one end (76) to the first plate (61) and having a second end (67) for blocking the
10 closing cable (26) by coming into abutment against one of the thickenings (64);

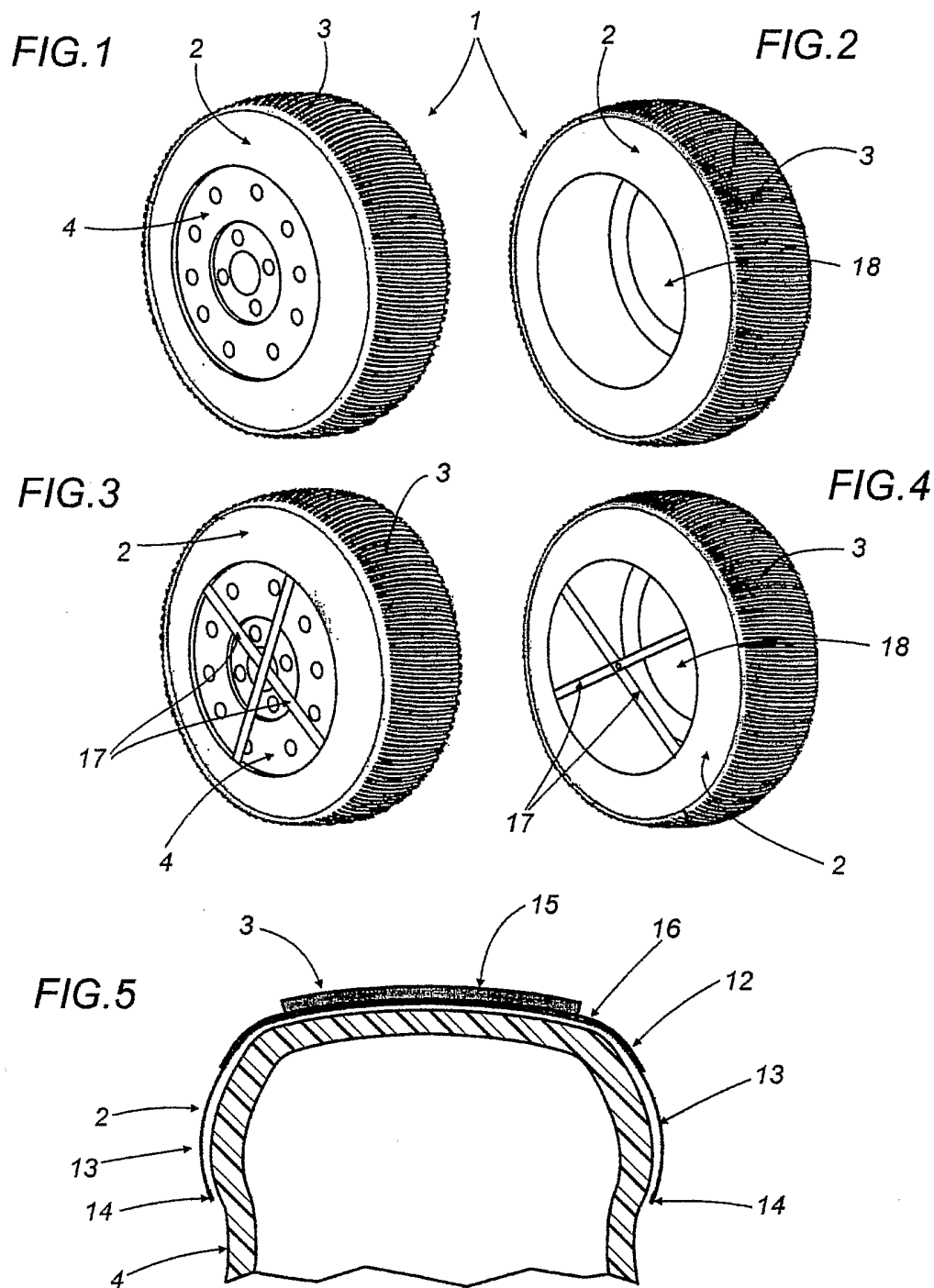
- a second steel cable (66) connected to the spring (68) to drive it into a cable-releasing position;

35. Cover according to claim 34, comprising a retention
15 element (65) to counteract the spontaneous return of the spring (68) from the release position to the lock position.

36. Cover according to claim 35, wherein the device (60) is applied to the cover on the inner side of the wheel, and said cables (26) and (66) go through channels (43, 71)

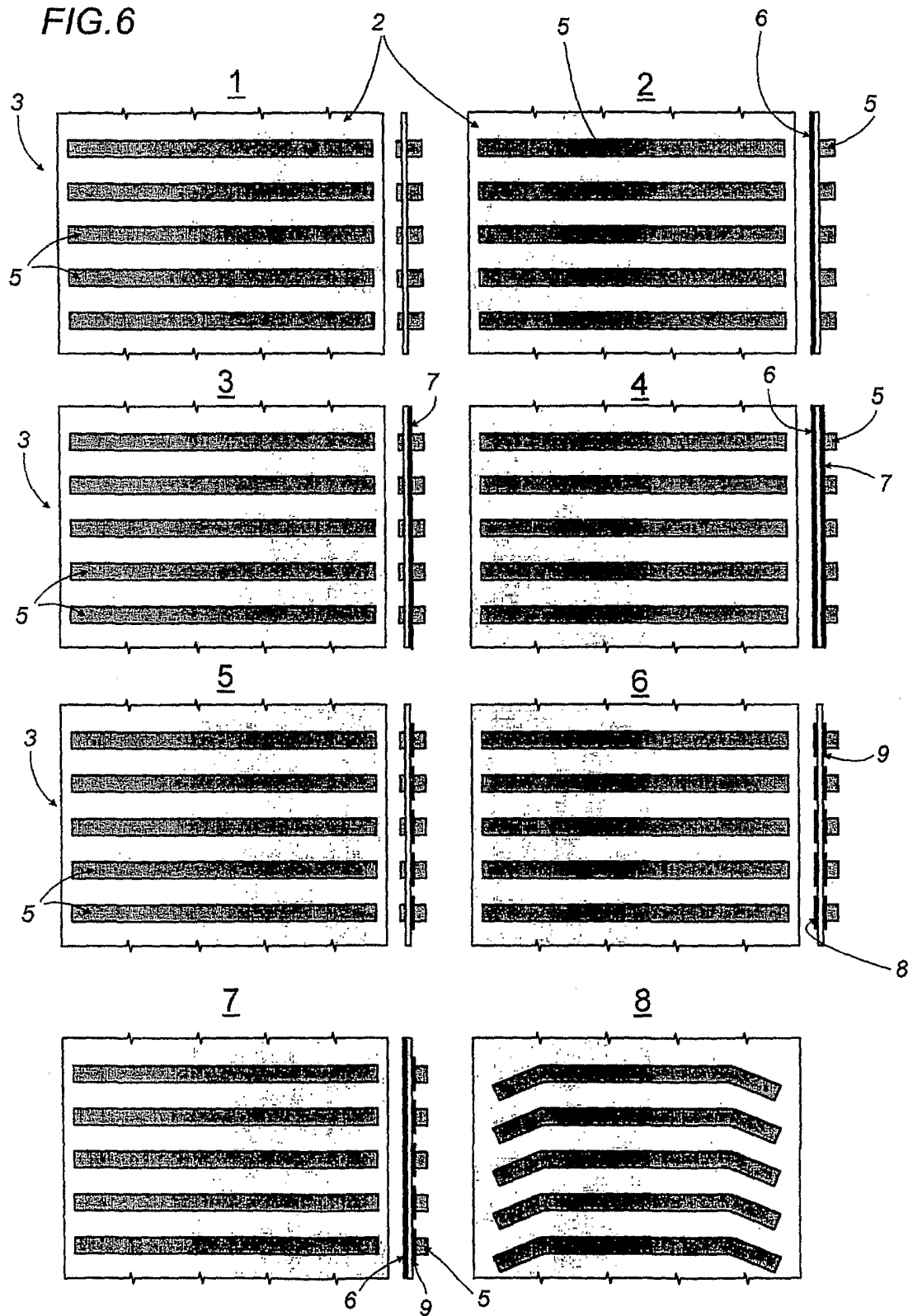
20 extending from the inner side to the outer side of the cover to facilitate the user's work.

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FIG. 6



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FIG. 7

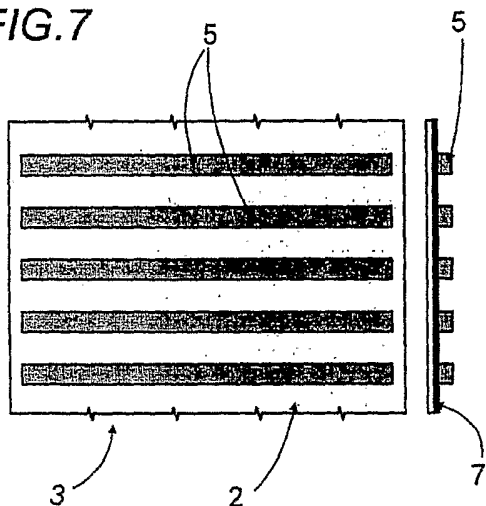


FIG. 8

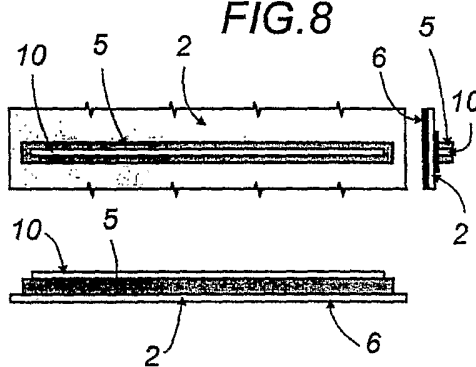


FIG. 9

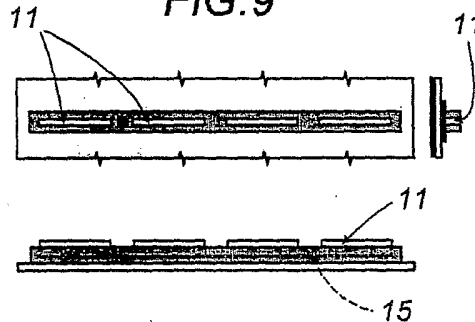
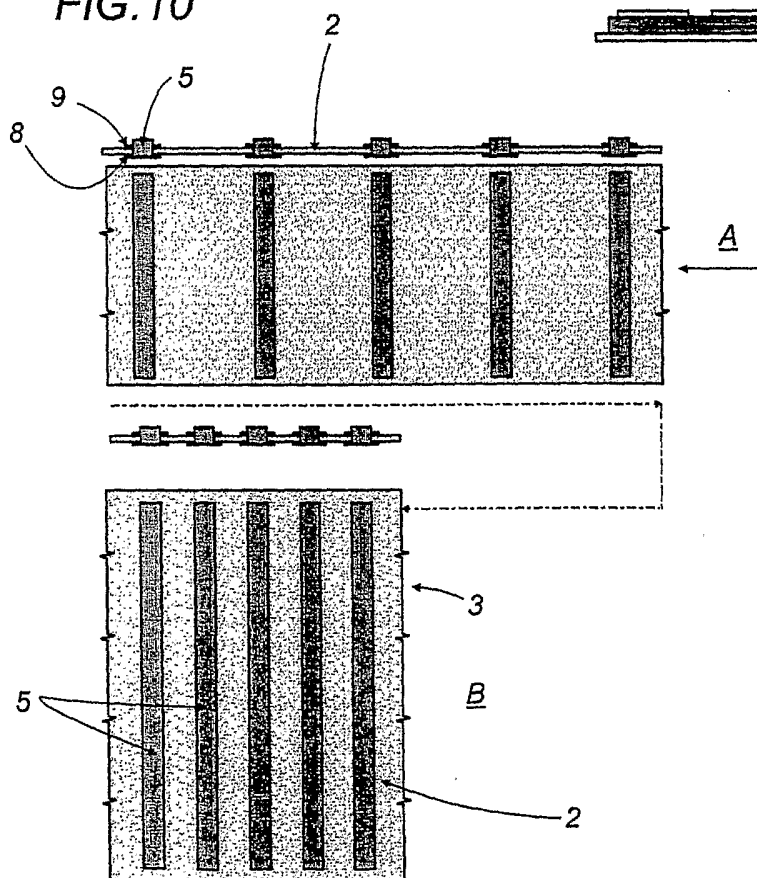


FIG. 10



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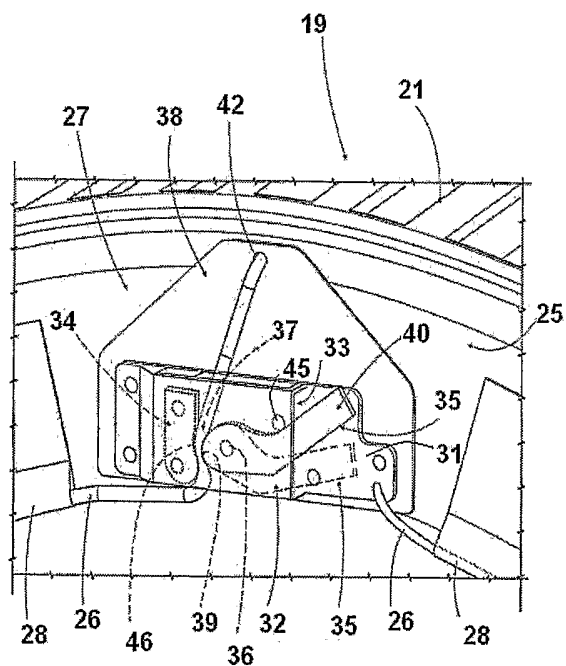
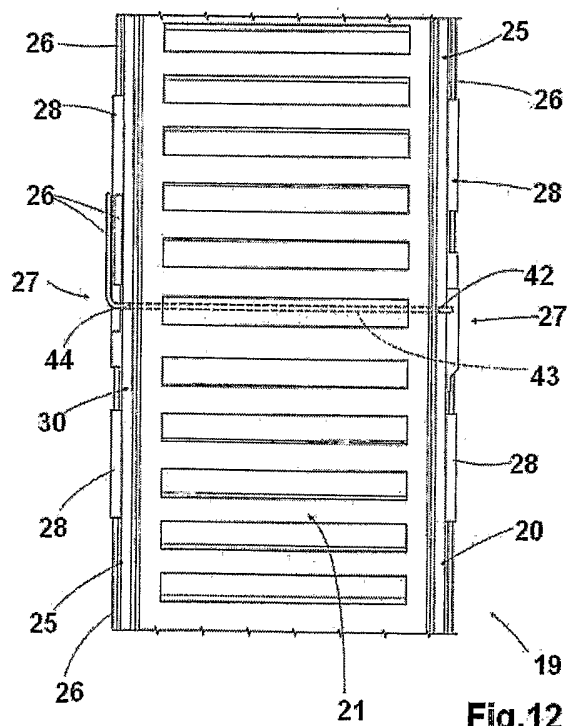
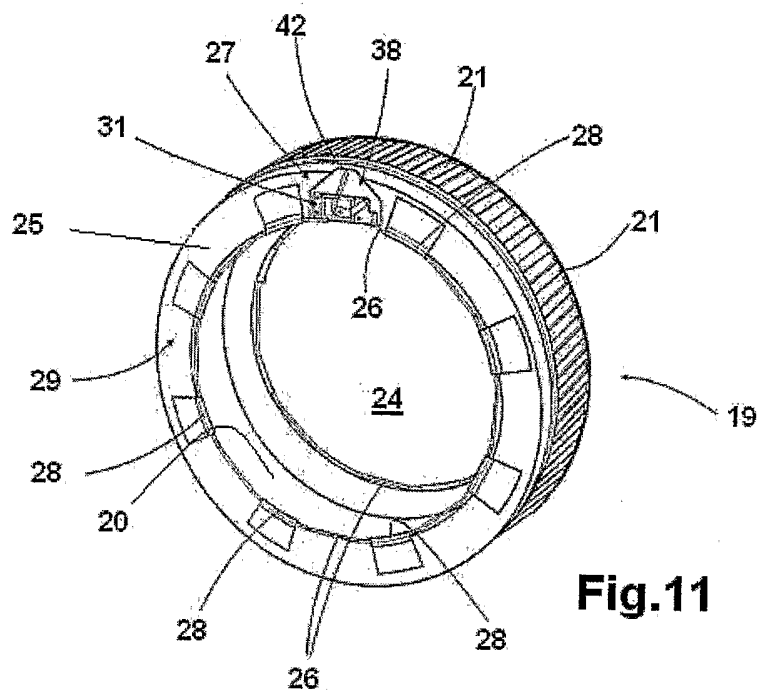


Fig. 14

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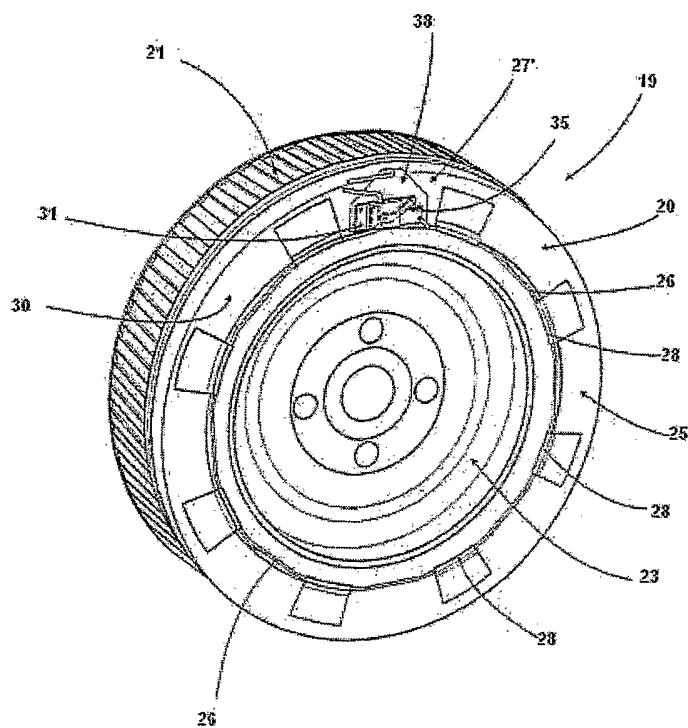
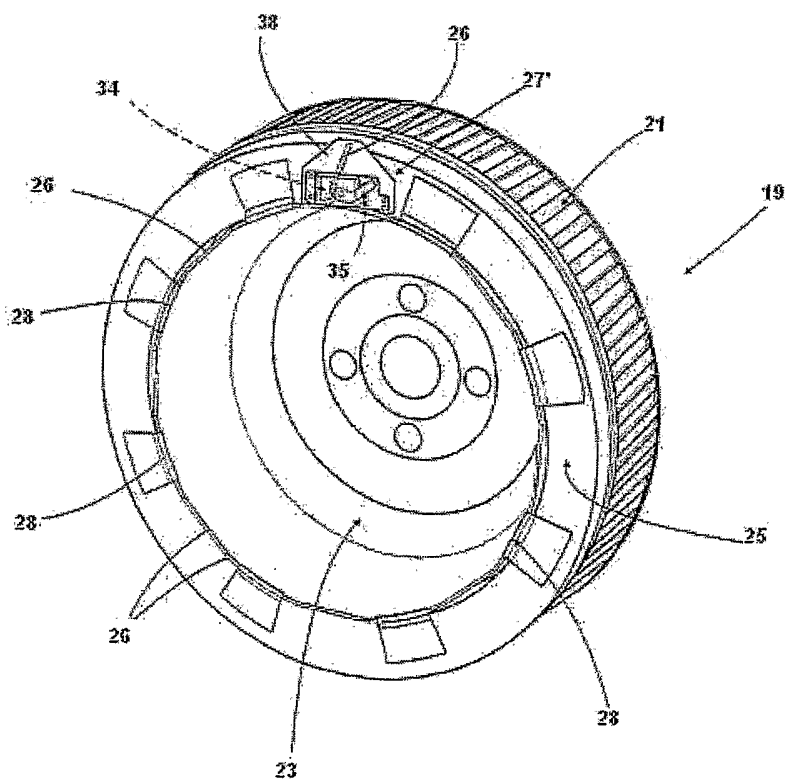


Fig. 15



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Fig.16

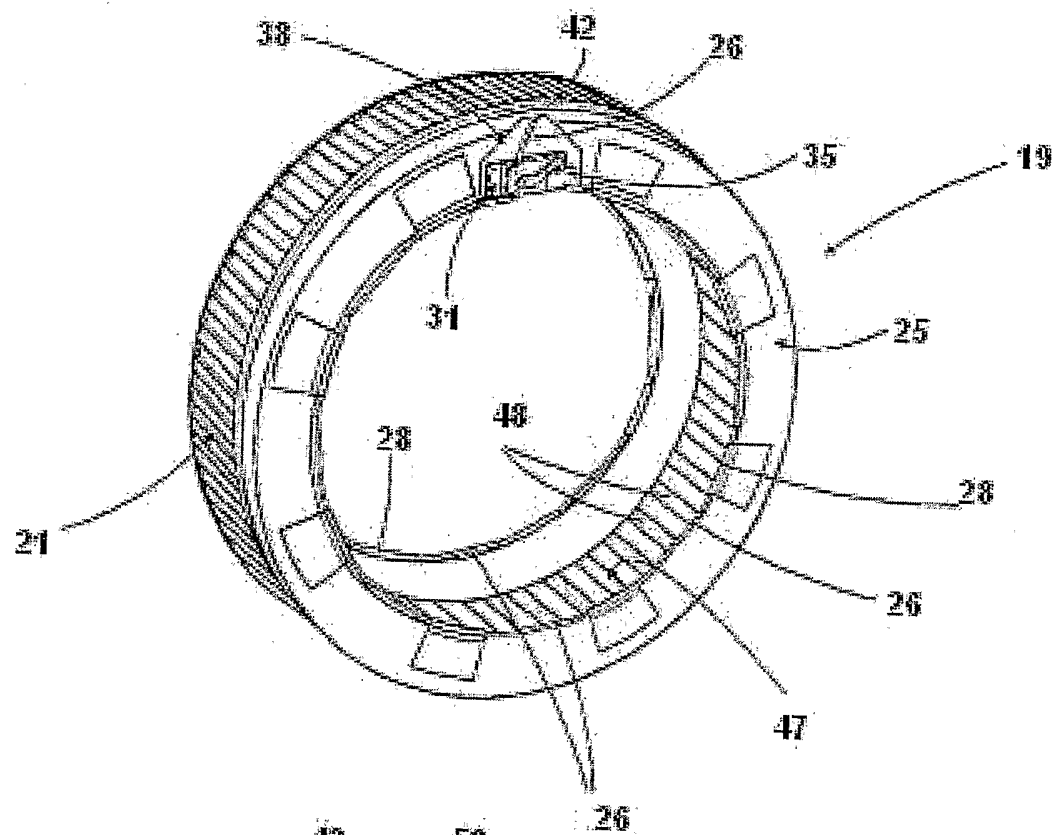


Fig.17

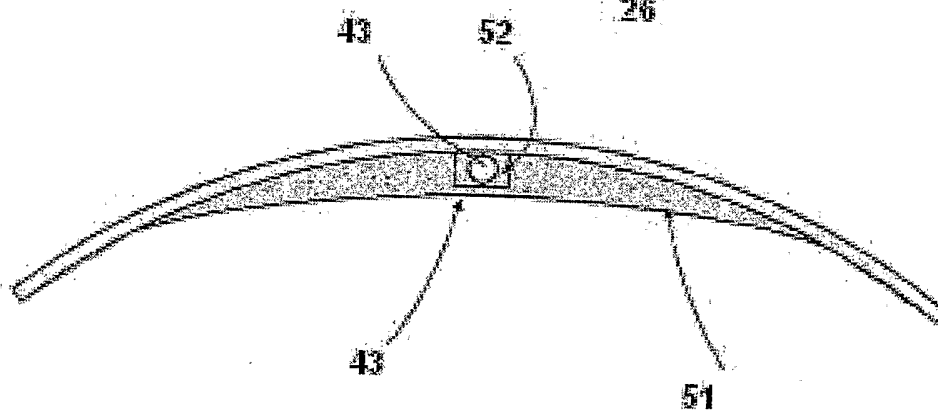
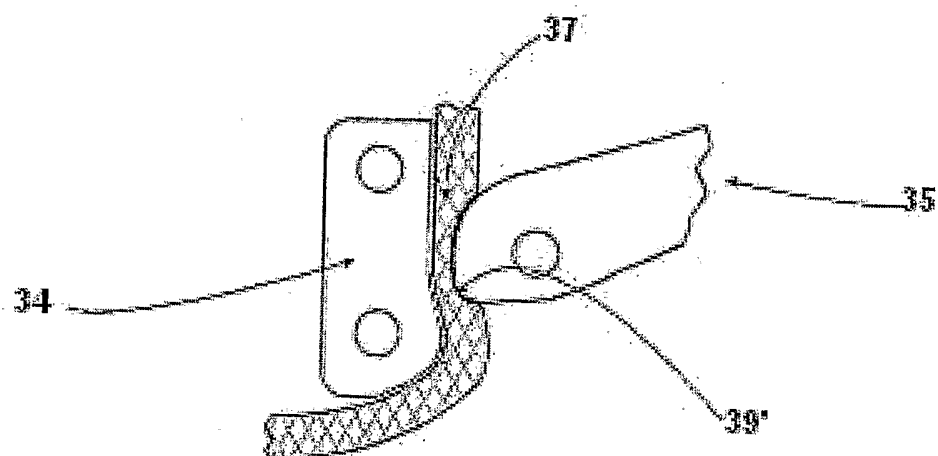


Fig.20



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Fig. 18

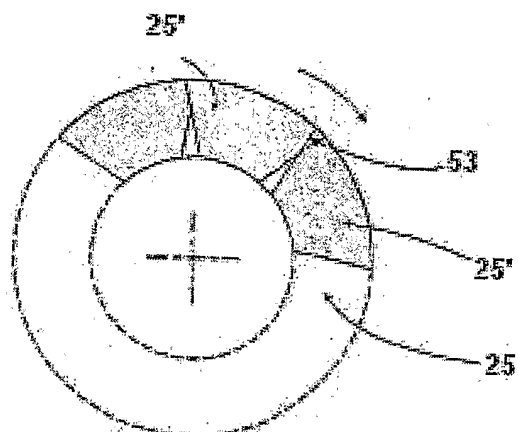


Fig. 19a

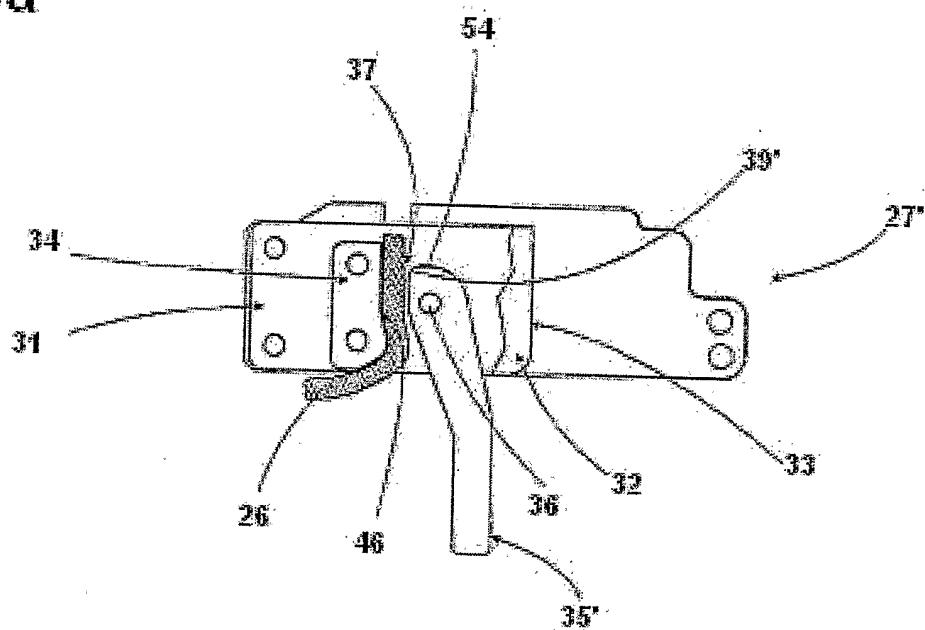
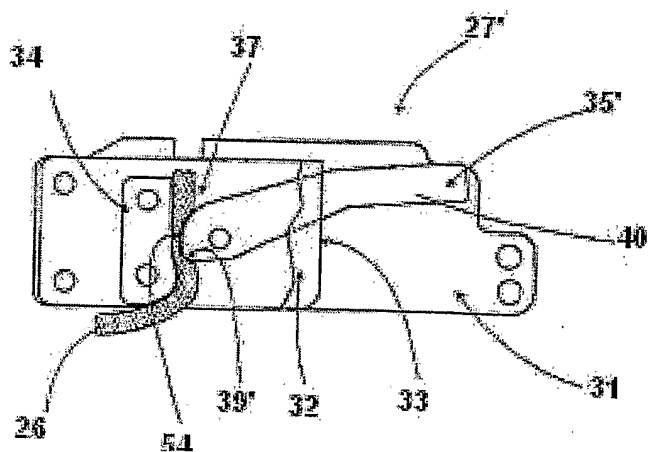


Fig. 19b



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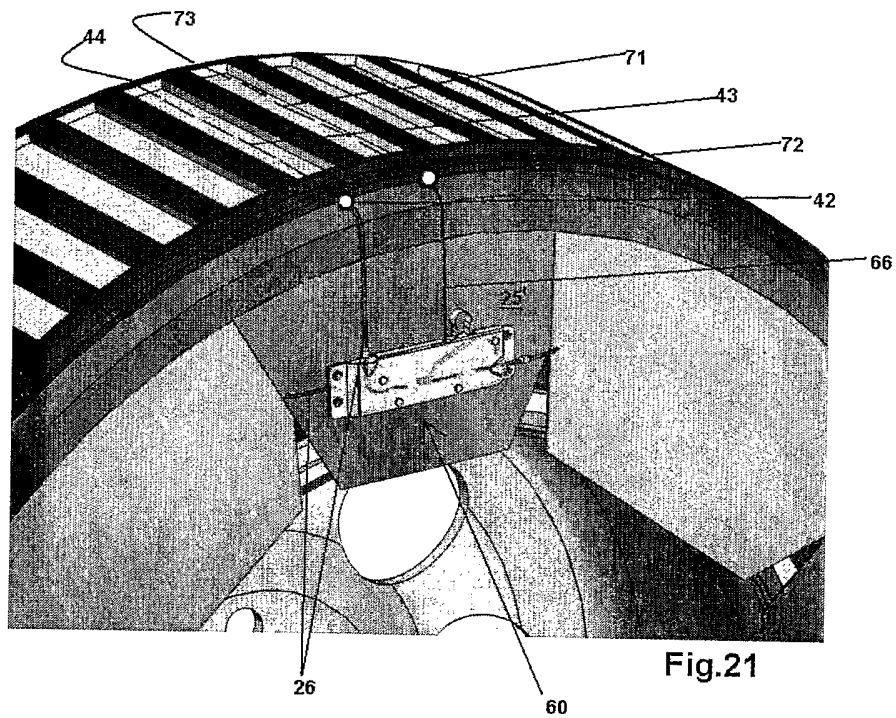


Fig.21

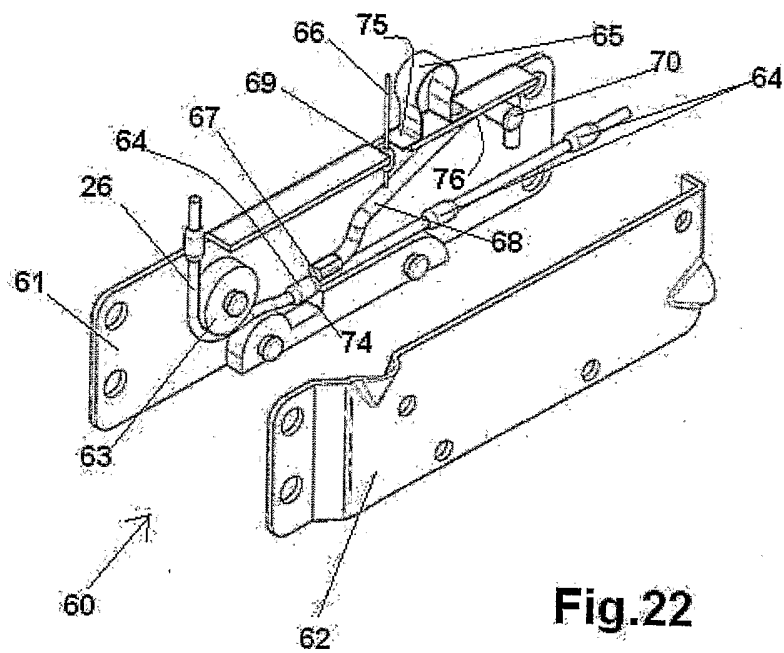


Fig.22

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2006/001234

A. CLASSIFICATION OF SUBJECT MATTER
INV. B60C27/18

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B60C

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

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

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 1 890 346 A (TUDHOPE DAVID R) 6 December 1932 (1932-12-06) page 1, line 93 - page 2, line 5; figures -----	1-5,7, 10,14
X	US 3 335 776 A (GLEN PETERSON) 15 August 1967 (1967-08-15) column 2 - column 4; figures -----	1-3,7
X	DE 19 10 609 A1 (HAESCHLATEX KG) 27 August 1970 (1970-08-27) the whole document -----	1,2,7, 13,14
X	DE 21 08 386 A1 (DOLLER ARTHUR) 24 August 1972 (1972-08-24) claims; figure 1 -----	1,2,7,14
	-/--	

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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Date of the actual completion of the international search

11 October 2006

Date of mailing of the international search report

19/10/2006

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Thanbichler, Peter

INTERNATIONAL SEARCH REPORT

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PCT/IB2006/001234

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00/59745 A (AUTOSOCK [NO]; LOETVEIT BAARD [NO]) 12 October 2000 (2000-10-12) claims; figures	1,2,7, 12-15
X	GB 262 908 A (SAMUEL HAUPT) 23 December 1926 (1926-12-23) the whole document	1,7

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2006/001234

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