The invention relates to a tire valve (1) comprising a valve channel (11) having a valve body (10) enclosing a valve seat (15), having at least one connecting means (9) for connecting the valve body (10) to a valve base (2), wherein the valve body (10) comprises a valve part (12) inserted in the valve channel (11) and displaceable in the axial direction therein, sealingly bearing against the valve seat (15) of the valve body (10) in the closed position of valve (1), and wherein the connecting means (9) of the valve body (10) is disposed in a connecting segment (8) at a distance in the axial direction from the functional valve segment of the valve body (10), and the valve body (10) is implemented as a single piece.
TIRE VALVE

[0001] The invention relates to a tire valve comprising a valve channel having a valve body enclosing a valve seat, equipped with at least one connecting means for connecting the valve body to a valve base, and comprising a valve part inserted in the valve channel and movable in the axial direction therein, sealing the bearing against the valve seat of the valve body in the closed position of the valve.

[0002] Tire valves for vehicles are designed as rim valves or as hose valves. Since motor vehicle tires for the most part are tubeless, mostly rim valves are used with motor vehicle rims. Such valves (the same however also holds true for hose valves) comprise a valve base, which in the case of rim valves is sealed with the rim by screwing. The valve base comprises an annular cylindrical tube section with an outer threading. The outer threading can be subdivided into two sections, a threading section for securing the valve base on the rim and another threading section for screwing on a valve cap to close the valve. In addition, the tube exhibits an inner threading to secure the actual valve. The valve exhibits a valve body with an attachment means configured as an attachment threading for attachment of the valve body to the outer threading serving on the valve base, by which this is screwed into the tube of the valve base. The valve body exhibits a valve channel that runs through it in the axial direction and makes available a valve seat for a valve part movable in the axial direction in the valve channel. In the closed setting of the valve, with its sealing surface, it acts against the valve seat of the valve body. The valve part exhibits a pin which projects out over the valve body in the area of the upper opening of the tube of the valve base. By compressing the pin into the valve body, the valve part is lifted away from the valve seat, so that air can then be released from the tire. The valve part is also lifted away from its valve seat when air is put in, if a clamp coupling is attached to the tube of the valve base.

[0003] Even if the functioning of such a valve has proven itself, for some applications it would be desirable if the air pressure in a tire could be changed more quickly. This is especially the case when letting air out. Such an application is needed for vehicles that are operated on varied surfaces. Occasionally it is necessary to lower the air pressure in a tire to increase the tire footprint when traveling over a soft surface. This customarily is done by pressing in on the pin assigned to the valve part of the tire valve, either manually or by attaching a manometer or a hose as part of a governing device on the vehicle side. For attaching such a manometer or such a hose, a coupling piece is clamped on the threaded end of the tube of the valve base. Part of the coupling is an operating pin which acts on the pin of the valve part to open the valve. When such couplings are used for attaching a manometer or a hose on a tire valve, the clamping should be done with care, because otherwise the clamp coupling, precisely at the higher air pressures, can pop off. Couplings that are screwed onto the outer threading of the tube to avoid this problem are viewed as troublesome to manipulate.

[0004] Based on this discussed prior art, therefore, the task that is the basis of the invention is to further develop a tire valve as mentioned initially so that with it, it will be possible to not just let air out of a tire quickly and fundamentally a coupling can be securely attached, but also that such a tire valve is also suitable for smaller tires.

[0005] This problem is solved according to the invention by a generic tire valve as named initially, in which the attachment means of the valve body is placed in a connecting segment at a distance in the axial direction from the functional valve segment of the valve body, and the valve body is designed as a single piece.

[0006] In this valve, the attachment means, which typically is designed as an attachment threading, is not placed radially to the elements necessary for the functioning of the valve, like the valve seat and the movable valve part, but rather in a connecting segment situated to be axially displaced to these elements. Thus the valve body with its valve-functioning elements is at a distance from the end of the tube of the valve base. The spatial separation between the connection segment and the valve-functioning elements of the tire valve in the axial direction permit the valve-functioning elements to be placed outside the tube of the valve base, thus at a location which in the radial direction is not limited by the width in the clear of the tube of the valve base. Consequently, such a tire valve can have a valve channel of greater diameter and a valve part designed with a correspondingly larger diameter. The larger diameter of the valve channel results in a larger flow cross section with the valve open and thus quicker release of air from the tire as well as faster pumping of air into the tire. Due to the arrangement of the valve body with its valve-functional elements outside the tube of the valve base, a configuration of the valve body that corresponds to the requirements, in fact independent of the otherwise present limitations of the tube of the valve base, is permitted. The valve body can, for example, exhibit an encircling clamping groove and/or other connection elements for attachment of the coupling of a hose or manometer. The coupling can therefore be attached in form-locking fashion onto the valve, especially without screwing of the coupling piece onto a threading being necessary.

[0007] The valve body of this tire valve is in addition of single-piece design. The one-piece configuration of the valve body permits it to be produced with sparing use of materials but nonetheless meet the strength requirements set for the valve body. As a consequence of the sparing use of material, such a tire valve is relatively low in weight and therefore suitable for use on smaller tires, for example those for passenger cars. It is precisely with passenger vehicles, especially if they are capable of off-road travel like SUVs, that such tire valves can be used, even if the tires for such vehicles must endure higher rotational velocities than for example truck tires. The previously-described separation of the valve-functioning section and the section comprising the attachment means from each other in the axial direction permits a more slender configuration, which is a prerequisite for using as little material as possible and therefore as low a weight of the tire valve as possible.

[0008] Fundamentally the attaching means of the valve body preferably configured as a connection threading can be designed as an interior or interior threading. If as large a flow-through cross section through the valve channel as possible is desired, the connection threading of the valve body is designed as an interior threading, so that the valve body can be screwed onto the outer threading of the tube of a valve base. Such a tire valve is then screwed like a customary protective cap onto the tube of the valve base, and correspondingly extends it. The valve body with its attachment means is connected to the valve base in such a manner that it is sealed. With use of an invention-specific tire valve, since the valve part does not need be accommodated into the tube of the valve base, at least not totally, it can be dimensioned to be shorter overall.
As a result of the relatively large structural area available within the valve channel, it can have installed elements. For example, there could be a stop surface to limit the motion of the valve part in the closing direction. Correspondingly, the valve part exhibits a complementary stop, with these stop surfaces preferably configured as encircling radial projections, which may be inclined in the direction of the longitudinal axis and to the valve opening. By providing such a stop on the valve seat in the closed setting of the tire valve, if the gasket adjoins the valve seat as part of the valve part, the elastomer gasket is at maximum only as severely deformed as is possible via the previously described motion stop, before the two stop surfaces adjoin another. This measure causes the sealing element to be gently used. This is understood to mean that the effect occurs not only if the sealing element is part of the movable valve part, but also if a used sealing element is assigned to the valve body fixed relative to the valve part.

Further advantages and embodiments of the invention are drawn from the following specification of an embodiment example while referring to the appended FIG. 1.

FIG. 1 shows a partial longitudinal section through a tire valve 1, which, in the embodiment example depicted is attached to a valve base 2 designed to be mounted on a vehicle rim. The valve base 2 is a valve base with a tube 3 exhibiting a longitudinal channel, a connection flange 4, a shoulder seal 5 and a mounting nut 6 to brace the valve base 2 to the rim bed of a vehicle tire while inserting a valve shim B. On its end opposite the attachment flange 4, the tube 3 has an exterior threading 7. The channel formed by the tube 3 serves to produce a pathway between the interior of a tire mounted on a rim and the surroundings. The mounting nut 6 is designed as a groove nut, and exhibits an annular surrounding recess 6.1, into which an O-ring 6.2 made of an elastomeric material is inserted. The diameter of the O-ring 6.2 is so dimensioned that in its de-tensioned state in the axial direction it projects over the surface of mounting nut 6 pointing away from valve shim B.

The tire valve 1 exhibits an attachment section 8 with an interior threading 9 complementary to the outer threading 7 of tube 3 as an attachment means for attaching tire valve 1 to valve base 2. With its inner threading, tire valve 1 is screwed onto the tube 3. The attachment section 8 of tire valve 1 is a part of the valve body 10 of tire valve 1. Adjoining the attachment section 8 of valve body 10 is a coupling section with the valve-functional elements of tire valve 1. Valve body 10 is manufactured as a single piece, typically as part of a more or less materials-removal processing step. Within its coupling section K, valve body 10 encloses a valve channel 11 as a continuation of the channel enclosing from tube 3 of valve base 2. In the valve channel 11 of valve body 10, a valve part 12 movable in the longitudinal-axis direction is placed. As depicted in FIG. 1, valve part 12 is in its closed setting. The opening motion of valve part 12 is indicated by a solid arrow. On its end area pointing away from attachment section 8, in a groove 13, valve part 12 carries a gasket 14, which in the embodiment example depicted is designed as an O ring made of an elastomeric material. In its closed setting the gasket 14 seals as it adjoins on a valve seat 15 made available by a valve 10. In its closed setting, as FIG. 1 shows, valve part 12 is held by the force of a compression spring 16. Compression spring 16 is designed as a conical spring and its tapered end is braced on a spring seat designed as a step 17 pointing to the attachment section 8 of valve part 12, and with its other end it braces on a step 18 provided on an inner threading 9 at the valve-body end as a spring seat on the valve-body side.

The valve body 10 exhibits an encircling stop surface 19 inclined in the direction of the longitudinal axis of tire valve 1 and in the direction toward valve seat 15. The valve part 12 exhibits a complementarily designed stop surface 20. In the closed setting of valve part 12, the two stop surfaces 19, 20 adjoin each other. By this means, the mobility of valve part 12 in the closing direction is limited, with the result that gasket 14 is deformed independent of the pressure prevailing in the tire with a defined pre-stressing to create the sealing. Additionally, through prestressing of the spring it is ensured that the tire valve 1 is also closed if the tire has no pressure.

In the free end area of its coupling section K, valve body 10 exhibits an outer encircling groove 21. The groove 21 serves as an attachment or cramping groove for a coupling piece to be attached to tire valve 1, such as of a manometer or a hose of a tire pressure regulating device. Into groove 21 engages a clamping element of such a coupling piece, through which it can be attached in form-locked fashion to tire valve 1. In the same way, tire valve 1 can be closed by a cap secured in groove 21.

On its head side pointing outwards, valve part 12 exhibits a receptacle 22, which is designed in the depicted embodiment example as a hollowed-shaped recess. The receptacle 22 serves to admit a control element for a coupling to be attached onto tire valve 1, through which valve part 12 is moved out of its closed setting shown in FIG. 1 in the direction toward attachment section 8 against the force of compression spring 16 for opening tire valve 1.

Between the outer jacket surface 23 of valve part 12 and the inner jacket surface 24 of valve body 10 is an annular gap 25. While with traditional tire valves which are screwed into the inner threading of the tube of a valve base, a cross-sectional width in the clear through which fluid can flow of about 0.5 mm is present, the flow-through diameter with the tire valve 1 depicted in the FIGURE is 3.5 to 4 mm. This is achieved for one by the relatively large size of the annular gap 25 and by the placement of same at a relatively large distance to the longitudinal axis of valve 1 (compared to valves previously known), by which the width of annular gap 25 is greater and thus the flow-through surface is correspondingly larger.

The concinity of the compression spring 16 also ensure a guiding of valve part 12, if it is moved in the direction of the attachment section 8 for opening of tire valve 1. Valve part 12 is in its completely open setting when stop surface 20 is in an axial position below another step 26 of valve body 10. Then the flange 27 of valve part 12 forming the stop surface 20 and the step 17 for the spring seat is at a distance to step 26, so that also in volume terms relative to flange 27 a sufficiently large flow-through surface is made available. If for opening, and thus for putting air into a tire and removing it, the valve part 12 is only to be slightly lifted from valve seat 15, the flange 27 may exhibit openings, so that it ultimately is formed by individual flange segments situated at intervals from each other via openings.

The diameter of the valve body 12 in the section of valve channel 11 adjoining the stop surface 19 up to the inclined step 26, thus that section of valve channel 11 in which the flange 27 is movable in the axial direction, corresponds to the inner diameter of valve body 10 in the area of its inner threading 9. Thus the valve part 12, the largest diameter of which is defined by the flange 27, is readily inserted through the opening of valve body 10 made available by the
inner threading. The compression spring 16 is then also inserted through this opening into the valve body 10, until with its largest-diameter end winding it comes to rest on stop 18. With the embodiment example depicted, the determination of the diameter of flange 27 of valve part 10 to the diameter of inner threading 9, wherein the latter needs only to be dimensioned with a certain play for insertion of valve part 12, to be larger than the diameter of flange 27, ensures that only a small amount of material is necessary to produce the valve body 10. As a result of this, the valve body 10 can be kept slender. Thus its outer diameter ultimately needs to have a material thickness that suffices to satisfy the mechanical requirements and the production requirements.

[0019] With the valve body 10 that is screwed on the tube 3, the O ring 6.2 serves as a seal vis-à-vis the valve body 10.

[0020] The invention was described using an embodiment example which exhibited an attachment threading as the means for attaching the tire valve to a valve base. Other devices can also serve as attachment means, especially if the valve base is adapted to it. For example, the tire valve can also be attached to the valve base using a bayonet lock. Likewise, other attachment means can be implemented for attaching the tire valve to the outer threading of a cylindrical base, for example by means of a clamp.

LIST OF REFERENCE SYMBOLS

1 tire valve
2 valve base
3 tube
4 attachment flange
5 shoulder seal
6 mounting nut
7.1 recess
6.2 O ring
7 outer threading
8 attachment section
9 inner threading
10 valve body
11 valve channel
12 valve part
13 groove
14 gasket
15 valve seat
16 compression spring
17 stop
18 step
19 stop surface
20 stop surface
21 receptacle
22 receptacle
23 jacket surface
24 jacket surface
25 annular gap
26 stop
27 flange
B valve shim
K coupling section

CROSS REFERENCE APPLICATIONS

This application is a National Stage entry of PCT/EP2011/052262 filed Feb. 16, 2011 which claims priority from German application 20 2010 000 254.0 filed Feb. 24, 2010, which is hereby incorporated by reference for all purposes

BACKGROUND

[0053] Vehicle tire valves for are designed as either rim valves or as hose valves. Since motor vehicle tires are commonly tubeless, mostly rim valves are used with motor vehicle rims. Both types of valves have a valve base, which in the case of a rim valve is screwed on to seal it with the rim. The valve base comprises an annular cylindrical tube section with an outer threading. The outer threading can be subdivided into two sections, a threading section for securing the valve base on the rim and another threading section for screwing on a valve cap to close the valve. In addition, the tube has an inner threading to secure the actual valve. The valve has a valve body with an attachment means configured as an attachment threading for attaching the valve body to the outer threading on the valve base, by which this is screwed into the tube of the valve base. The valve body has a valve channel extending in the axial direction and has a valve seat for a valve part movable in the axial direction in the valve channel. In the closed setting the valve and its sealing surface act against the valve seat of the valve body. The valve part has a pin which projects out over the valve body in the area of the upper opening of the tube of the valve base. To release air from the tire the valve part is lifted away from the valve seat by compressing the pin into the valve body. If a clamp coupling is attached to the tube of the valve base the valve part is also lifted away from the valve seat when air is put in.

[0054] Although functioning of the prior art valve has proven itself, for some applications it would be desirable if the air pressure in a tire could be changed faster. This is especially true when letting air out. Such an application is needed for vehicles that are operated on varied surfaces. Occasionally it is necessary to lower the air pressure in a tire to increase the tire footprint when traveling over a soft surface. This customary is done by pressing in on the pin assigned to the valve part of the tire valve, either manually or by attaching a manometer or a hose as part of a governing device on the vehicle side. A coupling piece is clamped onto the threaded end of the tube of the valve base for attaching the manometer or hose. Part of the coupling is an operating pin which acts on the pin of the valve part to open the valve. The clamping should be done with care when the couplings are used for attaching a manometer or a house on a tire valve. Otherwise the clamp coupling, particularly at the higher air pressures, can pop off. Couplings that are screwed onto the outer threading of the tube to avoid this problem are viewed as troublesome to manipulate.

[0055] Based on this discussed prior art, therefore, it is desirable to develop a tire valve that allows to not just let air out of a tire quickly with a coupling that can be securely attached, but also that a tire valve is suitable for smaller tires.

[0056] The foregoing example of the related art and limitations related therewith are intended to be illustrative and not exclusive. Other limitations of the related art will become apparent to those of skill in the art upon a reading of the specification and a study of the drawings.

SUMMARY

[0057] The invention relates to a tire valve having a valve channel with a valve body enclosing a valve seat. The valve
has at least one connecting means for connecting the valve body to a valve base. The valve also has a valve part inserted in the valve channel that is movably in the axial direction therein, sealing the bearing against the valve seat of the valve body in the closed position of the valve.

[0058] In this valve, the attachment means, which typically is designed as an attachment threading, is not radially arranged around the necessary elements of the valve, like the valve seat and the movable valve part. Rather the attachment element is in a connecting segment is axially displaced relative to these elements. Thus the valve body with its valve-functioning elements is at a distance from the end of the tube of the valve base. The axial direction spatial separation between the connection segment and the functioning elements of the tire valve permit the functioning elements to be placed outside the tube of the valve base. This places them at a location is not limited in radial direction by the clear width of the tube of the valve base. Consequently, such a tire valve can have a valve channel of greater diameter and a valve part designed with a correspondingly larger diameter. The larger diameter of the valve channel results in a larger flow cross section with the valve open and thus quicker release of air from the tire as well as faster pumping of air into the tire. Due to the arrangement of the valve body with its functional elements outside the tube of the valve base, a configuration of the valve body that corresponds to the requirements, in fact independent of the otherwise present limitations of the tube of the valve base, is permitted. For example, the valve body can have an encircling clamping groove and/or other connection elements for attachment of the coupling of a hose or manometer. This allows the coupling to be attached in form-locking fashion onto the valve, without screwing the coupling piece onto a threading.

[0059] Additionally, the valve body of this tire valve is a single-piece design. The one-piece configuration of the valve body permits it to be produced with sparing use of materials but nonetheless meet the strength requirements set for the valve body. As a consequence of the sparing use of material, such a tire valve is relatively low in weight and therefore suitable for use on smaller tires, for example those for passenger cars. It is precisely with passenger vehicles, especially if they are capable of off-the-road travel like SUV’s, that such tire valves can be used, even if the tires for such vehicles must endure higher rotational velocities than for example truck tire valves. The previously described separation of the valve-functioning section and the attachment means section from each other in the axial direction permits a more slender configuration, which is a prerequisite for using as little material as possible and therefore as low a weight of the tire valve as possible.

[0060] The attaching means of the valve body is configured as a threading connection with an interior or exterior threading. If it is desired that the valve channel have as large a flow-through cross section as possible is desired, the threading connection of the valve body is designed as an interior threading. This allows the valve body to be screwed onto the outer threading of the tube of a valve base. Such a tire valve is then is screwed like a customary protective cap onto the tube of the valve base, and correspondingly extends it. The valve body with its attachment means is connected to the valve base in a sealed a manner. With use of an invention-specific tire valve the valve part can be designed to be shorter overall since the valve part does not need be accommodated into the tube of the valve base, at least not totally.

[0061] The relatively large structural area available within the valve channel allows there to be installed elements. For example, there could be a stop surface to limit the motion of the valve part in the closing direction. Correspondingly, the valve part has a complementary stop, with these stop surfaces preferably configured as encircling radial projections. The stops may be inclined in the direction of the longitudinal axis and to the valve opening. By providing such a stop on the valve seat in the closed setting of the tire valve, if the gasket adjoins the valve seat as part of the valve part, the elastomer gasket is at maximum only as severely deformed as is possible via the previously described motion stop, before the two stop surfaces adjoin one another. This measure causes the sealing element to be gently used. This is understood to mean that the effect occurs not only if the sealing element is part of the movable valve part, but also if a used sealing element is assigned to the valve body fixed relative to the valve part.

[0062] The following embodiments and aspects thereof are described and illustrated in conjunction with systems, tool and methods which are meant to be exemplary and illustrative, not limiting in scope. In various embodiments, one or more of the above described problems have been reduced or eliminated, while other embodiments are directed to other improvements.

[0063] In addition to the exemplary aspects and embodiments described above, further aspects and embodiments will become apparent by reference to the accompanying drawings forming a part of this specification wherein like reference characters designate corresponding parts in the several views.

BRIEF DESCRIPTION OF THE DRAWINGS

[0064] FIG. 1 is a partial longitudinal section through a tire valve.

[0065] Before explaining the disclosed embodiment of the present invention in detail, it is to be understood that the invention is not limited in its application to the details of the particular arrangement shown, since the invention is capable of other embodiments. Exemplary embodiments are illustrated in referenced figures of the drawings. It is intended that the embodiments and figures disclosed herein are to be considered illustrative rather than limiting. Also, the terminology used herein is for the purpose of description and not of limitation.

DETAILED DESCRIPTION OF THE DRAWINGS

[0066] FIG. 1 is a partial longitudinal section through a tire valve 1, which, in the depicted embodiment is attached to a valve base 2 for mounting on a vehicle rim. The valve base 2 has a tube 3 with a longitudinal channel, a connection flange 4, a shoulder seal 5 and a mounting nut 6 to brace the valve base 2 to the rim bed of a vehicle tire while inserting a valve shim B. The tube 3 has an exterior threading 7 on the end opposite the attachment flange 4. The channel formed by the tube 3 creates a pathway between the interior of a tire mounted on a rim and the surroundings. The mounting nut 6 is designed as a groove nut, and has an annular surrounding recess 6.1, into which an O-ring 6.2 made of an elastomeric material is inserted. The diameter of the O-ring 6.2 is dimensioned such that in its de-tensioned state in the axial direction it projects over the surface of mounting nut 6 pointing away from the valve shim B.

[0067] The tire valve 1 has an attachment section 8 with an interior threading 9 complementary to the outer threading 7 of
tube 3 as an attachment means for attaching tire valve 1 to valve base 2. Tire valve 1 is screwed onto the tube 3 with inner threading 9. The attachment section 8 of tire valve 1 is a part of the valve body 10 of tire valve 1. Adjoining the attachment section 8 of valve body 10 is a matching section with the functional elements of tire valve 1. Valve body 10 is manufactured as a single piece, typically as part of a machining step. Valve body 10 encloses a valve channel 11 within its matching section K, as a continuation of the channel enclosing from tube 3 of valve base 2. A valve part 12 movable in the longitudinal-axis direction is placed in the valve channel 11 of valve body 10. Valve part 12 is in the closed setting in FIG. 1. The opening motion of valve part 12 is indicated by a solid arrow. Valve part 12 carries a gasket 14 in a groove 13 on its end area pointing away from attachment section 8. In the depicted embodiment the gasket 14 is designed as an O ring made of an elastomer material. In its closed setting the gasket 14 seals as it adjoins on a valve seat 15 made available by a valve 10. As depicted in FIG. 1, valve part 12 is held in the closed position by the force of a compression spring 16. Compression spring 16 is designed as a conical spring and its tapered end is braced on a spring seat designed as a step 17. Pointing to the attachment section 8 of valve part 12, and with its other end it braces on a step 18 provided on an inner threading 9 at the valve-body end as a spring seat on the valve-body side.

[0068] The valve body 10 has an encircling stop surface 19 inclined in the direction of the longitudinal axis of tire valve 1 and in the direction toward valve seat 15. The valve part 12 has a complementarily designed stop surface 20. In the closed setting of valve part 12, the two stop surfaces 19, 20 adjoin each other. This limits the mobility of valve part 12 in the closing direction, with the result that gasket 14 is deformed independent of the pressure prevailing in the tire with a defined pre-stressing to create the sealing. Additionally, the pre-stressing of the spring ensures that the tire valve 1 is closed if the tire has no pressure.

[0069] Valve body 10 has an outer encircling groove 21 in the free end area of its coupling section K. The groove 21 serves as an attachment or cramping groove for a coupling piece to be attached to tire valve 1, such as a manometer or a hose of a tire pressure regulating device. A clamping element of the coupling piece engages into groove 21, through which it can be attached in form-locked fashion to tire valve 1. In the same way, tire valve 1 can be closed by a cap secured in groove 21.

[0070] Valve part 12 has a receptacle 22 on its head side pointing outwards, which is designed in the depicted embodiment as a hollow-shaped recess. The receptacle 22 allows a control element for a coupling to be attached onto tire valve 1, through which valve part 12 is moved out of its closed setting shown in FIG. 1 in the direction toward attachment section 8 against the force of compression spring 16 for opening tire valve 1.

[0071] There is an annular gap 25 between the outer jacket surface 23 of valve part 12 and the inner jacket surface 24 of valve body 10. Traditional tire valves which are screwed into the inner threading of the tube of a valve base, have a cross-sectional width in the clear through which fluid can flow of about 0.5 mm. However, the flow-through diameter with the tire valve 1 depicted in the FIGURE is 3.5 to 4 mm. This is achieved by the relatively large size of the annular gap 25 and by the placement of some at a relatively large distance to the longitudinal axis of valve 1 (compared to valves previously known), by which the width of annular gap 25 is greater and thus the flow-through surface is correspondingly larger.

[0072] The conicity of the compression spring 16 also ensures a guiding of valve part 12, if it is moved in the direction of the attachment section 8 for opening of tire valve 1. Valve part 12 is in its completely open setting when stop surface 20 is in an axial position below another step 26 of valve body 10. Then the flange 27 of valve part 12 forms the stop surface 20 and the step 17 for the spring seat is at a distance to step 26, so that also in volume terms relative to flange 27 a sufficiently large flow-through surface is made available. If the valve part 12 is only to be slightly lifted from valve seat 15 for opening, and thus for putting air into a tire and removing it, the flange 27 may have openings such that it is formed by individual flange segments situated at intervals from each other via openings.

[0073] The diameter of the valve body 12 in the section of valve channel 11 adjoining the stop surface 19 up to the inclined step 26, and thus that section of valve channel 11 in which the flange 27 is movable in the axial direction, corresponds to the inner diameter of valve body 10 in the area of its inner threading 9. Thus the valve part 12, the largest diameter of which is defined by the flange 27, is readily inserted through the opening of valve body 10 made available by the inner threading 9. The compression spring 16 is then also inserted through this opening into the valve body 10 until with its largest-diameter end winding it comes to rest on stop 18. With the depicted embodiment, the determination of the diameter of flange 27 of valve part 10 to the diameter of inner threading 9, wherein the latter needs only to be dimensioned with a certain play for insertion of valve part 12, to be larger than the diameter of flange 27, ensures that only a small amount of material is necessary to produce the valve body 10. This allows the valve body 10 to be kept slender. Thus its outer diameter ultimately needs to have a material thickness that suffices to satisfy the mechanical requirements and the production requirements.

[0074] With the valve body 10 that is screwed on the tube 3, the O ring 6.2 serves as a seal vis-à-vis the valve body 10.

[0075] The invention was described using an embodiment example which exhibited an attachment threading as the means for attaching the tire valve to a valve base. Other devices can also serve as attachment means, especially if the valve base is adapted to it. For example, the tire valve can also be attached to the valve base using a bayonet lock. Likewise, other attachment means can be implemented for attaching the tire valve to the outer threading of a cylindrical base, for example by means of a clamp.

LIST OF REFERENCE SYMBOLS

[0076] 1 tire valve
[0077] 2 valve base
[0078] 3 tube
[0079] 4 attachment flange
[0080] 5 shoulder seal
[0081] 6 mounting nut
[0082] 6.1 recess
[0083] 6.2 O ring
[0084] 7 outer threading
[0085] 8 attachment section
[0086] 9 inner threading
[0087] 10 valve body
[0088] 11 valve channel
[0089] 12 valve part
13. A tire valve comprising:
a valve body with a valve channel extending through;
the valve channel having a valve seat having at least one
attachment means for attaching the valve body to a
valve base;
the valve further comprising a valve part inserted in the
valve channel, said valve part being movable in the axial
direction in the valve channel;
the valve part adjoins in sealing fashion a valve seat of the
valve body when the valve is in a closed position;
the attachment means of the valve body being in an attach-
ment section axial spaced from a functional section of
the valve body;
the valve body is formed as a single piece; and
wherein the valve is held by a compression spring against
the valve seat and where the valve is opened by moving
the valve part against the force of the compression
spring.

14. The tire valve according to claim 13, wherein the
attachment means is designed as an attachment threading.

15. The tire valve according to claim 14, wherein the
attachment threading of the valve body is an interior threading
adapted for screwing onto an exterior threading of a valve
base.

16. The tire valve according to claim 15, wherein the
attachment section with its interior threading is a part of the
valve body having a cylindrical jacket surface.

17. The tire valve according to claim 16, wherein the
attachment section of the valve body has a coupling section
with a locking contour for attachment of a coupling piece
such as a manometer or a hose of a tire pressure regulator or
a protective cap.

18. The tire valve of claim 13 further comprising the valve
body having a stop projecting outwards in a radial direction
on the inner side, said stop functioning as valve-body-side
spring seat.

19. The tire valve of claim 13 wherein the valve part has a
gasket acting against the valve seat in the closed setting.

20. The tire valve of claim 18 further comprising the valve
body having a stop surface projecting inwards in the radial
direction and the valve part having a complementary outward
projection stop surface, the two stop surfaces functioning to
limit the mobility of the valve part in the valve body in the
direction of the valve seat.

21. The tire valve of claim 20, wherein the stop surfaces are
inclined toward the valve opening as well as of the longitudi-
nal axis of the valve body.

22. The tire valve of claim 20, wherein the stop surfaces are
arranged in relation to the geometry of gasket and valve seat
such that they adjoin to limit deformation of the gasket.

23. The tire valve of claim 21, wherein the stop surfaces are
arranged in relation to the geometry of gasket and valve seat
such that they adjoin to limit deformation of the gasket.

24. The tire valve of claim 13 wherein the valve part on its
end pointing away from the attachment section has a recess to
accommodate a control element belonging to a coupling for
attaching onto the valve for opening the valve.

25. A tire valve comprising:
a valve body with a valve channel extending through,
the valve channel having a valve seat having an attachment
threading for attaching of the valve body to a valve base,
said attachment threading being an interior threading
adapted for screwing onto an exterior threading of the
valve base;
the valve further comprising a valve part inserted in the
valve channel, said valve part being movable in the axial
direction in the valve channel;
the valve part adjoins in sealing fashion a valve seat of the
valve body when the valve is in a closed position;
the attachment threading of the valve body being in an attach-
ment section axial spaced from a functional section of
the valve body, said attachment section with its interior threading being a part of the valve body having
a cylindrical jacket surface;
the valve body is formed as a single piece; and
wherein the attachment section of the valve body has a
coupling section with a locking contour for attachment of a coupling piece such as a manometer or a hose of a tire pressure regulator or a protective cap.

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