(No Model.)

G. H. F. SCHRADER.

VALVE PROPER FOR TIRE OR OTHER VALVES.

No. 591,886. Patented Oct. 19, 1897.

FIG. 1.

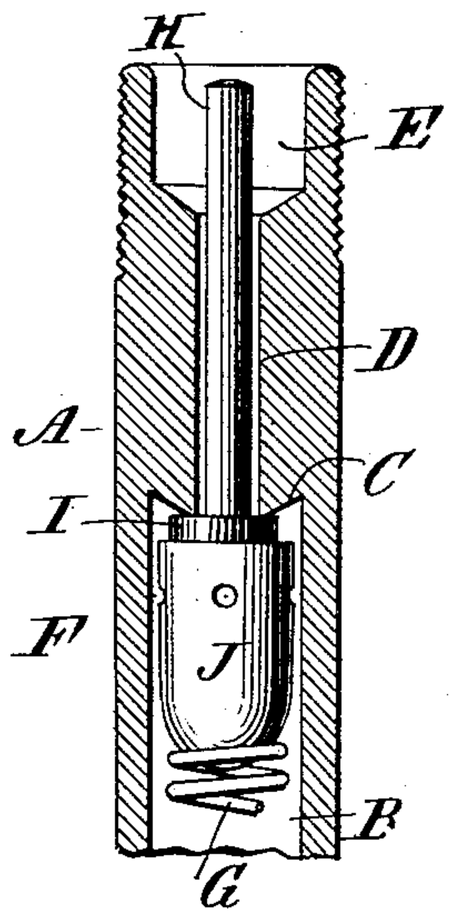


FIG. 2.

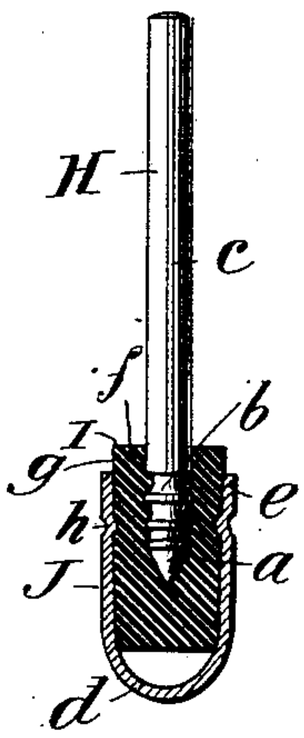


FIG. 3.

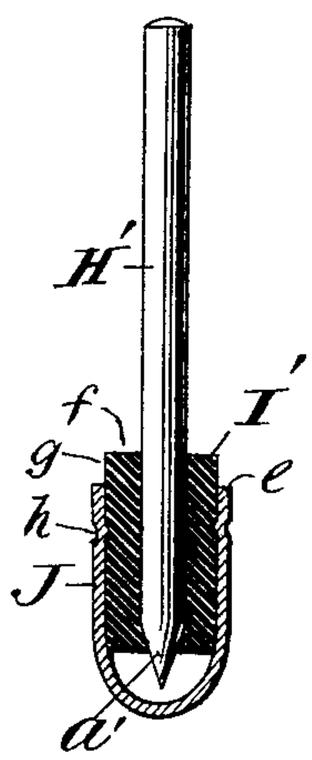


FIG. 4.

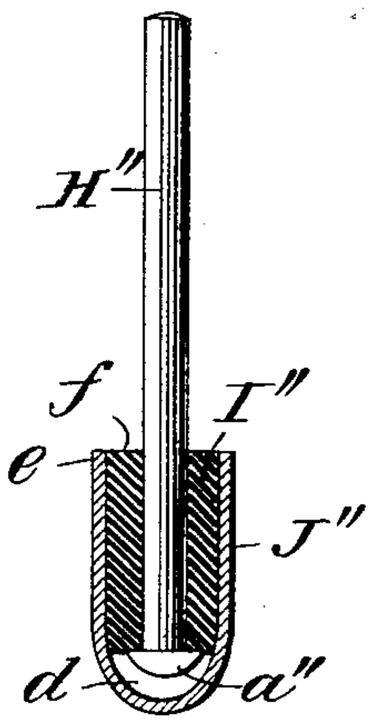
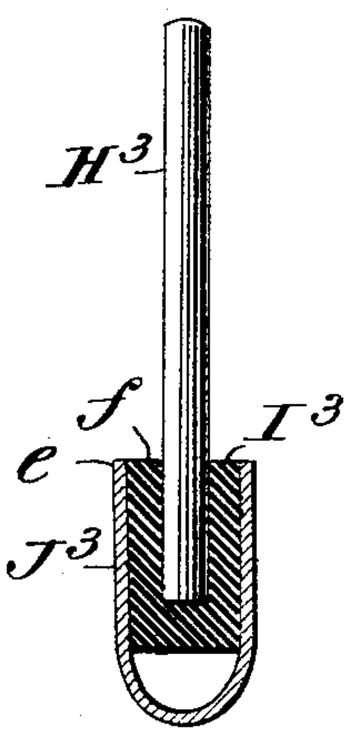


FIG. 5.



WITNESSES:

Fred Whitz

Thomas F Wallace

INVENTOR:

George H. F. Schrader,

By his Attorneys.

Arthur C. Fraser & Co.

UNITED STATES PATENT OFFICE.

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

VALVE PROPER FOR TIRE OR OTHER VALVES.

SPECIFICATION forming part of Letters Patent No. 591,886, dated October 19, 1897.

Application filed November 28, 1896. Serial No. 613,762. (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 Valves Proper for Tire and other Valves, of which the following is a specification.

This invention relates to valves, and aims to provide an improved valve proper, applicable to valves generally, but especially adapted for pneumatic and other valves of small caliber.

Heretofore for tire-valves, in which the valve-chamber is extremely small of diameter, to bring the diameter of the valve-shell within standard limits, it has been customary to employ a metal stem having a head on which is seated a rubber ring for the valve proper, the ring sometimes being inclosed at its sides by a flange to prevent distortion, and the stem projecting through the valve-seat has a stem by which the valve can be manipulated for deflating it. With this construction the parts are delicate and fragile and difficult of construction, while there is danger of leakage because of the numerous joints between the parts. To obviate the latter danger, stemless valves have been employed consisting of an imperforate rubber plug incased in a metal cup and a separate deflating-pin fastened in the shell and adapted to be pushed through the seat and against the valve proper for deflating the valve. Both constructions have been covered by my previous patents.

My present invention aims to provide an improved valve proper of simple construction which shall be durable and effective in operation and convenient of use.

To this end in carrying out the preferred form of my present invention as adapted for a tire-valve I employ an elongated imperforate cylindrical plug of rubber, a separate stem entering this plug, and a separate metal casing embracing the inner end of the plug, the stem and casing being connected together through the intervention of the plug and being otherwise separate and distinct from each other, and I provide certain other features of improvement, all of which will be hereinafter more fully set forth.

In the accompanying drawings, Figure 1 is a side elevation of my improved valve proper in its preferred form shown as adapted for a tire-valve the shell of which is shown fragmentarily in axial section and the spring of which is shown similarly in elevation. Fig. 2 is an axial section of the plug and cup of the valve proper, the stem being shown in side elevation. Fig. 3 is a similar view of a modification. Fig. 4 is a like view of another modification, and Fig. 5 is a like view of another modification.

Referring to the drawings, let A indicate the shell of the valve; B, the valve-chamber thereof; C, the seat thereof; D, the neck thereof; E, the outer socket of this neck; F, the valve proper as a whole; G, the valve-spring; H, the valve-stem; I, the plug or seat of the valve proper, and J the casing or cup thereof. These parts may be of any usual or suitable construction, the parts shown being taken as a suitable example of the corresponding parts of a tire-valve in which the seat C is an annular seat from which the contracted neck D rises outwardly and the enlarged chamber B extends inwardly, the stem H projecting through the neck, the plug I engaging the seat, and the casing J loosely fitting the chamber.

According to the preferred form of my invention the stem H and casing J are separated and independent parts and are connected together through the medium of the plug. According to another feature of improvement incident to the preferred form of the invention the stem and plug are united by the embedding of the end of the stem in the body of the plug, and according to another feature of improvement the valve proper comprises an imperforate plug of packing material, having a projecting stem by which it can be manipulated.

Referring to Figs. 1 and 2, I will now describe the embodiment of my invention therein shown in detail. In this construction the stem H consists of a plain cylindrical metal stem, the lower end of which is inserted into the plug I. The plug consists of an elongated cylindrical imperforated block of rubber, and the casing consists of a thin cup-shaped pressed metal cap having cylindrical internal sockets and external walls, a hemispherical imperforate end wall at its in-

ner end and open at its outer end, within the socket of which the plug is inclosed nearly to its upper end and above the lower end of the stem. The stem preferably does not pass entirely through the plug, and is held therein frictionally or in any other suitable manner. As shown, the end of the stem is pointed at *a*, and above this one or more grooves or roughenings *b* are formed in its outer cylindrical wall *c*. The stem shown is applied to the plug by forcing its end into the latter axially thereof to the desired extent. The cup J is passed over the end of the plug, so that the latter is enveloped within the socket *d* of the cup until the top edges *e* of the latter pass above the end *a* of the stem and almost to the seating-face *f* of the plug, preferably leaving a portion *g* of the cylindrical side walls of the plug exposed above the edge *e* of the cup for purposes of expansion. If desired, the walls of the cup can be pressed or dented inwardly or into the plug, as shown at *h*, or in any other suitable way for increasing its engagement, but if the plug is a sufficiently tight fit this will not be necessary. As thus constructed, the upper end *f* of the plug constitutes an annular yielding seat, which is integral with the body of the plug, so that no leakage around the stem can occur, as the plug is imperforate, while the plug can be sufficiently manipulated by the stem and will be prevented from expansion or wear from contact with the walls and spring by the inclosing casing. The stem being of wire, the plug being a section of a rubber rod, and the cup being a drawn or stamped piece of plate or sheet metal, the construction of the parts will be simple and convenient.

In use the valve will be employed as stem-valves have ordinarily been employed. While the stem is simply designed as a deflating-stem, its end will not be screw-threaded, but may be left perfectly plain, as shown. If desired, the construction of the stem may be suited to perform any of the functions now required of stems of this character.

It will be seen that my invention provides improvements in the valve proper 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 shown as constituting its preferred form, as it can be availed of 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.

In the modification shown in Fig. 3 the stem H′ has no grooves or roughenings, but its pointed end *a′* is inserted through the plug I′, so that it projects into the socket in the casing J, the fit between the casing and plug being tight enough to prevent leakage to the inner end of the stem.

In the modification shown in Fig. 4 the stem H″ has an enlargement or head *a″* on its inner end and is pushed through the plug I″ from below, which plug is the rubber tube, and the casing J″ is a plain cup-shaped casing tightly fitting the plug I″, receiving the head *a″* within its socket *d* and having its upper edge *e* flush with the top face *f* of the plug.

In the modification shown in Fig. 5 the stem H^3 is not pointed, its blunt end being forced into the plug I^3, and the casing J^3 is a plain casing, the top edge *e* of which is flush with the top face *f* of the plug, friction being relied on for a sufficient connection.

Any suitable construction for compressing the plug around the stem may be employed, it only being essential that it shall be separate from and not directly connected to the stem, but the best results are obtainable from the preferred construction of casing J shown and described. If sufficient connection between the plug and stem can be made for certain uses of the valve proper without requiring auxiliary means for compressing the plug against the stem, it will in such cases not be necessary to use the special means described.

What I claim is—

1. A valve proper for tire and other valves consisting of an independent body of packing material and a separate pointed stem puncturing and entering said body, frictionally held therein, and projecting therefrom.

2. A valve proper for tire and other valves consisting of a rubber plug and a metal stem embedded frictionally therein and projecting therefrom and means compressing said plug against said stem.

3. For tire and other valves, a valve proper consisting of a body of packing material, a stem projecting therefrom and a casing surrounding said body and unconnected to said stem.

4. A valve proper for tire and other valves consisting of a body of packing material, a stem entering said body and projecting therefrom, and means unconnected to said stem compressing said body thereagainst.

5. A valve proper for tire and other valves, comprising a stem, a body of packing material surrounding said stem, and an imperforate cup-shaped casing surrounding said body and independent of said stem.

6. A valve proper for tire and other valves comprising a stem having a roughened end, a body of packing material enveloping such end, and a metal wall embracing the sides of such material opposite and independent of the end of the stem.

7. For tire and other valves, a valve proper comprising a stem H, a plug I having an annular face *f* surrounding said stem, and a separate casing J enveloping said plug independent of said stem.

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.