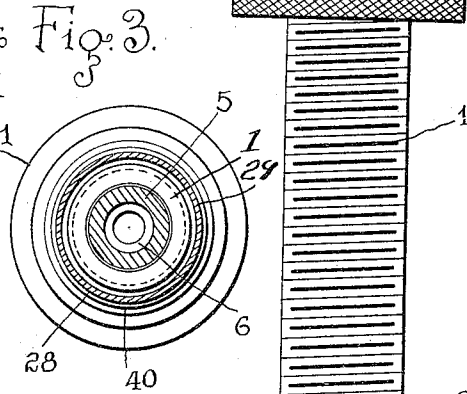
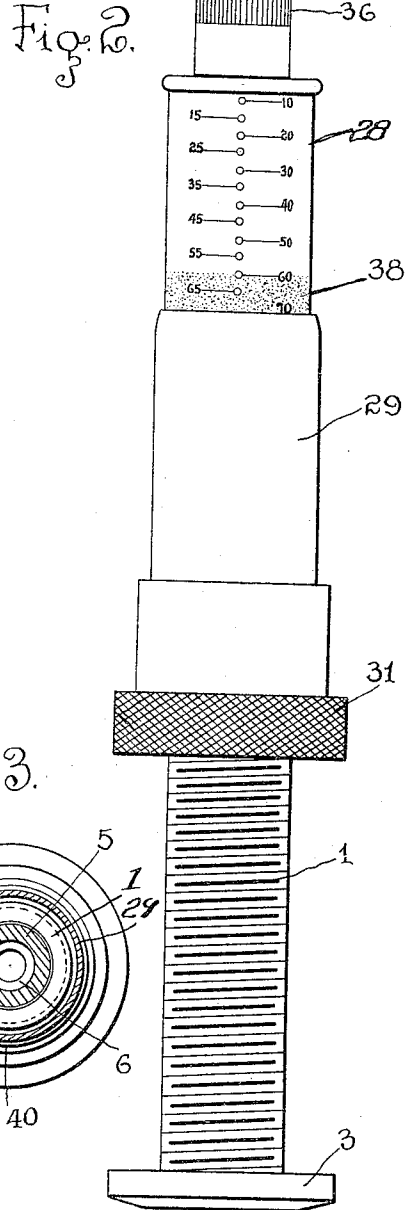
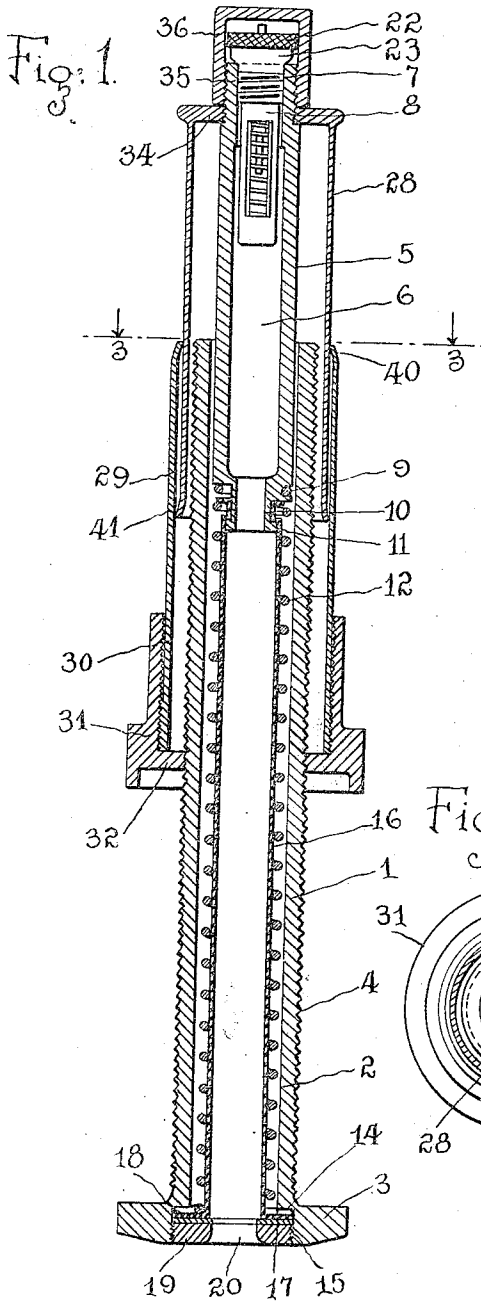


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R. H. HENEMIER ET AL  
PRESSURE GAUGE VALVE DEVICE

1,497,441

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## UNITED STATES PATENT OFFICE.

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## PRESSURE-GAUGE VALVE DEVICE.

Application filed December 12, 1922. Serial No. 606,357.

*To all whom it may concern:*

Be it known that ROBERT H. HENEMIER and ANTHONY PENSOVECCHIO, citizens of the United States, and residents of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Pressure-Gauge Valve Devices, of which the following is a specification.

The tire valve and gauge of the present invention is of an improved arrangement and construction designed particularly to provide a gauge, for use in pneumatic tires, of a permanently attached type and which will be specially improved in its visibility to the observer to indicate the pressure in the tire.

Particularly important features of my improved construction consist in the arrangement whereby relatively movable members of the gauge or pressure indicating parts are positioned and arranged exteriorly of the valve sleeve or stem proper thereby allowing of the indicating parts to be relatively enlarged and correspondingly more readily visible and the exteriorly arranged gauge members are further so arranged whereby they enclose the upper portion of the valve stem and in consequence function as a protective or dust cap to cover the external threads of the valve stem in the well known manner.

Further features and advantages of the present invention will be more fully understood by reference to the accompanying drawings wherein a desirable embodiment of my invention is shown and wherein corresponding reference characters are applied to the similar parts in the several views.

Fig. 1 is a central, vertical, sectional view of the improved structure.

Fig. 2 is a view thereof in elevation.

Fig. 3 is a horizontal, sectional view on line 3—3 of Fig. 1.

In the approved embodiment of the features of the present invention, as illustrated, 1 indicates the valve sleeve or stem which is of tubular form having a central longitudinal bore 2 longitudinally therethrough. The stem 1 is formed with a shoulder enlargement 3 at its lower end and is externally threaded at 4 throughout its length to receive the usual securing nuts for attaching the stem to the tire tube and for rigidly securing the stem to the rim of the wheel in

the well known manner. Within the upper end of the sleeve 1 a movable stem member or plunger 5 is fitted to have a close sliding effect within the bore 2. The plunger member 5 is formed, as shown, with a longitudinal opening or bore 6 therethrough, is internally threaded at 7 to receive the usual valve insert or air intake valve 8 and is formed at its lower end with an annular groove 9, a reduced lower extension having an annular recess 10 and a shoulder 11.

A retractile coil spring 12 is positioned within the bore of stem 1 and is attached to the lower end of the plunger member 5 by having its upper end fitted within the groove 9 and at its lower extremity the spring is attached to the rigid valve stem 1 by being outwardly enlarged to engage the shoulder 14 formed within the stem at its lower end. The shoulder 14 is formed, as indicated, by an annular recess having the lower portion of its wall threaded at 15.

To provide an air seal between the movable plunger member 5 and the valve stem 1, a tube 16 of elastic material, desirably thin rubber, is fitted within the bore 2 so as to be inclosed by the spring 12 and is attached at its upper extremity to the lower end of the plunger member 5 by having its upper marginal portion received within the groove 10 and fitted over the shoulder 11 and at its lower extremity it is secured to the valve stem 1 by having an outwardly flared portion 17 thereof clamped between a washer 18 and a securing nut 19 threaded to the internal threads 15 and having a central air passage 20 therethrough.

The valve 8, arranged to seal the upper end of the tubular member 5, is what is commonly termed the valve insert and is here shown as a normally yielding inlet valve of the type as illustrated in Patent No. 1,396,517 dated March 4, 1919 wherein the insert is provided at its upper end with a manipulating flange 22 beneath which a sealing washer 23 is positioned to engage the upper marginal edge of the movable stem member or plunger 5, whereby the latter is sealed.

In the arrangement in so far as described the structure is such as to seal the parts against the outward passage of air and wherein the tubular plunger member 5 is arranged to be movable longitudinally within the stem under the influence of the retractile spring 12 tending to move the

plunger inwardly and under the influence of the pressure within the tire exerting an outward force against the influence and position of the spring. As a result thereof the plunger member 5 is longitudinally movable and will assume a position related to or corresponding to the air pressure.

To render the degree of pressure within the tire conveniently readable to the observer there is provided an exteriorly and telescopic indicating means the movable part of which is attached to and movable with the plunger member 5 so as correspondingly to assume a position determined by the air pressure. The indicating means, as here shown, comprises a movable tubular member 28 telescopically fitted to slide within a stationary tubular member 29, the latter being threaded at 30 within a securing or retaining nut 31 having a lower inwardly extending flange 32 formed for threaded engagement with the external thread of stem 1. The movable indicator part 28 at its upper end has an inwardly extended flange or wall 34 having threaded engagement with the upper screw threaded flange extension 35 of the plunger 5 which is also adapted to receive and has threaded thereto the usual protective cap 36, as indicated. The movable indicator part 28 is shown suitably graduated and marked to indicate air pressure which is readable by reason of the characters being exposed with relation to the stationary tubular member 29. An additional feature of the present invention, designed to further facilitate observing the pressure indicated by the movable indicator 28 consists in providing the latter with an additional band or marking as associated with the degree of pressure which is desired to maintain. This may desirably be provided in the form of a colored band 38 of suitable enamel which is readily visible to the observer so as to enable reading of the indicator without close scrutiny. This band of color marking may desirably be of a width covering a range of ten pounds pressure, for instance as shown being of a width to extend between the graduations numbered 60 and 70, when embodied in a device for use upon a tire the pressure of which should be maintained at approximately 60 to 70 pounds. This additional and special marking of the indicator member, as will be understood, may be effected in any desirable manner to obtain a contrast readily visible to the eye and may be in the form of indentations or marking of the metal, but as aforesaid its effectiveness is enhanced by the employment of a color, for instance, a red enamel which produces a pronounced effect which may be observed at a glance to determine the approximate pressure in the tire.

As best indicated in Fig. 1, the upper

marginal edge of the outer indicator tube 29 is turned or flanged inwardly at 40 and the lower marginal edge of the movable indicator tube 28 is outwardly flanged or flared at 41 to maintain a close engagement between the tubular members and to act as a stop to limit their relative movement lengthwise.

As will be observed, the externally arranged and telescopic indicator members or tubes 28 and 29, in addition to functioning as indicating means in the manner described, provide a protective covering or dust cap for the valve stem 1 thereby eliminating the necessity of employing the special dust caps as commonly employed for that purpose. As will be further recognized the external arrangement of the indicating parts allows of these parts being made of substantial size which materially contributes to the facility with which they may be observed. The improved structure, as described, permits of inflating the tire as desired without disturbing the pressure gauge or indicator parts, the operation being performed in the usual manner by simply removing the cap 36 and connecting of the pump coupling to the threaded extension 35 of the plunger 5. In the assembling of the indicator parts it will be understood that the clamping nut 31 is threaded onto the sleeve 1 so as to engage with the felly of the wheel or may be with an additional clamping nut interposed therebetween. To correctly position the stationary indicator member 29, this part is rotated whereby its threaded engagement with the nut 31 will adjust its position longitudinally and with the tire deflated it is initially so adjusted whereby its upper marginal edge will engage the underside of the outwardly flared portion of the upper wall 34 of the movable member 28 which thereby determines the zero position. To properly so function the threaded engagement between the stationary indicator member 29 and the clamping nut 31 is of sufficiently tight fit to maintain the parts in adjusted position.

The movable or plunger member 5 may also be provided with graduation marks so as to be readable to determine the pressure upon the removal of the outer indicator means, as will be readily understood. Also as will be appreciated the described structure and several features of the invention are subject to various modification without departing from the scope of the invention as defined in the appended claims. As illustrative thereof, the movable indicator tube 28 may if desired be formed of transparent material such as a suitable glass and the indicating marking may be applied to the internal surface thereof in any desirable manner. Such a modified structure would have obvious advantages under certain conditions.

Having described our invention we claim:

1. A device of the character described comprising an externally threaded sleeve, a plunger member telescopically associated therewith to be movable responsive to the air pressure therein and indicating means comprising a movable tubular indicator member attached to the plunger member and arranged to surround a portion of the external threads of the sleeve and a stationary indicator member associated therewith.

2. A device of the character described comprising an externally threaded sleeve, a plunger member slidably fitted within the sleeve to be movable in response to the air pressure and indicating means comprising exteriorly and telescopically arranged members consisting of a stationary member and a movable member, said latter member being attached to the plunger member to be moved thereby, said indicating means being arranged to protectively enclose the exter-

nal threads of the sleeve and means for securing the stationary indicator member.

3. A device of the character described comprising a sleeve, a movable plunger member telescopically associated therewith to be movable responsive to the air pressure therein and indicating means associated therewith comprising exteriorly and telescopically arranged members consisting of a stationary tubular member and a movable tubular member slidable with relation thereto and attached to the plunger member and one of said indicating members being provided with graduated marking and further provided with a signal band of a contrasting nature coinciding with a range of pressure to be maintained.

Signed at New York, in the county of New York and State of New York, this 11th day of December A. D. 1922.

ROBERT HENRY HENEMIER.  
ANTHONY PENSOVECCHIO.