J. SCHMIDT.

VALVE CAP.

APPLICATION FILED APR. 27, 1920.

1,374,395. Patented Apr. 12, 1921.

Fig: 1.

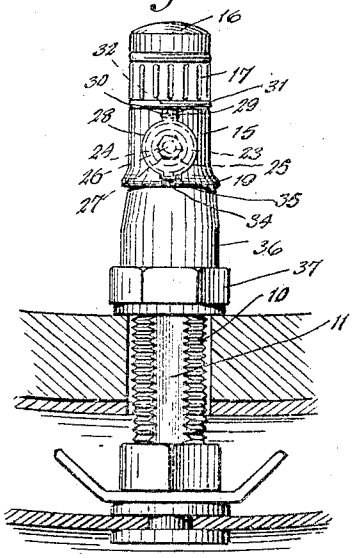


Fig: 2.

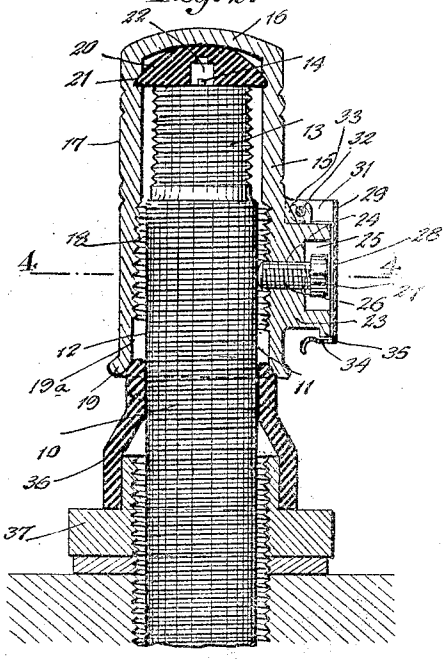


Fig: 3.

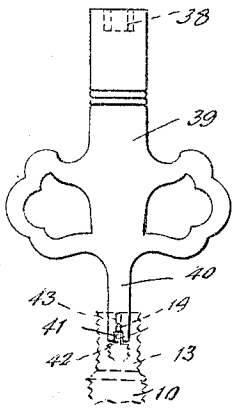
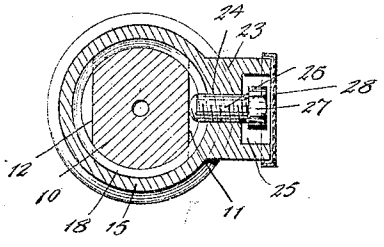


Fig: 4.



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VALVE-CAP.

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To all whom it may concern:

Be it known that I, JOHN SCHMIDT, a citizen of Jugo-Slavia, and a resident of the borough of Bronx, in the city, county, and State of New York, have invented certain new and useful Improvements in Valve-Caps, of which the following is a description.

The present invention relates to improvements in valve caps especially for use upon the valves of pneumatic tires or other inflatable structures, and has for its object to provide a cap which will effectually close the valve, will be dust and moisture-proof, and which may be locked in place, to the end that it will not accidentally become loosened, and cannot be removed by unauthorized persons.

I propose, in carrying out my invention, to provide a cap which will be of very simple and durable construction, and will be convenient to operate. The device, it may be noted, will take the place of the separate cap and cover at present in use upon valves, combining the functions of these separate parts, and having the additional advantage of being locked in place. With these and other objects in view, an embodiment of my invention is shown in the accompanying drawings, and this embodiment will be hereinafter more fully described with reference thereto and the invention will be finally pointed out and claimed.

In the accompanying drawings:

Figure 1 is a view partly in section and partly in elevation, showing the valve cap in place upon the valve stem of an ordinary pneumatic tire valve.

Fig. 2 is an enlarged sectional view of the cap, showing a portion of the valve stem engaged thereby.

Fig. 3 is a plan view of the key used in conjunction with the valve cap, and showing the manner of adjusting the valve thereby, and,

Fig. 4 is a horizontal sectional view taken along the line 4—4 of Fig. 2.

Similar reference characters indicate corresponding parts throughout the several figures of the drawings.

Referring to the drawings, the cap, according to my present invention, is adapted to be placed upon the threaded stem 10 of the valve, this stem being of a well-known type, provided with flat surfaces 11 and 12 extending longitudinally and along opposite sides, to enable it to be engaged by a wrench without mutilating the threads. At its upper end the stem is provided with a reduced and threaded extension 13, from which the valve pin 14 projects. Ordinarily a cap is screwed upon the end 13, while a cover is secured upon the stem, inclosing the cap.

The cap 15, according to the present invention, is provided at its upper end with a concavo-convex closure 16, and at its outer surface, and preferably near the upper end of the cap, is knurled, ribbed or otherwise suitably formed, as at 17, to facilitate turning. The cap is threaded interiorly, as at 18, to be screwed upon the stem, the threads terminating at a distance from the closed upper end. The open end of the cap is flared, as at 19, and between this flared end and the lower termination of the threads there is provided a plain cylindrical portion 19^a of greater diameter than the threads, to provide an entrance portion to enable the cap to be placed squarely upon the stem before turning, thus permitting a positive and accurate engagement of the threads.

In the upper end of the cap there is inserted a gasket 20, of rubber or other suitable material, the same being flat at its under side, and convex at its upper side, the peripheral portion being engaged in the annular groove 21 formed upon the interior of the cap. The degree of convexity of the gasket is greater than the degree of the cavity of the inner end of the cap, so that an annular space for compression is provided about the contacting central point of the gasket. A socket 22 is provided centrally of the under side of the gasket, extending partially therethrough, to receive the valve pin 14 in the engaged position of the cap.

An enlargement 23 is formed upon one side of the cap relatively near the lower end thereof, and has provided therein a threaded hole 24 surrounded at its outer end by an annular recess 25, and is adapted to receive a set screw 26, the hexagonal head 27 thereof being disposed in the recess, the screw adapted to be turned into engagement with one or the other flat surfaces 11 and 12 of the stem to securely lock the cap thereon. A circular rimmed dust cap 28 is provided over the end of the enlargement 23 to prevent dust from entering the recess 25, being provided at its upper portion with an extension 29, having ends 30 and 31 bent therefrom, a

pin 32 connecting the same to a lug 33 formed upon the upper side of the enlargement, and forming a hinge for the cap. At the lower portion of the cap there is provided a spring piece 34, adapted to snap over a lug 35 to yieldingly hold the dust cap in place.

In order to close the valve by means of the valve cap, according to my invention, the same is screwed upon the stem until the rubber gasket 20 is brought tightly in engagement with the end of the extension 13, the valve pin 14 projecting into the socket 22. A rubber sleeve 36 is first placed upon the stem between the nut 37, engaging the wheel felly and the lower end of the cap to inclose the exposed threaded portion of the stem. This, it will be understood, may be cut to any desired length, depending upon the projection of the stem from the felly. The flared end 19 of the cap is adapted to tightly clamp the end of the sleeve upon the stem, so that an air-tight connection is established, preventing dust from entering the cap. The cap is turned to such position that the set screw 26 is opposite one of the flat surfaces 11 and 12, and thereupon the dust cap is raised, and the hexagonal end of the screw is engaged by the socket 38, provided in the end of a key 39, not unlike a clock key, and the set screw is thereby tightened into engagement with the flat surface of the stem, securely locking the cap in place. The position of the head of the set screw within the recess 25 will prevent the set screw from being tampered with, as it will not be possible to engage the same by the fingers, and a special key will be necessary in order to turn the same. The end of the key opposed to the socket 38 is in the form of a reduced extension 40, adapted to be inserted within the bore of the portion 13 of the stem, and is provided with a notch 41 adapted to engage the transverse key portion 42 of the valve to adjust the same, a hole 43 extending from the base of the notch 41 to receive the projecting valve pin 14.

The valve cap, according to my invention, is of simple, durable construction. It may be conveniently and economically manufactured, and will prove thoroughly efficient in use.

I have illustrated and described a preferred and satisfactory embodiment of my invention, but it is obvious that changes may be made therein within the spirit and scope thereof, as defined in the appended claims.

I claim:

1. An improved cap comprising a tubular body portion having means to engage with the valve stem and being closed at one end, said closed end being provided with a concavity and a groove in the side wall of the body inwardly of the concavity, and an expansible gasket having its inner face substantially flat and adapted to rest on the end of the valve stem and having its outer face rounded on an arc of curvature struck from a radius of lesser length than the radius from which the concavity is struck whereby to provide an annular space about the edge of the concavity to receive the expanded portions of the gasket, the edge of the gasket adapted to fit in said groove.

2. A valve cap comprising a tubular body portion interiorly threaded to receive the threads on the valve stem and being closed at one end, means in said closed end to engage against the outer end of the valve stem and adapted to be compressed between the closed end of the body and such outer end of the valve stem, means at the inner end of said body engaging about the base portion of the valve stem and adapted to be encountered by such body when screwed inwardly on the threads of the valve stem, and means for locking said cap relatively to said means in the closed end thereof and said last-mentioned means.

3. A valve cap comprising a tubular body portion threaded interiorly to receive the threads on a valve stem and closed at one end, sealing means placed in the closed end of said body portion and adapted to engage with the free end of the valve stem, outer sealing means placed about the base portion of said valve stem and adapted to be encountered by the open end of said cap as the same arrives at a position for compressing the sealing means in the closed end thereof, and means carried by said body portion and movable into and out of engagement with said valve stem for locking the body portion relatively to said inner and outer sealing means whereby the valve cap may be held against displacement in a position to place the first-mentioned sealing means under compression and to cause tight engagement between the free open end of the body portion and said second-mentioned sealing means.

4. A valve cap comprising a tubular body portion closed at one end and having interior threads to receive the threads on a valve stem, a set screw fitted in the side of said body portion and adapted to engage with said valve stem, a socket constructed on said body portion about the head of the set screw and providing a confined space to prevent access to such head, and means to removably close said socket.

In testimony that I claim the foregoing as my invention, I have signed my name hereunder.

JOHN SCHMIDT.