No. 657,572. Patented Sept. 11, 1900.

G. H. F. SCHRADER.

TIRE VALVE AND CAP.

(Application filed Jan. 4, 1900.)

(No Model.)

FIG. 1.

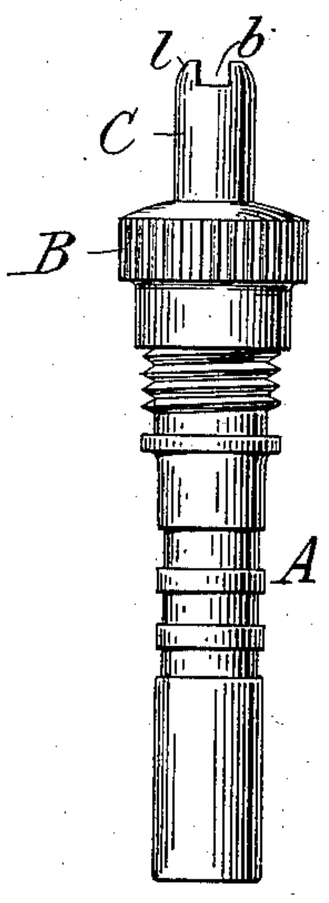


FIG. 2.

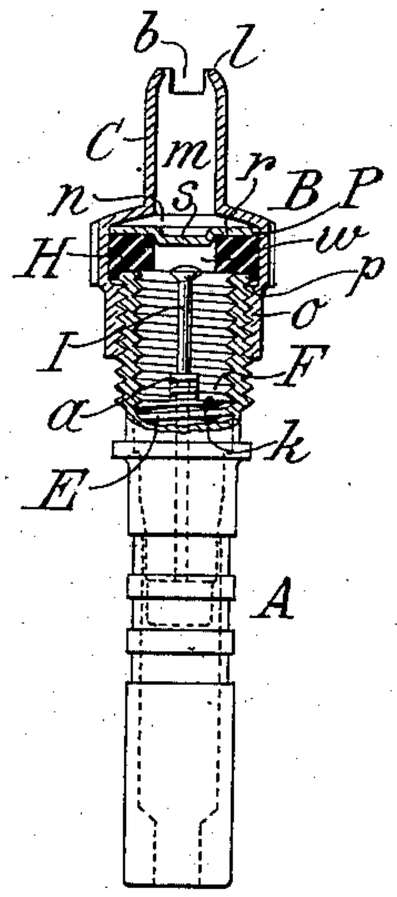
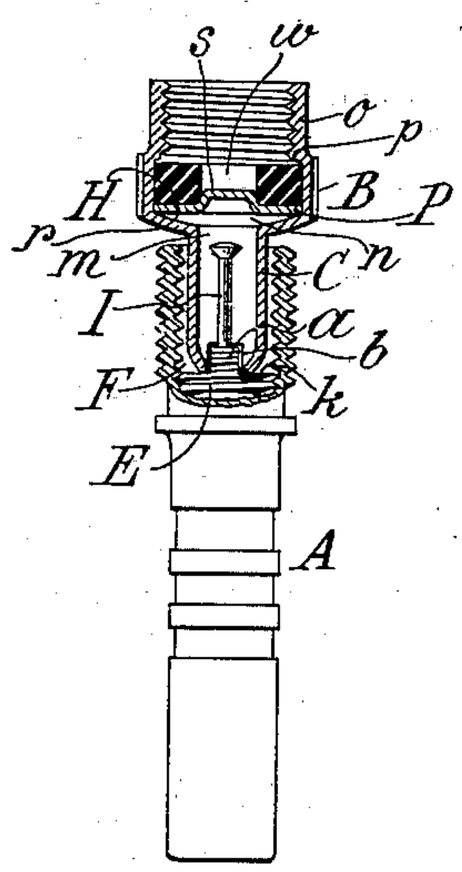


FIG. 3.



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GEORGE H. F. SCHRADER, OF NEW YORK, N. Y.

TIRE-VALVE AND CAP.

SPECIFICATION forming part of Letters Patent No. 657,572, dated September 11, 1900.

Original application filed June 21, 1898, Serial No. 684,062. Divided and this application filed January 4, 1900. Serial No. 337. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. F. SCHRADER, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Tire-Valves and Caps, of which the following is a specification.

This application is a division of my application, Serial No. 684,062, filed June 21, 1898, for improvements in tire valves and caps.

This invention relates to caps for tire and other valves and aims to provide certain improvements therein.

Heretofore tire-valves have been constructed with a tubular plug screwed within a socket in the shell for holding the valve-seat in place, through which plug the valve-stem or deflating-pin has projected, so that by inserting a tool into the socket the end of the stem could be reached for deflating the valve, or by inserting a screw-driver and pressing in the stem until the screw-notch of the plug was engaged the plug could be unscrewed for permitting access to the valve proper. The pressure and spring tension against the valve-stem have acted to disengage the screw-driver unless great care was taken and a continual pressure exerted to hold it in engagement, making the act of inserting or removing the plug a difficult and delicate one. The screw-driver has endangered bending or impairment of the stem by reason of the liability of the latter to get at one side of the screw-driver tip and be twisted, owing to its slender proportions, a slight impairment frequently serving to destroy the effectiveness of the valve proper. The combined screw-driver and deflating projection has usually been formed as a solid projection on the top of the cap, so that by unscrewing the cap and inverting it it could be used for separating or deflecting it. My present invention aims to provide an improved construction of cap and one which can be used for unscrewing the plug without danger to the stem or interference therewith. To this end in carrying out the preferred form of my invention I provide a cap for closing the end of the shell which has a tubular projection of sufficient internal diameter to freely pass over the stem of a valve when the cap is inverted, which projection is provided at its extremity with screw-driving provisions for engaging like provisions on a valve-plug, and I provide certain other features of improvement, which will be hereinafter fully set forth.

My improved cap is especially applicable for use with valves in which the valve-stem projects beyond the shell, but may be advantageously employed with valves of other constructions.

Referring to the drawings, which illustrate one adaptation of my invention, Figure 1 is a side elevation of a tire-valve, showing the preferred form of my improved cap in place thereon. Fig. 2 is an elevation, partly in axial section, showing the cap applied; and Fig. 3 is a similar view showing the cap inverted for screwing the plug.

Referring to the drawings, let A represent the valve-shell; B, the cap; C, the projection on the latter; E, the plug; F, the socket for the plug; I, the valve-stem passing through the plug, and H the packing-washer in the cap. In general these parts may be of any suitable construction and operation, the internal parts shown being adapted to be inserted or removed from the shell by screwing or unscrewing the plug E, which for this purpose has a screw-driver provision *a*, adapted to be engaged by the screw-driver provision *b* of the cap. The valve proper (not shown) may be of any suitable construction and may be pressed inwardly by the stem I to deflate the valve in the usual manner. The stem I preferably extends outwardly to near or beyond the end of the shell. The screw-driver provision *a* on the plug preferably consists of diametrically-opposite projections on the latter, flanked by flats *k* at each side.

According to one feature of improvement incident to my present invention the screw-driver provision of my improved cap consists of a notch *b*, traversing the end of the latter diametrically and flanked by arc-shaped and rounded portions *l*, so that the extremity of the cap is smooth and rounded and cannot injure the fingers in manipulating.

According to another feature of improvement the cap is formed with a bifurcated or hollow and open-ended screw-driver projection C, which when said projection is tubu-

lar is preferably formed with two notches *b*, and the internal socket *m* of which is of sufficient size to pass freely over the outer end of the stem I when the projection is inserted into the socket F for screwing in or out the plug, in which case the stem passes within the socket in the projection and cannot exert any tendency to throw the cap out of engagement with the plug, nor can the stem be injured or interfered with by the projection of the cap. The socket *m* is preferably a tubular extension of the cavity in the cap and is formed therein in any suitable way. In the construction shown the cap is formed by stamping, spinning, or drawing up a single sheet of metal into a tube opened at both ends, having the projection C at one end, the enlarged internal cavity *n*, and the contracted neck *o*, which latter is screw-threaded to screw over the external thread on the shell. A shoulder *p* at the bottom of the washer-socket *n* prevents escape of the washer H.

Another feature of improvement relates to the washer H, which is preferably a ring of packing material sprung into the socket *n* and having a central aperture or recess *w*, into which the stem I can freely pass. I prefer to introduce an antifriction member, as a disk of metal, between the washer H and the cap, so that the washer will not be twisted with the screwing on and off of the cap. Any suitable device may be used for this purpose; but according to the preferred form of my invention I provide an improved washer P, having an annular edge portion *r*, bearing on the ring H, and a central projection *s*, passing into the recess in the ring H and preventing inward distortion of the latter. The compression of the ring H against the edge of the shell makes a leak-tight joint around the edge, and the compression of the disk P against the ring completes the closure of the outer end of the shell.

In use the cap can be employed to apply or remove the plug without danger of impairing the valve-stem and without any disengagement of the cap by reason of the internal pressure, the cap remaining in engagement with the plug until drawn out of the socket. With a valve of the construction shown, the finger may be pressed on the stem, thus deflating the valve without requiring any special tool, and when the cap is placed upon the shell the stem may extend into the recess of the washer H without danger of accidental deflation.

It will be seen that my invention provides improvements which can be readily and advantageously availed of, and it will be understood that the invention is not limited in its employment to the particular details of construction, arrangement, and combination of the several features shown as constituting the preferred form of the invention, since it can be employed in whole or in part, according to such modifications as circumstances or the judgment of those skilled in the art may dictate, without departing from the spirit of the invention.

I claim as my invention the following-defined novel features, substantially as hereinbefore specified, namely:

1. In tire and other valves, a valve-shell having a screw-threaded socket, in combination with a screw-threaded plug screwing into said socket and having screw-driver provisions, a valve-stem projecting through said plug, and a screw-driver entering said socket having screw-driver provisions for engaging those of said plug, and having a recess for passing over said stem.

2. In tire and other valves, a shell having a screw-threaded socket, in combination with a plug screwing in said socket and having screw-driver projections, a valve-stem projecting into said socket, and a screw-driver for entering said socket having notches for engaging said projections, and having a recess for receiving said stem.

3. In tire and other valves, a valve-shell, in combination with a valve-stem projecting toward the end of said shell, a cap screwing over the end of said shell, and a ring of packing material in said cap compressed against the end of said shell to close the latter, and having a central perforation opposite the end of said stem, said cap having provisions for holding said ring against the end of the shell.

4. In tire and other valves, a valve-shell, in combination with a valve-stem projecting toward the end of said shell, a cap screwing over the end of said shell, and a ring of packing material in said cap compressed against the end of said shell to close the latter, and having a central perforation opposite and for receiving the end of said stem, and an antifriction-disk between said ring and cap.

5. In tire and other valves, a valve-shell, in combination with a valve-stem projecting toward the end of said shell, a cap screwing over the end of said shell, and a ring of packing material in said cap compressed against the end of said shell to close the latter, and having a central perforation opposite the end of said stem, and an antifriction-disk between said ring and cap having a projection entering the perforation in the ring and resisting inward distortion thereof.

6. For tire and other valves, a cap consisting of a body adapted to be screwed to the end of a valve-shell for closing it, and having a projection adapted to enter said shell and engage a plug within the same said projection having a screw-driver provision at one end, and a socket for receiving a valve-stem at that end.

7. In caps for tire and other valves, a tubular body open at both ends having a screw-thread at one end for engaging a valve-shell, a screw-driver projection at the other end for entering such valve-shell when the cap is reversed, a socket within said projection, and a packing material between said ends.

8. For tire and other valves, a cap for clos-

ing the end of a valve-shell, having a hollow screw-driver projection at one end adapted to enter said shell and engage a plug within the same said projection having transverse screw-driver notches.

9. For tire and other valves, a cap having a screw-threaded socket for screwing over the end of a valve-shell, a ring of packing material in said socket having a central perforation, and an antifriction member between said material and the cap.

10. For tire and other valves, a cap having a screw-threaded socket for screwing over the end of a valve-shell, a ring of packing material in said socket having a central perforation, and a member having a portion within said ring for preventing inward distortion thereof.

11. For tire and other valves, a cap having a screw-threaded socket for screwing over a valve-shell, a ring of packing material within said cap, and a disk between said material and cap having a projection entering said ring for preventing inward distortion thereof.

12. In caps for tire and other valves, a cap consisting of a single piece of sheet metal having a hollow interior open at both ends and having provisions for retaining a packing, and a separate part within and closing communication through said cap.

13. For tire and other valves, a cap having a screw-threaded socket for screwing over a valve-shell, a ring of packing material within said cap, and means carried by said cap for preventing inward distortion of the ring.

14. For tire and other valves, a cap having a screw-threaded socket for screwing over a valve-shell, a ring of packing material within said cap, and means carried by said cap and entering said ring for preventing inward distortion of the ring.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

GEORGE H. F. SCHRADER.

Witnesses:

GEORGE H. FRASER,

THOMAS F. WALLACE.