

No. 685,649.

Patented Oct. 29, 1901.

G. H. F. SCHRADER.
TIRE OR OTHER VALVE.

(Application filed Apr. 8, 1897.)

(No Model.)

FIG. 1.

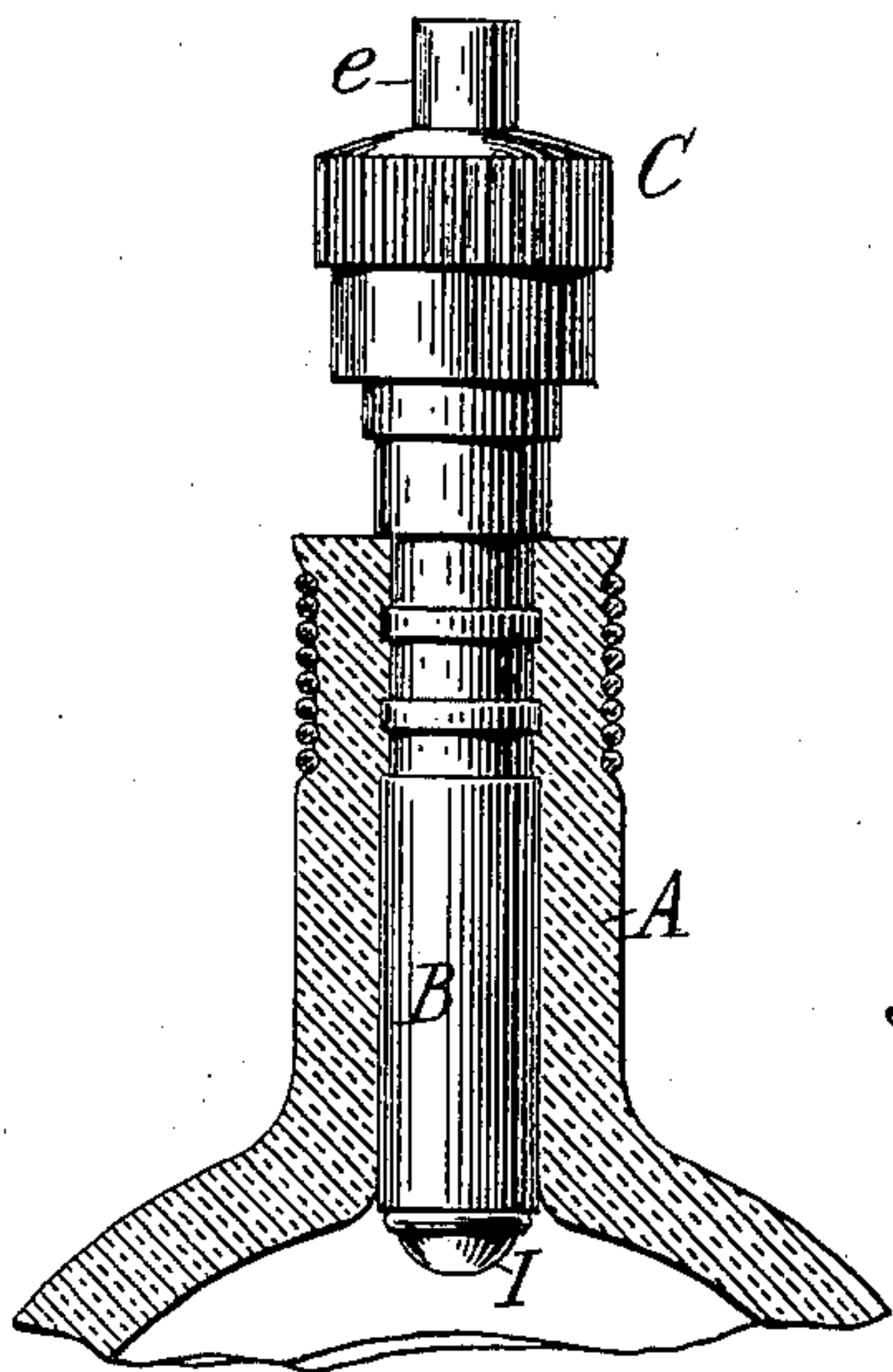


FIG. 2.

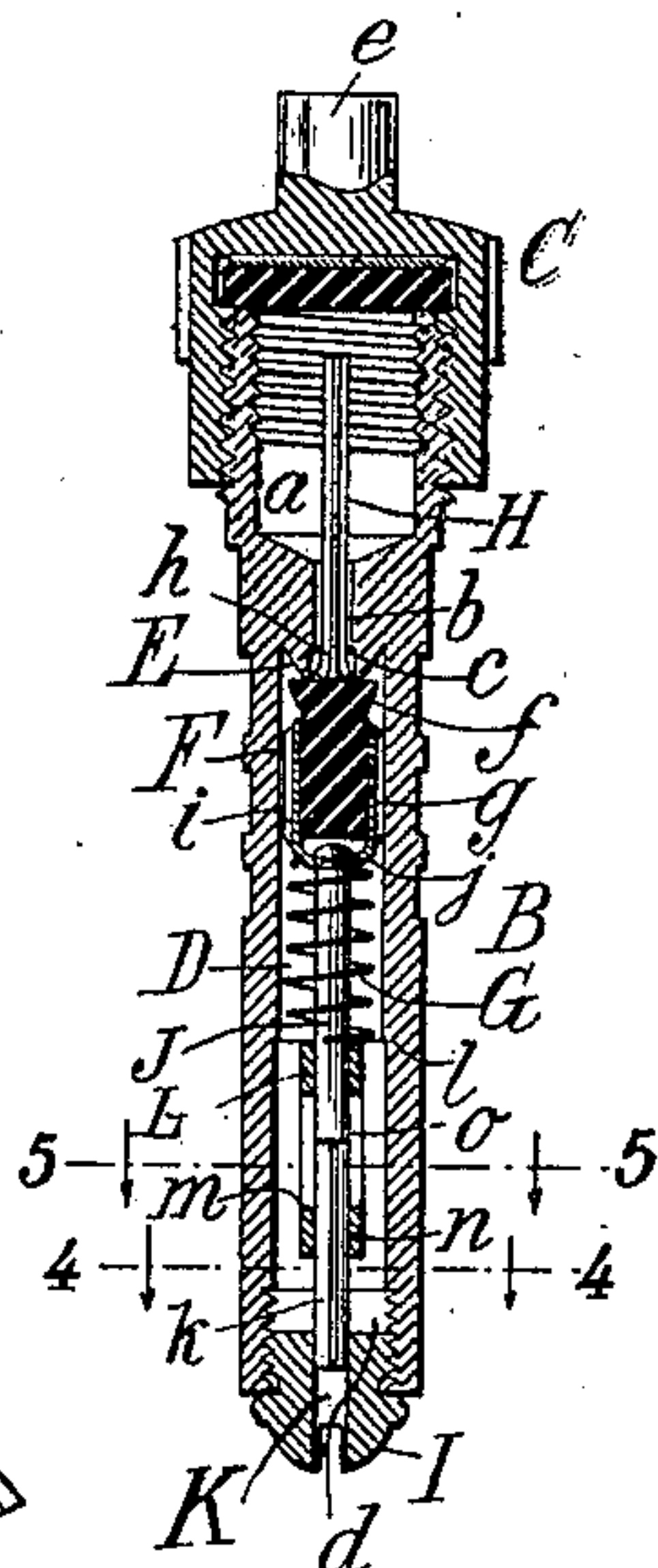


FIG. 3.

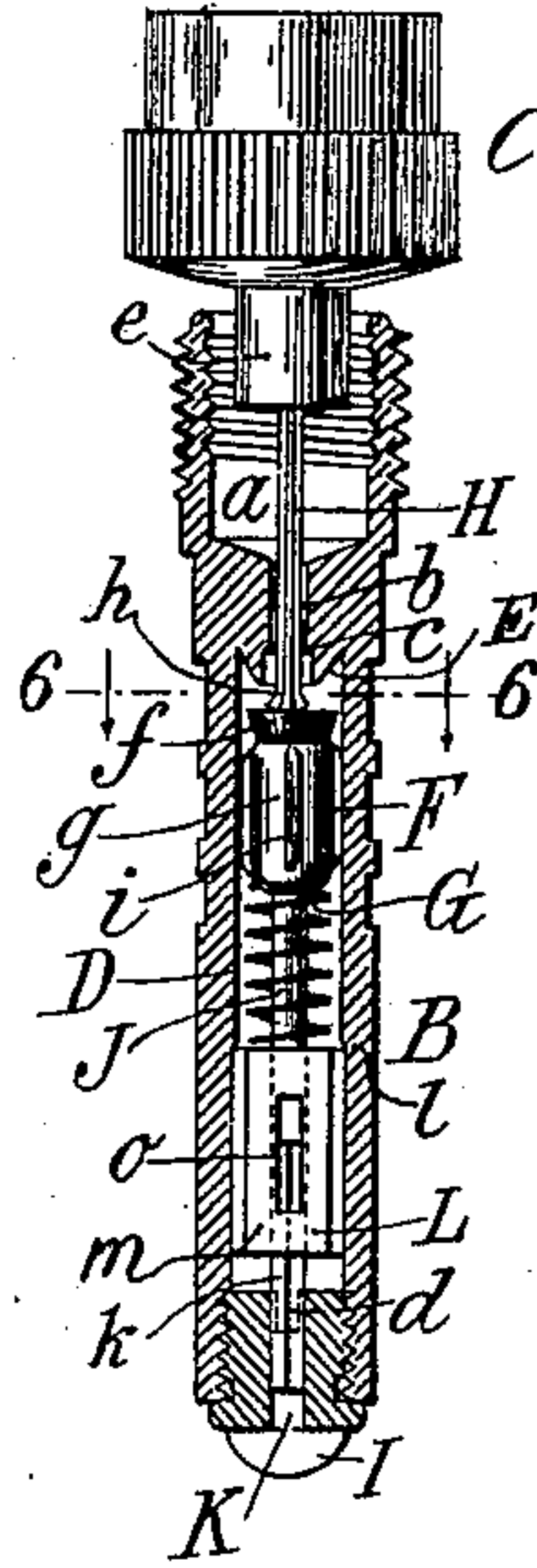


FIG. 4.

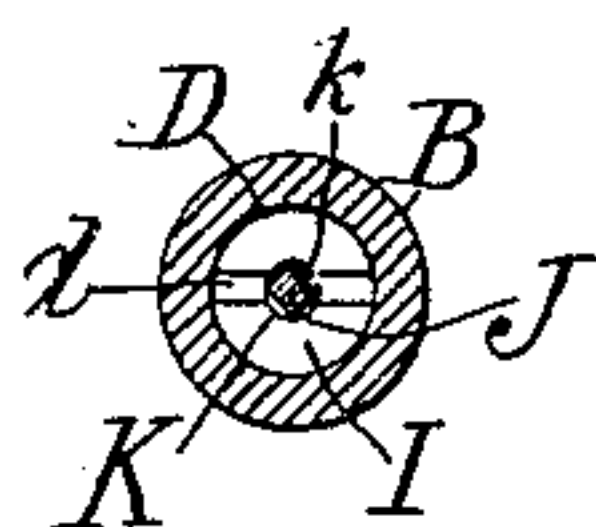


FIG. 5.

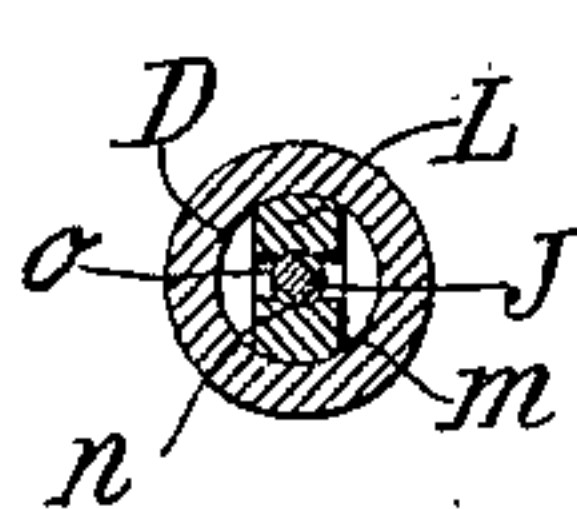


FIG. 6.

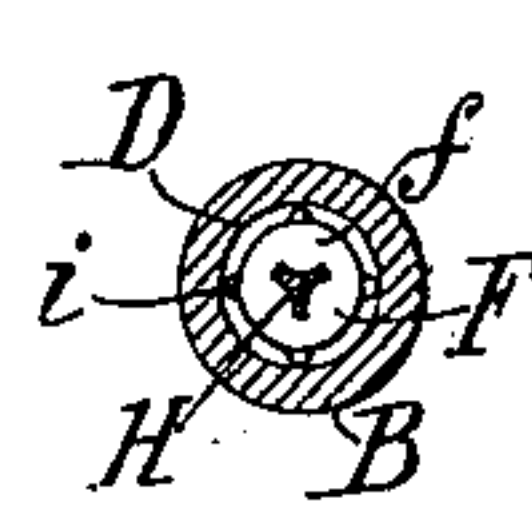


FIG. 8.

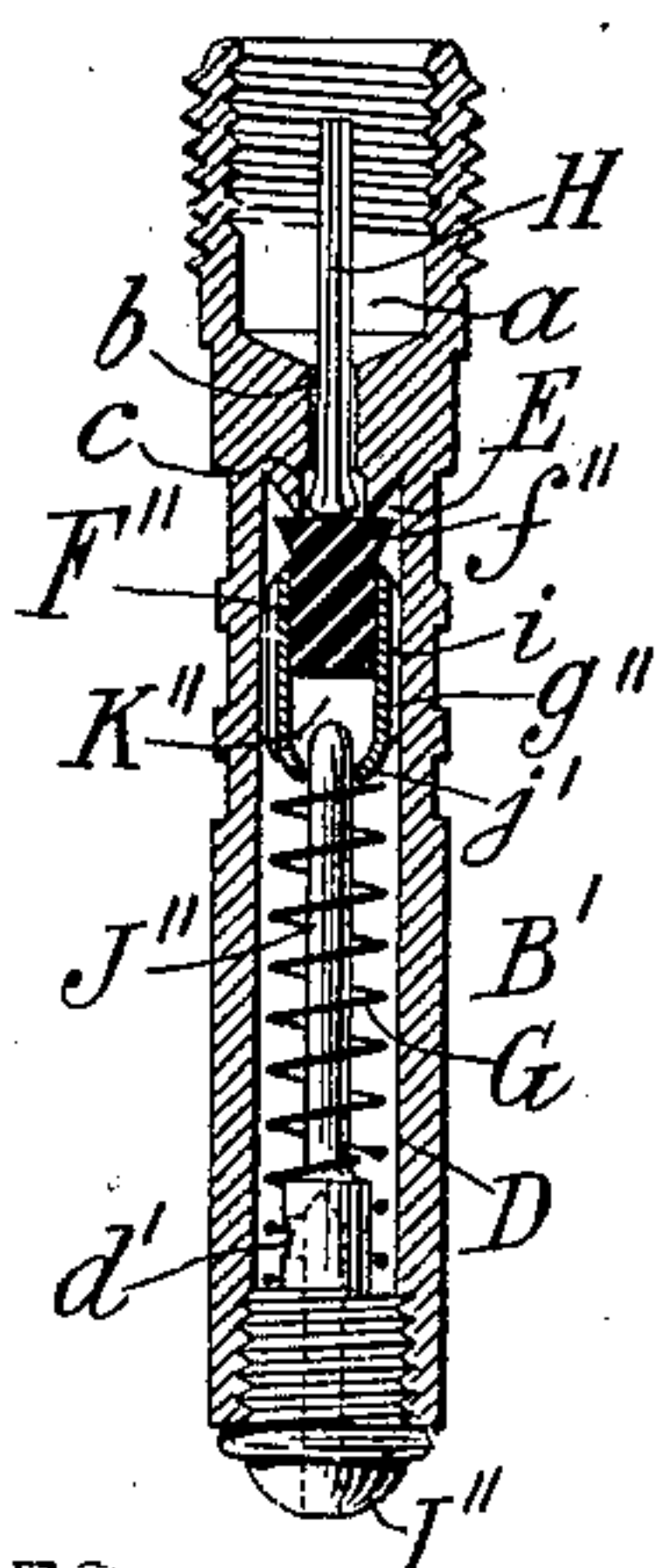


FIG. 7.

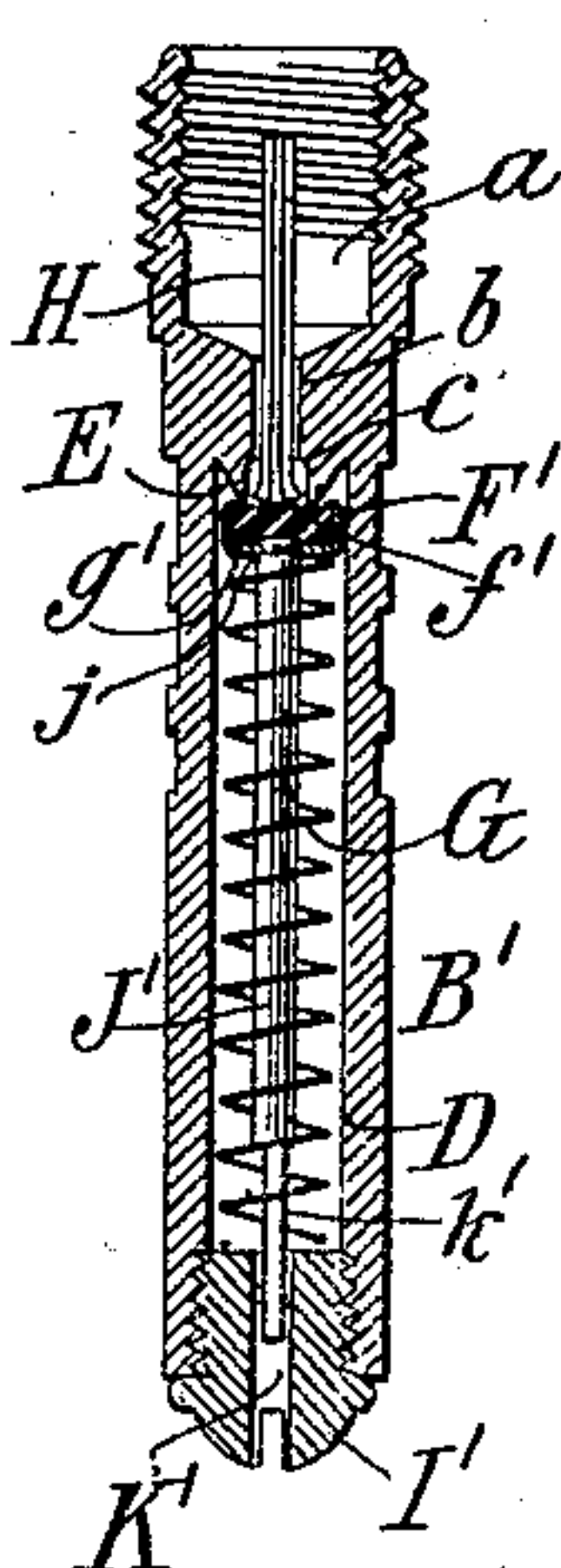
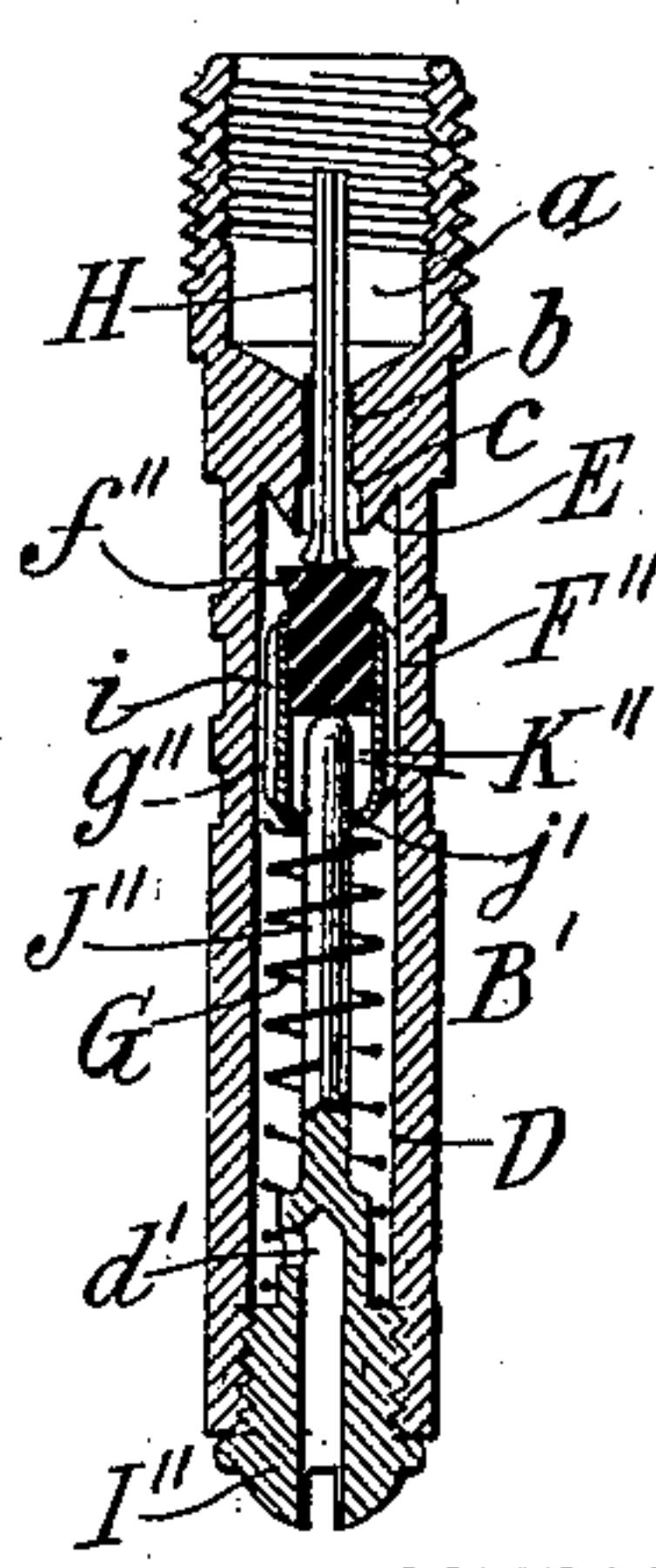


FIG. 9.



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UNITED STATES PATENT OFFICE.

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

TIRE OR OTHER VALVE.

SPECIFICATION forming part of Letters Patent No. 685,649, dated October 29, 1901.

Application filed April 8, 1897. Serial No. 631,250. (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 or other Valves, of which the following is a specification.

This invention relates to pneumatic and other valves of the class known as "tire-valves," and aims to provide certain improvements therein.

Heretofore tire-valves have been constructed with a shell having an internal valve-chamber and seat, a valve proper within the chamber, and a spring for seating the valve proper. Imperforate plugs and disks have been used as the valve proper and have been guided by the walls of the valve-chamber. In some cases a stem-valve has been used, and in others a separate deflating-pin has been employed. Various constructions of valves of this class have heretofore been invented by me.

My present invention provides improved means for guiding the valve proper, improvements in the construction of the valve proper, and certain other features of improvement, all of which will be fully hereinafter set forth.

In the accompanying drawings, which illustrate certain adaptations of my present improvement, Figure 1 is a side elevation of one form of tire-valve fixed to the cot of a pneumatic tire, the cot and tire being shown fragmentarily in section. Fig. 2 is a vertical axial section thereof, the parts being in a closed position. Fig. 3 is an axial section of the valve-shell, showing the internal parts in elevation and in the open position. Figs. 4 and 5 are respectively cross-sections on the lines 4 4 and 5 5 of Fig. 2, and Fig. 6 is a cross-section on the line 6 6 of Fig. 3. Fig. 7 is an axial section showing a modification. Fig. 8 is a similar view showing another modification, and Fig. 9 is a like view showing the valves in Fig. 8 in the open position.

The valves shown are all of the style known as "cot-valves;" but my improvements are equally applicable to any other construction of valve.

In the drawings, A represents a tire; B, the shell of a tire-valve; C, the cap thereof; D, the valve-chamber; E, the valve-seat; F, the

valve proper; G, the valve-spring; H, the deflater, and I the plug closing the inner end of the shell. These parts may be of any usual or suitable construction, the example taken being chosen as a convenient construction of valve to which my improvements are applicable. In this construction the shell is tubular and has an outer screw-threaded socket *a*, a contracted neck *b*, leading to the seat, a shoulder *c* in this neck, and a duct *d* through the plug I, communication through the shell traversing these parts and the valve-chamber by passing around the valve proper when the latter is unseated. The cap screws on the usual outer thread of the shell and has a finger *e* for entering the socket and depressing the deflater to unseat the valve proper.

The valve proper shown consists of an imperforate piece of rubber or other packing material *f* and an inclosing holder *g*. The deflater and valve proper are separate and independently-movable parts, the deflater being confined within the shell by an enlarged end *h*, which cannot pass the shoulder *c* in the neck and which rests against the body *f* when pressed inwardly for unseating the valve.

Referring now to Figs. 1 to 6, I will first describe in detail the preferred form of my present improvements. According to one feature of improvement I construct the valve proper with longitudinal external guiding-ribs *i*, which project from its sides and make a suitable fit with the cylindrical walls of the chamber D and leave spaces between them for the free passage of air. These ribs are preferably formed in the wall of the casing *g*, which is shown as a stamped-metal cup having portions of its side walls bent or creased outwardly to form projections constituting the ribs *i*. According to another feature of improvement I provide a valve proper of the imperforate type with guiding provisions at its inner or egress side—that is, the side remote from the seat—these provisions constituting reciprocal faces carried by the valve proper and the shell at the egress side and in sliding engagement sufficient to preserve the position of the valve within the chamber, while not interfering with its proper movement. Preferably the valve is provided with an inwardly-projecting rigid tail J and the

plug with a smooth guiding-socket K, receiving this tail, remote from the valve proper. The tail J may be suitably constructed and connected to the valve proper. I prefer to
 5 form it of a cylindrical rod, the upper end of which is riveted to the casing *g* by being passed through a hole *j* in the bottom thereof and swaged to overhang this hole within the casing below the plug *f* and to provide a free
 10 passage-way between the rod and the socket by cutting away a part *k* of the rod at its lower end—for example, by squaring it there, as shown. The guiding-walls K are preferably formed in the plug I, these walls being
 15 in the construction shown also the walls of part of the duct *d*. The rod extends from the valve proper to the plug and sufficiently within the latter to give the requisite guiding engagement. I preferably provide also
 20 an intermediate guide for the tail of the valve proper. This is shown as a tubular part L, fixed within the chamber G and located therein by a shoulder *l*. This part bridges the chamber and has cut-away sides *m*, permitting free passage-way through the chamber,
 25 a cylindrical bore *n*, fitting the tail J, and a cross-cut *o*, exposing the tail at its side. This part in the construction shown surrounds at its top the cylindrical part of the tail and at
 30 its bottom the cut-away part thereof and suffices as a bridge for carrying the spring G. The valve-chamber is shown as slightly enlarged to receive the part L and provide the shoulder *l* therefor.

35 In use the valve proper will be properly guided in the construction shown both near its seating end, at the extremity of its tail, and intermediate of these points. This permits a sufficiently free fit to give great sensitivity of action and still avoids any danger of disadvantage from looseness. All liability of the valve to become improperly seated or to catch or cant is obviated. The side ribs will remove any danger of the spring
 45 jamming between the chamber and casing. With imperforate valves these dangers have been material, and guiding other than through the length of the valve proper itself has been difficult, if not impossible, of attainment.
 50

In operation the improved valve will be used as former valves of this class have been, the separate deflating-pin being employed or not, as desired. The valve proper
 55 will unseat to permit inflow and seat to prevent outflow, the air passing in the space or spaces between the walls of the casing and shell.

60 It will be understood that my invention provides improvements which can be readily and advantageously availed of in whole or in part and that I do not limit myself to the particular details of construction and combination set forth as constituting the preferred
 65 form of the invention, but that the invention can be employed in whole or in part, accord-

ing to such modifications or combinations of its several features of improvement as circumstances or the judgment of those skilled in the art may dictate, without departing from 70 the spirit of the invention.

In the construction shown in Fig. 7 the intermediate guide is omitted, the tail J' being here flattened at its end *k'* and guided by the socket K' in the plug I'. The shell B' has its 75 valve-chamber of uniform diameter, and the valve proper, F', consists of a thin flat imperforate disk of rubber *f'* instead of the elongated cylindrical plug before described, which disk is fixed within the inturned edge 80 of a shallow metal casing or cup *g'*, to which the tail is fixed. No guiding-ribs are shown on this cup.

In the modification shown in Figs. 8 and 9 the shell B' is of the same construction as 85 that shown in Fig. 7, and the valve proper, F'', consists of a short imperforate plug *f''* and a long metal casing *g''*, the guiding-socket K'' being in this instance formed in the valve proper or the casing thereof, while the guiding-tail J'' is in this instance formed on or carried by the plug I'. The casing *g''* has the ribs *i*, before described, and extends a considerable distance below the plug, having a large hole *j'* in its lower end. The guiding-tail 95 J'' is shown as a finger projecting from the plug I' nearly to the valve and entering the hole in the casing, so that the end of the finger projects into the socket K''. The casing is thus guided in its vertical movements by the 100 finger. The end of the finger strikes the plug *f''* and arrests inward movement of the valve proper. The outlet-duct through the plug is here lettered *d'*. A spring G is shown as surrounding the tail J'' between the plug 105 and valve proper.

What I claim is—

1. The improved valve proper for tire and other valves, comprising a body of packing material, and a casing inclosing said body 110 and having external ribs for engaging the walls of a valve-chamber.

2. The improved valve proper for tire and other valves, consisting of a body of packing material, and a sheet-metal cup inclosing and 115 holding said material, and having outwardly-bent projections in its side walls, substantially as and for the purpose set forth.

3. The improved valve proper for tire and other valves comprising a carrier having a 120 hole through it, a guiding-tail passing into said hole at one end of said carrier, and a packing material held at the other end thereof.

4. The improved valve proper for tire and other valves comprising a carrier having a 125 hole through it, a guiding-tail passing into and fixed in said hole at one end of said carrier, and a packing material held at the other end thereof.

5. The improved valve proper for tire and 130 other valves comprising a carrier having a hole through it, and passage-ways for a fluid,

a guiding-tail passing into said hole at one end of said carrier, and a packing material held at the other end thereof.

5 6. In tire and other valves, a valve-shell having a valve-chamber, a seat at one end of said chamber and an egress-passage at the other end thereof, in combination with a stemless valve proper in said chamber, closing with the pressure, having at the ingress
10 side a face engaging said seat, said valve-shell and valve proper having beyond the egress side of the latter reciprocal guiding-faces guiding the valve proper in its movements toward and from said seat, and a pas-
15 sage-way between said guiding-faces permitting outflow from said chamber.

7. In tire and other valves, a valve-shell having a chamber, a seat at one end of said chamber and an egress-passage at the other
20 end thereof, in combination with a stemless valve proper in said chamber, closing with the pressure and having a face at its ingress end engaging said seat, said shell and valve proper having at the egress side of the latter
25 the one a guiding projection and the other a guiding-socket receiving such projection, and a passage-way through said guiding-socket for outflow from said chamber.

8. In tire and other valves, a valve-shell

30 having a valve-chamber and seat, in combination with a stemless valve proper in said chamber engaging the seat and having a projecting guiding-tail, and a separate rigid piece carried by said shell and having a socket receiving and guiding said tail. 35

9. In tire and other valves, a shell having an elongated valve-chamber and a seat, in combination with a valve proper in said chamber, a guiding projection at the egress side of said valve proper, and a separate rigid part inter-
40 mediate of the ends of said chamber having a socket receiving and guiding said projection.

10. In tire and other valves, the shell F having seat E and chamber G, in combination with a plug I closing said shell, and
45 having a guiding-socket K, a part L in said chamber, having a guiding-socket *n* and a cut-away portion *m*, and a valve proper engaging said seat and having a projection entering and guided in said socket. 50

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

GEORGE H. F. SCHRADER.

Witnesses:

GEORGE H. FRASER,
RENÉ BRUINE.