

(No Model.)

G. H. F. SCHRADER.  
TIRE VALVE, &c.

No. 604,425.

Patented May 24, 1898.

FIG. 2.

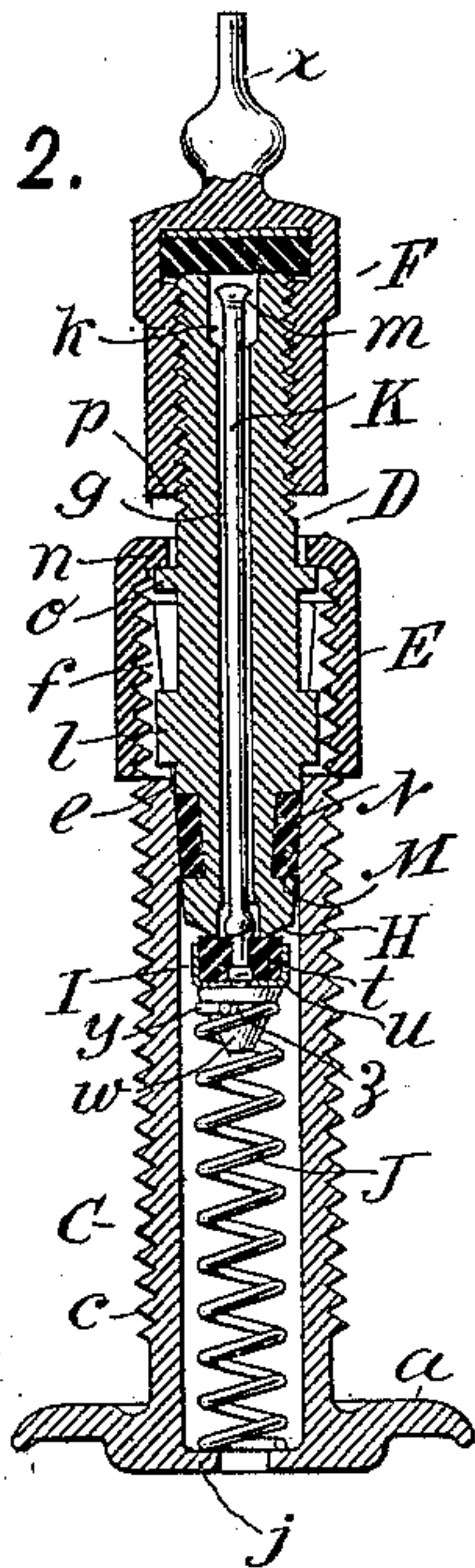


FIG. 1.

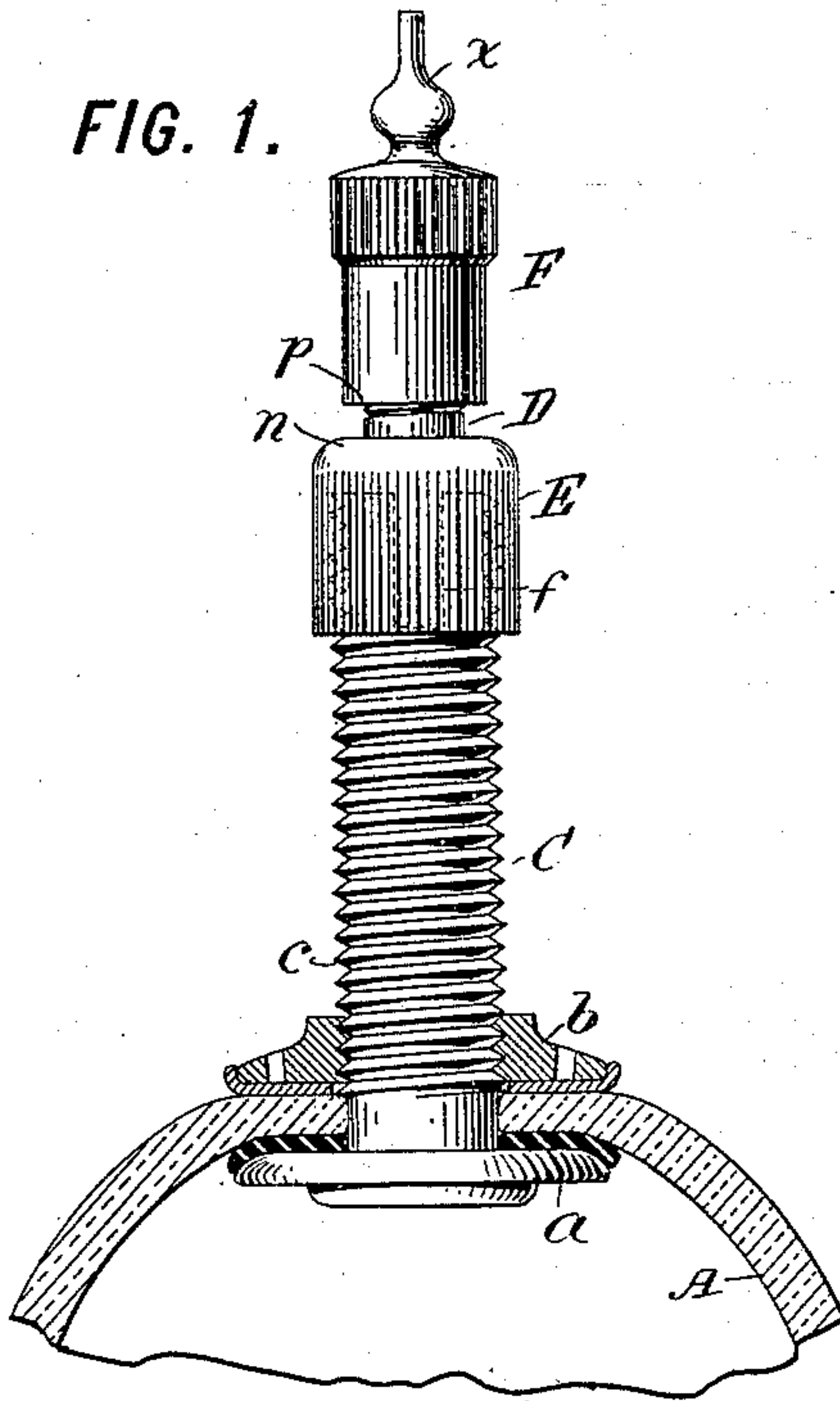


FIG. 3.

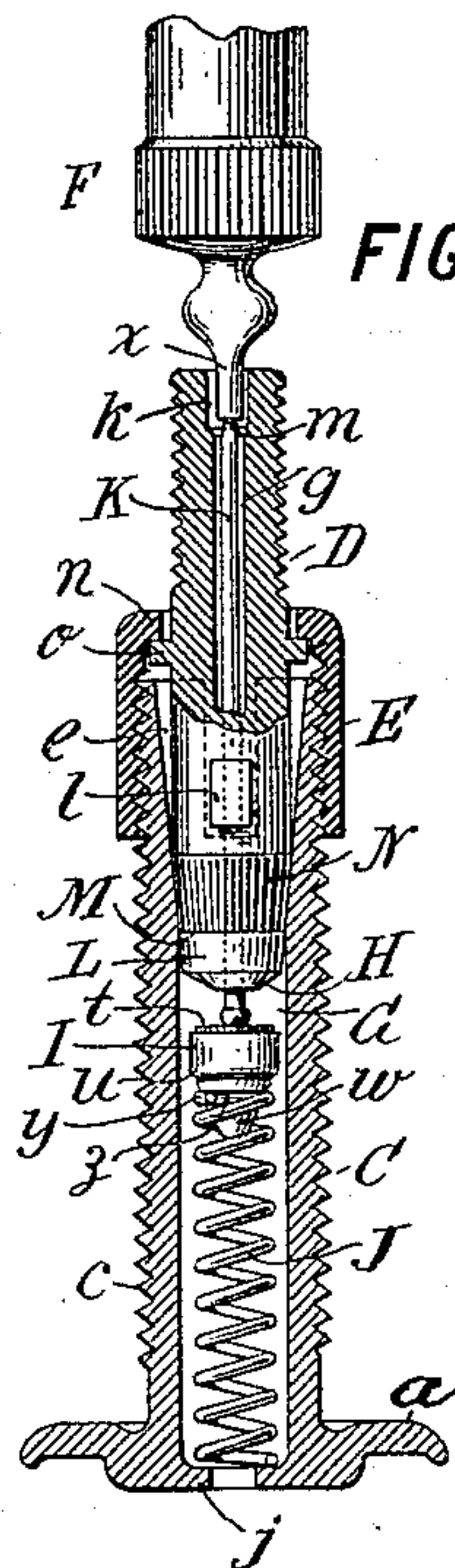


FIG. 5.

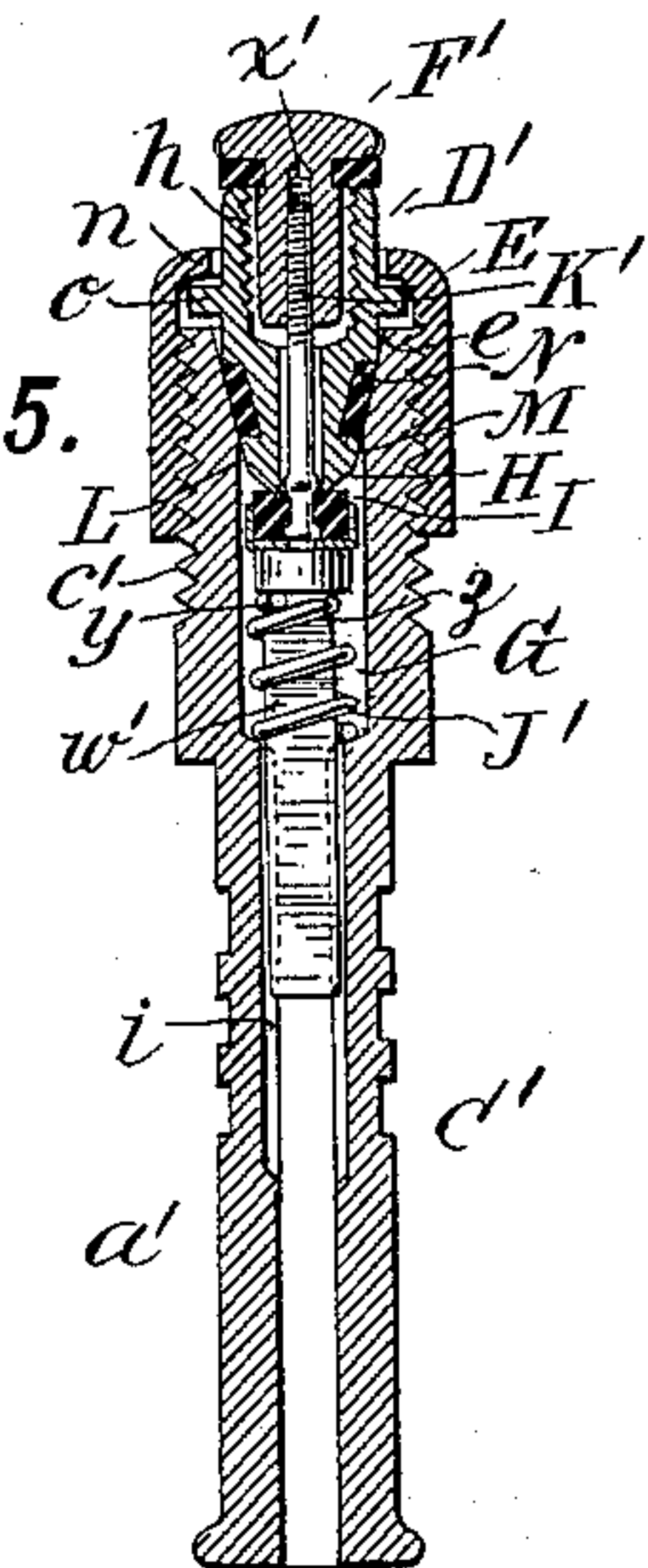


FIG. 4.

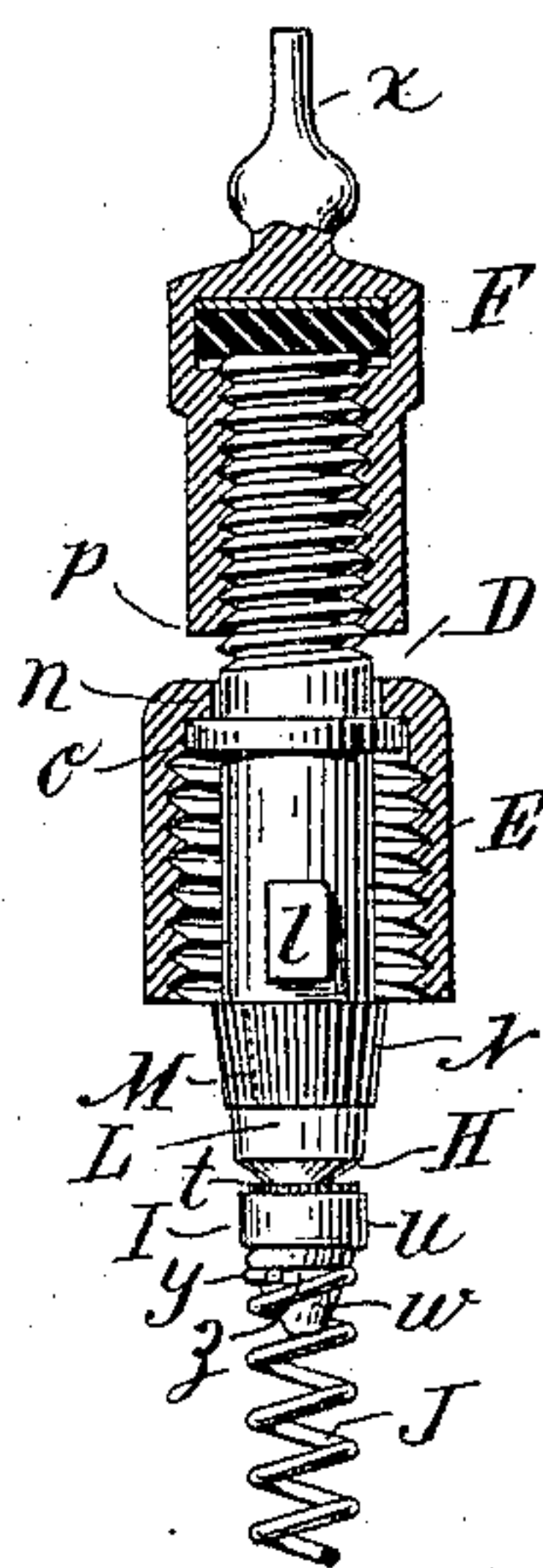
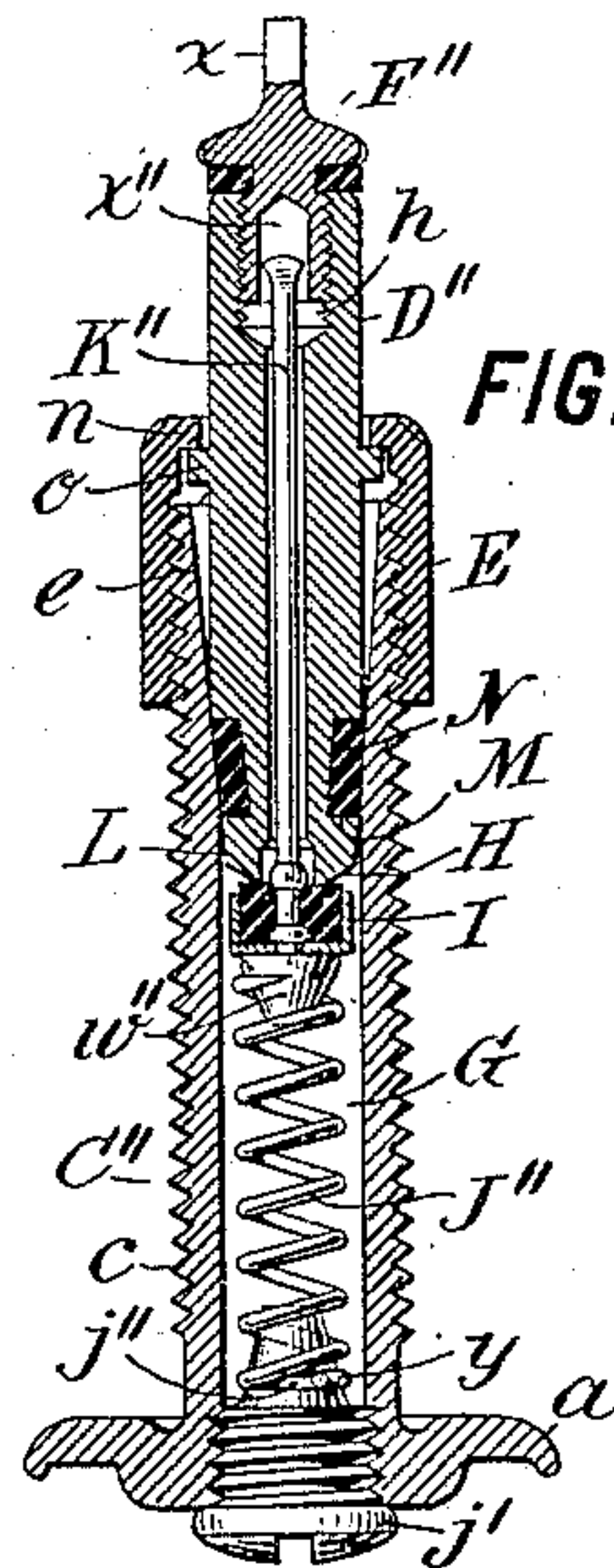


FIG. 6.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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

## TIRE-VALVE, &c.

SPECIFICATION forming part of Letters Patent No. 604,425, dated May 24, 1898.

Application filed November 19, 1896. Serial No. 612,667. (No model.) Patented in England December 3, 1896, No. 27,532; in France December 8, 1896, No. 262,009; in Belgium December 9, 1896, No. 125,090, and in Austria January 7, 1897, No. 47/57.

*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 the Like, (which have been patented in Great Britain December 3, 1896, No. 27,532; in France December 8, 1896, No. 262,009; in Belgium December 9, 1896, No. 125,090, and in Austria January 7, 1897, No. 47/57,) of which the following is a specification.

This invention relates to air-valves for tires and the like, and aims to provide certain improvements therein.

The invention especially relates to the class of valve at present in use in which a metal tube, hereinafter called a "valve-tube," is clamped to the tire or is clamped within a cot on the tire in permanent manner and has a conical socket at its outer end, into which a valve member is clamped by a sleeve swiveled on the member and screwing on the valve-tube. In one common construction of this kind the valve member has a reduced cylindrical end, over which a rubber tube is drawn, the tube covering a cross-port in the end and serving as a valve proper therefor, while above this point it serves as a packing-washer.

My invention provides a valve member which can be coupled to the valve-tube with a leak-tight joint, and which shall have a separate valve proper independent of this joint, and which is preferably irremovably connected to the member, so that the function of the valve proper need not be impaired by adjusting the valve member relatively to the valve-tube, the valve proper cannot be lost, and the valve can be deflated without necessitating removal of the valve member. I also provide certain other features of improvement, which will be hereinafter more fully set forth.

In the accompanying drawings, Figure 1 is a cross-section of a pneumatic tire, showing its valve-tube and my improved valve in side elevation. Fig. 2 is an axial section of the preferred form of the improved valve applied to the valve-tube. Fig. 3 is a similar view, the valve member, cap, and valve being shown

partly in elevation and the cap being inverted to hold the valve proper in the open position. Fig. 4 is a fragmentary side elevation of the valve member, valve proper, and spring, the cap and coupling-sleeve being shown in section. Fig. 5 is an axial section showing a modification, and Fig. 6 is a similar view showing another modification.

Referring to the drawings, let A represent a tire; C, the valve-tube thereof; D, the valve-member; E, the coupling-sleeve, and F the dust-cap.

The valve-tube is a metal tube having a flange *a* passing within the tire and a nut *b* screwing against the tire and clamping it between the nut and flange, as usual. The tube C has an external thread *c*, an internal chamber G, a tapering socket *e* at its upper end, and a bottom projection *j* at the end of its chamber G, as usual. It is notched at *f* at one or more points of its outer end. The valve member D is a tubular member fitting in the end of the tube C, having lugs *l* fitting the notches *f* of the tube and surrounded by the sleeve E, which has an internal screw-thread engaging the thread of the tube C and an internal shoulder *n* bearing against an external shoulder *o* on the member D to hold the latter in the tube. Beyond the sleeve the valve member is screw-threaded, and its screw-thread is engaged by a reciprocal thread on the cap F, as usual.

According to one feature of my invention the valve member D is constructed with an annular seat H on its inner end, with an inlet-conduit *g* extending from its outer end and opening through this seat axially of the member and having an enlargement *k* at its outer end, and externally the valve member is constructed with a tapering end L, fitting in the socket *e* and extending from the seat H outwardly and having a groove M around this end where it passes within the socket, in which groove is an annular packing-washer N, which is compressed between the member and tube when the member is forced into the socket, and thereby makes a leak-tight joint between these parts independently of the valve proper.

According to another feature of improve-



ment the valve proper, I, is secured to the member D opposite the seat H thereof in such manner that it cannot be accidentally disconnected therefrom, but is free to move independently thereof to open or close the valve. This valve proper consists of a ring or washer *t* of packing material, inclosed in a flange *u*, carried by the head *w* of an elongated valve-stem K, which passes through the inlet *g* and is preferably secured therein by having an enlargement *m* within the enlargement *k* of the inlet and sufficiently close to the outer end thereof to be within reach of the finger *x* of the cap when the latter is inverted and pressed into the inlet, so that thereby the valve can be unseated, as shown in Fig. 3.

According to another feature of improvement the spring J for the valve proper is secured against accidental loss preferably by being fixed to the end of the valve proper—as, for example, by having its end *y* bent into a groove *z* in the head *w*.

According to another feature of improvement the sleeve E is connected to the valve member D, so that its loss therefrom will be prevented, and it can be employed both to remove the member from, as well as to couple it to, the tube by means of the cap F, the lower end *p* of which is extended sufficiently toward the flange *n* of the sleeve to engage this flange when the sleeve is moved outwardly, and thereby cause further movement of the sleeve to necessitate movement of the valve member with it.

As thus far described, it will be seen that the member D, with its valve proper, I, and sleeve E, comprises an attachment ready for application to any tube C, which can be sold in this form and can be applied to the tube by any ordinary person when required and that there is no danger of loss of the valve proper from the valve member or of its dislocation or impairment during application or removal. When the spring J is employed as described and the cap F is constructed as shown, the parts will all be connected together against loss or displacement.

In use the valve member will be removed while the valve-tube is being applied to the tire, especially in case the tube is vulcanized to the tire, and afterward the valve member and its parts will be applied when required. In case of impairment of the latter it will be uncoupled and a new one substituted for it without the necessity of tampering with the connection between the valve-tube and tire.

It will be seen that my invention provides improvements in tire and other valves which can be readily and advantageously availed of, and it will be understood that the invention is not limited to the particular details of construction, combination, and arrangement set forth as constituting its preferred form, but that it can be modified as circumstances or the judgment of those skilled in the art may dictate without departing from the spirit of the invention.

In the construction shown in Fig. 5 the valve-tube C' has its lower end *a'* adapted for insertion in the cot of a tire, in which it may be clamped or suitably fixed, and has its screw-thread *c'* at its outer end only, beyond which it has a tapering socket *e*, into which the tapering end L of the valve member D' is clamped by the sleeve E, as before described. The valve member has the described groove M and packing-ring N for making a tight joint and has an annular seat H on its inner end within the valve-chamber G in the tube, while at its outer end it has an internally-threaded socket *h*, by means of which a pump-coupling may be connected to the valve for inflating, the inlet *g* extending from this socket to the seat H. The cap F' here has an internal thread *x'*, engaging the threaded end of the stem K' of the valve proper, I, for drawing the latter against the seat when the cap is screwed in one direction and for unseating it to permit deflation when the cap is screwed in the other direction. The head *w'* of the valve-stem is here extended as a flat guiding-tail working in grooves *i* in the tube C' to prevent rotation of the stem. The spring J' is inseparably connected to the stem by having its end *y* pressed into a notch *z* therein, as before described.

In the modification shown in Fig. 6 the tube C'' is a shoe-tube like that first described, except that its lower end is internally screw-threaded and is partly closed by a screw-plug *j'*, having a groove *j''* on its end within the chamber G, to which plug the spring J'' is secured by having its end *y* bent into said groove, the other end of the spring loosely engaging the head *w''* of the valve-stem K'', so that loss of the spring is prevented by its being connected to the valve-tube instead of the valve member. In this construction the valve member D'' has the screw-threaded socket *h* at its outer end, into which the cap F'' screws, which cap has an inner socket *x''*, freely passing over the end of the valve-stem, and an outer finger *x*, adapted to be inserted in the socket for pressing inwardly the valve-stem to move the valve proper, I, from its seat H for deflating the valve. In other respects the parts are similar to those first described, the member D'' having a tapering end L fitting into the recess *e* and having a groove M and washer N for making a tight joint. The sleeve E is here freely separable from the member D'', merely serving to force this member into the valve-tube.

What I claim is—

1. In tire and other valves, a valve member adapted to be coupled to the end of a valve-tube, consisting of a tubular member having an end for fitting within the hollow end of said tube, an annular seat beyond such portion, an inlet leading from its outer end to and opening at such seat, and an annular groove surrounding the end of its body which enters within the end of such tube, a packing-washer in said groove for entering entirely



into the hollow interior of such tube for making a leak-tight joint between said member and such valve-tube, said member having a wall above said groove for passing into the hollow end of said tube outwardly of said washer and holding the latter therein, and a coupling swiveled to said member for screwing on said tube and coupling the member thereto, whereby said ring can be clamped between the outer wall of said member and the internal wall of said tube and a leak-tight joint between the two, inwardly of the outer end of the latter, can be made.

2. In tire-valves and the like, a tubular member having a tapering end for fitting into the hollow interior of a valve-tube, having an annular seat beyond such portion, for passing into the valve-chamber of such tube, and an inlet leading from its outer end to said seat, a coupling swiveled to said member outwardly of its tapering end for clamping it to said tube, a valve proper beyond said member movable axially of it and seating on its inner end, and means securing said valve proper movably to said member and preventing its accidental escape therefrom.

3. In tire and other valves, a valve-tube, having a valve-chamber and an enlarged socket leading thereto, in combination with a valve member comprising a tubular part having a tapering portion near one end adapted to fit entirely into the socket of said tube, having an annular groove surrounding such portion and passing entirely into such tube, an annular seat beyond such portion, and an inlet extending through it from its outer end to said seat, a valve proper secured to said member opposite the seat thereof, and movable axially of the member, and a coupling swiveled to said member outwardly of its tapering end for coupling it to a valve-tube.

4. In tire and other valves, a valve-tube, having an open socket in its end, in combination with a tubular valve member, having a valve-seat, an inner end fitting into the socket of said tube, an outer shoulder out-

wardly of said end, and a screw-thread for receiving a cap, a valve proper carried by said member movable axially thereof and engaging said seat, a cap screwing onto said member and having a shoulder outwardly of the shoulder thereof, and an internally-screw-threaded sleeve outwardly of said seat, surrounding said member and having an internal flange between the shoulder thereof and the shoulder of said cap, whereby said shoulders retain said sleeve on said member, substantially as and for the purpose set forth.

5. For tire and other valves, a valve proper, and a spiral spring therefor irremovably connected together.

6. For tire and other valves, a tubular member having a seat, an inlet leading through it to said seat, and having an end for entering into the hollow interior of a valve-tube, and a shoulder outwardly thereof, in combination with a sleeve swiveled to said member for coupling it to such tube, engaging said shoulder and held thereby outwardly of said end, and a valve proper engaging said seat and having a stem traversing said inlet and permanently and irremovably fixed therein.

7. In tire and other valves, a valve member D, having outer shoulder o, reduced portion L for fitting into the hollow interior of a tire-tube, and groove M on its exterior, surrounding such portion having an inlet g extending through it, and a valve-seat H on its end, in combination with a valve proper I engaging said seat at the inner end of said member, a sleeve E swiveled to said member outwardly of said groove and engaging said shoulder, a packing-ring in said groove for passing entirely into such tube, and a cap for said member.

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.