R. E. STEWART AND H. H. HAMMERSTROM.

LEAK INDICATOR FOR TIRE VALVES.

APPLICATION FILED AUG. 17, 1920.

1,388,443.

Patented Aug. 23, 1921.

FIG. 1.

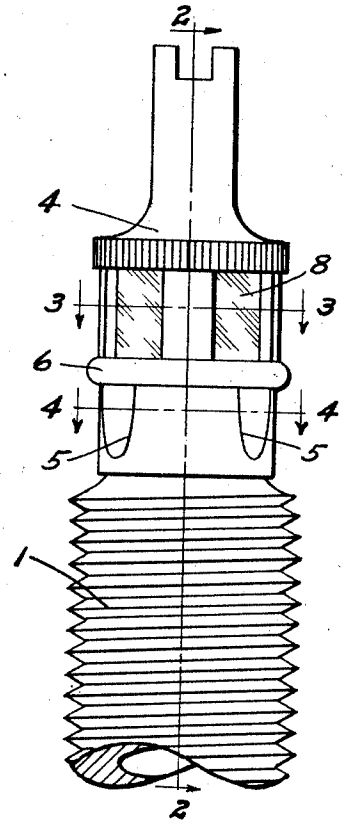


FIG. 2.

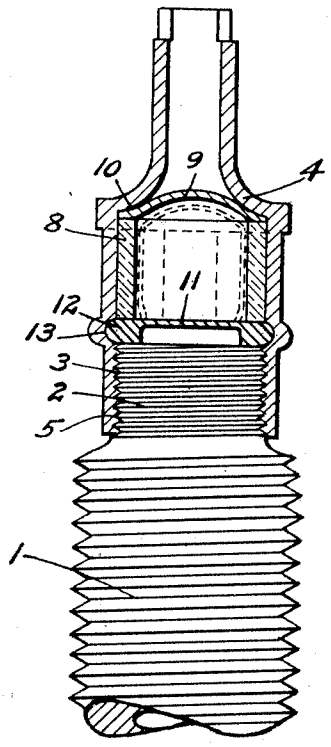


FIG. 3.

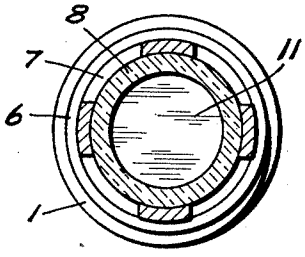
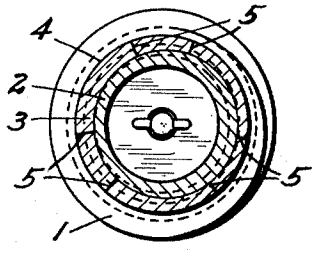


FIG. 4.



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LEAK-INDICATOR FOR TIRE-VALVES.

1,388,443. Specification of Letters Patent. Patented Aug. 23, 1921.

Application filed August 17, 1920. Serial No. 404,244.

To all whom it may concern:

Be it known that we, RALPH E. STEWART and HENRY H. HAMMERSTROM, citizens of the United States, residing at Los Angeles and at Sierra Madre, respectively, in the county of Los Angeles and State of California, have invented new and useful Improvements in Leak-Indicators for Tire-Valves, of which the following is a specification.

This invention is a leak indicator for tire valves and the like, and has for its object the provision of means contained within the cap for a valve stem, so arranged as to give a visual indication of the escape of air through the valve stem past the usual valve provided therein.

The invention will be readily understood from the following description of the accompanying drawings, in which—

Figure 1 is a side elevation of a valve stem having a cap constructed in accordance with the invention.

Fig. 2 is a longitudinal section through the cap.

Figs. 3 and 4 are transverse sections on the lines 3—3 and 4—4 of Fig. 1.

The valve stem is of usual construction including the threaded stem 1 terminating at its upper end in a threaded nipple 2 of reduced diameter arranged to engage the internally threaded lower end 3 of the cap 4. The usual valve, not shown, is arranged within the valve stem.

The portion of the cap having threaded engagement with nipple 2 is, preferably, slit as shown at 5 from an annular enlargement 6 formed upon said cap intermediate of its ends toward the lower edge of the threaded portion of the cap. By this arrangement a more intimate threaded engagement is provided between the cap and the threaded nipple 2.

The portion of the cap above the annular enlargement 6 is provided with sight openings 7 and a transparent tube 8, preferably of glass, is received within this portion of the cap so as to cover the sight openings 7. A metal disk 9 may be arranged within the cap above tube 8 so as to close the upper end thereof, said cap being retained in position by the shoulder 10 of the cap. A diaphragm 11 is received within the cap below the lower end of tube 8, said diaphragm acting to retain said tube in position within the cap.

This diaphragm consists of a peripheral portion 12 which is relatively thick and which is received within an annular recess 13 provided in the inner surface of the enlargement 6 of the cap. The central portion of the diaphragm 11 is of relatively thin material which will be readily distorted by pressure against the same. The diaphragm is, preferably, of rubber, the central portion thereof being of soft rubber and the peripheral portion being of relatively hard rubber. The diaphragm is, preferably, colored.

In operation, when there is no leakage past the valve in valve stem 1 the diaphragm 11 will retain the position shown in Fig. 2 wherein the diaphragm is not in sight through sight openings 7. When, however, the valve of the valve stem is leaking the escape of air through the valve stem will distort the thin central portion of the diaphragm 11 so as to force the latter upwardly within glass tube 8 into the position shown in dotted lines in Fig. 2. In this position the colored material forming the central portion of the diaphragm is readily observable through the transparent tube 8 and sight openings 7 thereby indicating that there is a leakage through the valve stem.

Various changes may be made without departing from the spirit of the invention as claimed.

What is claimed is:

1. The combination with a valve stem, of a cap for the same having a slot therein, a transparent sleeve received within said cap beneath said slot, and an expandible diaphragm received in said cap and extending across the same, said diaphragm retaining said sleeve in position and adapted to be distorted by escaping pressure.

2. The combination with a valve stem, of a cap for the same having a side opening, and a diaphragm within said cap having a peripheral portion received in an annular recess of said cap, said diaphragm being arranged to be distorted by escaping pressure through said valve stem so as to be visible through said side opening.

3. The combination with a valve stem, of a cap for the same having a slot therein, a transparent sleeve received within said cap beneath said slot, and an expandible diaphragm received in said cap and extending across the same, said diaphragm having a peripheral portion received in an annular re-

cess of said cap and retaining said sleeve in position and adapted to be distorted by escaping pressure.

4. The combination with a valve stem, of a cap for the same having a side opening, and a diaphragm within said cap having a peripheral portion received in an annular recess of said cap and a central portion of relatively thin material received over said valve stem, said central portion being arranged to be distorted by escaping pressure through said valve stem so as to be visible through said side opening.

5. The combination with a valve stem, of a cap for the same, a transparent tube within said cap, said cap having a sight opening therein in alinement with said tube, and an indicator within said cap over said valve stem and arranged to be distorted into said tube by escaping pressure through said valve stem.

In testimony whereof we have signed our names to this specification.

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HENRY H. HAMMERSTROM.