E. E. HOLT.

TIRE VALVE AND THE LIKE.

APPLICATION FILED JULY 20, 1918.

1,314,650.

Patented Sept. 2, 1919.

Fig. 1

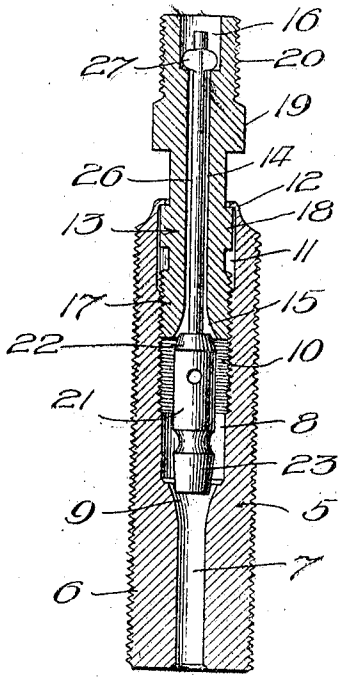


Fig. 3

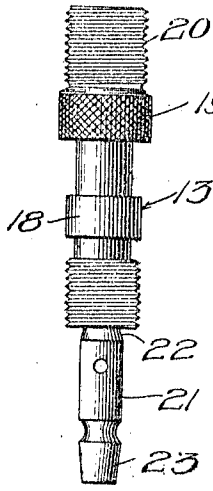
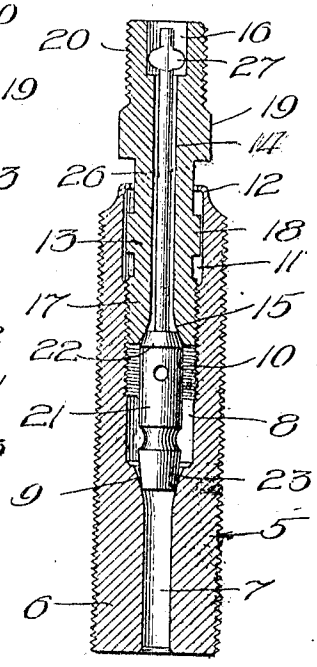


Fig. 2.



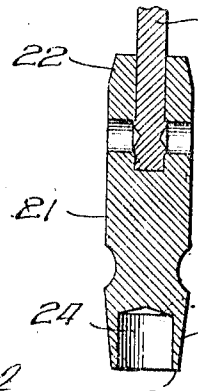


Fig. 4

WITNESSES:

Harry S. Gaither

INVENTOR

Edward E. Holt

BY

ATTORNEYS

UNITED STATES PATENT OFFICE.

EDWARD E. HOLT, OF CHICAGO, ILLINOIS, ASSIGNOR TO HOLT AUTO DEVICES COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

TIRE-VALVE AND THE LIKE.

1,314,650. Specification of Letters Patent. Patented Sept. 2, 1919.

Application filed July 20, 1918. Serial No. 245,866.

To all whom it may concern:

Be it known that I, EDWARD E. HOLT, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Tire-Valves and the like, of which the following is a specification.

The present invention has to do with certain improvements in tire valves and the like used particularly in connection with pneumatic tires. While the features of invention are especially well adapted for this particular use, it will be understood that they are not limited to this use, but certain of them are equally well adapted for other uses. One of the objects of the invention is to greatly simplify the construction of the valve and reduce the number of parts to the smallest number of parts, thereby reducing the cost of manufacture and minimizing the possibility of the valve becoming injured or its serviceable condition impaired.

Other objects and uses of the invention will appear from a detailed description of the same which consists in the features of construction and combinations of parts hereinafter described and claimed.

Referring to the drawing:

Figure 1 shows a vertical longitudinal section through the valve when the same is in its fully opened position or condition;

Fig. 2 shows a view corresponding to Fig. 1 with the valve in its fully closed position or condition;

Fig. 3 is a side elevation of the valve plug and operating sleeve; and

Fig. 4 is a vertical longitudinal section through the valve plug and the lower end of the pin.

In the construction illustrated, the main or body portion of the valve is designated by the numeral 5. This is in the form of a stem, the lower end 6 of which is to be attached to the tube in any suitable manner, as by the use of the well known form of plates or disks for clamping the material of the tube between them. The stem 5 is generally threaded throughout its length, as shown in Figs. 1 and 2.

Extending longitudinally of the stem is a bore or passage. The lower portion of this bore or passage designated by the numeral 7 is of relatively small size, while the upper portion designated by the numeral 8 is of larger size. At the point of junction between these portions of the bore there is a tapered or contracted valve seat 9. The same is preferably of circular cross section and tapers or draws together from its upper to its lower portion as very clearly shown in Figs. 1 and 2. In some cases, this curvature may be eliminated, and use may be made of a straight taper.

The central part of the enlarged portion 8 is threaded as shown at 10 in Figs. 1 and 2, and the upper end 11 of the enlarged portion 8 is of slightly increased size. The relative sizes of the lower central and upper portions of the bore 8 are such that all parts thereof can be formed and finished, including the seat 9, by the use of tools inserted through the upper end of the stem 5. This greatly facilitates the manufacturing processes to which the valve must be subjected. The extreme upper end of the stem 5 is preferably in the form of a thin flange 12 which may be curled or beaded over, as shown in Figs. 1 and 2, for a purpose to be presently explained.

A plug 13 is operatively mounted within the upper end of the valve stem. This plug has a longitudinal passage or bore 14, the lower end of which terminates in a tapered or curved valve seat 15, and the upper end of which preferably terminates in an enlarged socket or recess 16. The valve seat 15 is shown as being formed on a curved taper somewhat similar in this respect to the seat 9, although in some cases a straight taper may be used, if desired.

The lower portion 17 of the plug 13 is threaded to correspond with the threads 10 of the enlargement 8. The central portion 18 of the plug 13 is provided with a cover working within the upper end 11 of the passage 8, and when the thin flange 12 is turned or beaded over as shown in Figs. 1 and 2 after the plug 13 has been set into place, said plug will be held in place and prevented from coming away from the stem 5 or being removed therefrom, except by the destruction of the parts.

The upper portion of the plug 13 may be provided with a milled finger piece 19, by means of which it may be manipulated, and the extreme upper end of the said plug 13 is threaded as at 20 in order to receive the hose connection, by means of which the tire is inflated.

A circular valve member 21 is located between the valve seats 9 and 15. The upper end of said valve member is provided with a tapered or conical seating face 22 adapted to seat into the seat 15, and the lower portion of said valve member is provided with a tapered or conical portion 23 adapted to seat into the valve seat 9. The lower end of the member 21 will be provided with a socket or recess 24 so as to establish a relatively thin wall or flange 25 on the lower end of the member 21 in accordance with the disclosures of Letters Patent of the United States, No. 1,271,898 issued to me July 9, 1918.

A pin 26 has its lower end connected to the valve member 21 and its upper end terminating within the enlarged socket or recess 16. The upper end of said pin is pinched or flattened out as at 27 so as to limit the movement of the pin downwardly through the bore 14.

As shown in Figs. 1 and 2 a certain amount of lost motion is provided for this pin 26, the amount of this lost motion being determined by the excess in the length of the pin 26 between the valve seat 22 and the flattened portion 27 as compared to the distance between the valve seat 15 and the enlarged socket 16 within which the flattened portion 27 operates.

The amount of the aforementioned lost motion is such that when the plug 13 is fully raised into the position of Fig. 1, the valve 21 will be lifted away from the seat 9 so as to permit air to be forced into the tire through the bore 7. On the contrary when the plug 13 is fully lowered or forced down into its lost position as shown in Fig. 2, the entire amount of this lost motion will be taken up and the valve 21 will seat at both of its ends.

While I have herein shown and described only a single embodiment of the features of my invention, still I do not limit myself to the said embodiment except as I may do so in the claims.

I claim:

1. As a new article of manufacture, a tire valve comprising in combination an elongated valve stem having a longitudinal passage or bore, the inner portion of said passage being of relatively small diameter, the central portion of said passage being of enlarged diameter, and the outer end of said passage being of maximum diameter, the central portion of the passage being threaded, there being a curved tapering valve seat at the point of junction between the central and smallest portions of the passage, a flange on the extreme upper end of the valve stem, a cylindrical plug member adapted for cooperation with the valve stem aforesaid and comprising a relatively small lower end portion threaded for engagement with the threads of the central portion of the passage aforesaid, a central enlarged shoulder on the plug adapted to work within the upper enlarged portion of the passage of the valve stem, and an uppermost enlarged end on the plug provided with exterior threads for the accommodation of an inflating hose, there being a longitudinal bore throughout the length of the plug, the lower end of said bore being provided with a conical valve seat, and the upper end of said bore being enlarged, and a valve member working between the valve stem and plug aforesaid, said valve member comprising a valve plug having its lower end tapered for engagement with the valve seat first mentioned, and its upper end tapered for engagement with the valve seat and plug, a pin connected to said valve member and extending through the bore of the plug, and a stop on the upper end of said pin working within the socket aforesaid and serving to limit the movement of the pin and valve member with respect to the plug, substantially as described.

2. As a new article of manufacture, a tire valve comprising in combination a valve stem having a longitudinal bore or passage, the lower end whereof is of relatively small size, the central portion whereof is of larger size, and the upper portion of which is of maximum size, the central portion of the bore being threaded, there being a circular tapering valve seat adjacent to the point of junction between the first and second mentioned portions of the bore, a plug threaded onto the central portion of the bore and having a protruding portion for manipulation from the exterior of the valve, said plug having a longitudinal passage or bore, there being a conical valve seat in the lower end of said passage, and a valve member working between the two valve seats, said valve member comprising a circular valve having both ends tapered for engagement with their respective valve seats, a pin connected to said valve and extending through the bore of the plug, and means for limiting the movement of the pin and valve with respect to the plug, substantially as described.

3. As a new article of manufacture, a tire valve comprising, in combination, a valve stem having a longitudinal bore or passage, the lower end whereof is of relatively small size, and the central portion whereof is of larger size, there being a circular tapering valve seat adjacent to the point of junction between said portions of the bore, a plug threaded into the bore and projecting from the end of the valve stem for manipulation by the user, said plug having a longitudinal bore or passage, there being a conical valve seat in the lower end of said passage, and a valve member working between the two valve seats, said valve member comprising a

circular valve having both ends tapered for engagement with their respective valve seats, and a pin connected to said valve and extending through the bore of the plug, substantially as described.

4. As a new article of manufacture, a tire valve comprising, in combination, a valve stem having a longitudinal bore or passage, there being a circular tapering valve seat in said passage, said valve seat facing outwardly, a plug threading into the bore or passage at a point beyond the valve seat, and projecting outside of the valve stem for manipulation by the user, said plug having a longitudinal passage or bore, there being an inwardly facing conical valve seat on the inner end of said passage, a valve member working between both of the valve seats, and a pin connected to said valve member and extending through the bore of the plug, substantially as described.

EDWARD E. HOLT.