

P. E. GILLING.
PRESSURE GAGE.

APPLICATION FILED NOV. 2, 1911. RENEWED JUNE 27, 1916.

1,276,899.

Patented Aug. 27, 1918.

Fig. 1.

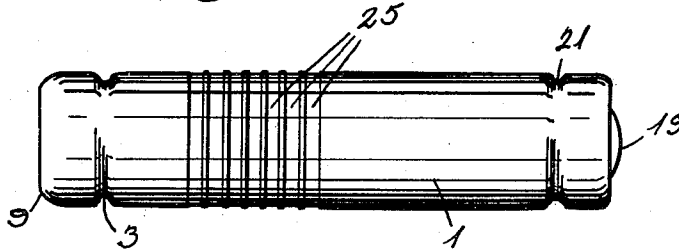


Fig. 2.

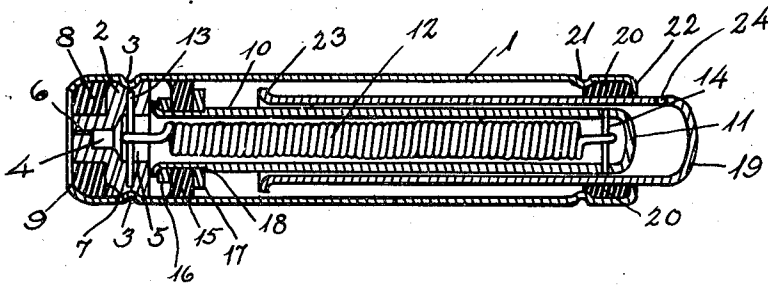


Fig. 3.

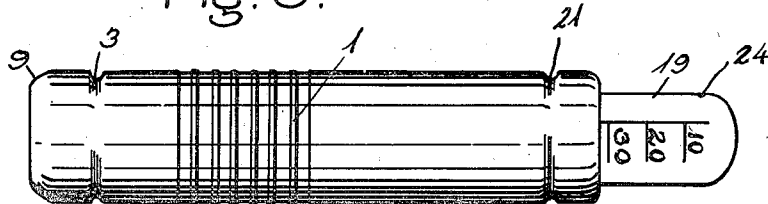
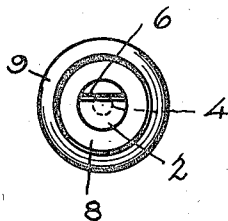


Fig. 4.



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PRESSURE-GAGE.

1,276,899.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, PRESTON E. GILLING, a citizen of the United States, residing at East Orange, in the county of Essex and State of New Jersey, have invented certain Improvements in Pressure-Gages, of which the following is a specification.

This invention relates more especially to that class of pressure gages which is used for ascertaining the air pressure in inflated pneumatic tires for automobiles and the like, although I of course do not wish to in any way restrict the use of the invention for any purpose for which it is adapted.

The objects of the invention are to provide such a pressure gage which will be thoroughly reliable and dependable; to secure a fool-proof construction, devoid of removable parts which might become detached and lost; to produce a gage compact in form and of neat and pleasing appearance; to provide a simple construction, not liable to get out of order, and to obtain other advantages and results as may be brought out in the following description.

Referring to the accompanying drawings, in which like numerals of reference indicate the same parts throughout the several figures,

Figure 1 is a side view of my improved pressure gage showing the parts in retracted or idle position;

Fig. 2 is a central longitudinal section, showing a certain gage sleeve partly extended;

Fig. 3 is a view similar to that shown in Fig. 1, but having the gage sleeve extended, and

Fig. 4 is a view of the pressure-receiving end of the gage.

In said drawings, 1 indicates a cylindrical tubular casing, preferably of sheet-metal, having in one of its ends an inlet plug or deflector 2 which is preferably held in place by pressing the walls of the casing 1 into a peripheral groove of the plug as at 3. The plug thus fits tightly against the walls of the casing and has a central air passage 4 which is enlarged at the inner side of the plug as at 5, and at the outer side communicates with the atmosphere by a saw-slit 6 or the equivalent. This saw-slit is off center, as shown in Fig. 4, more especially, so that when the pressure gage is applied to the valve of the tire, the saw-slit will not

be closed by the usual valve stem. The said outer side of the plug 2 preferably lies a little inside the end of the casing 1 as shown, and has an outer annular recess 7 containing a gasket 8 which is retained in said recess by slightly bending in the edges of the casing, as at 9, and which gasket further insures against any leakage of air between the plug 2 and the walls of the casing.

Within the casing 1 is a piston tube 10 of considerably smaller diameter than the casing, having an open end adapted to engage the inlet plug 2 around its air passage 4, or enlarged end 5 thereof, and being closed at its opposite end 11, the said piston tube being preferably short enough in its retracted position so that said closed end 11 will not project materially from the casing 1. A helical spring 12 in said piston tube 10, fast at one end to a pin 13 extending diametrically across the enlarged end 5 of the air passage 4, and at its other end to a cross-pin 14 adjacent to the closed end of the piston tube, normally holds the said piston tube seated against the inlet plug 2, while permitting it to move outward under air pressure to an extent proportionate to the pressure.

To provide a piston upon the inner end of the piston tube thus described, a ring 15 of leather or the like is arranged upon said tube 10, between two metal washers 16 and 17, held against a shoulder 18 on the tube by curling the end edges of the tube outward and backward, as shown in Fig. 2.

Obviously, the piston tube will normally be retracted against the inlet plug 2 by the spring 12, but when the inlet end of the gage is pressed to a tire valve, as is common, the compressed air therein will pass through the plug 2 and act against the piston and slide it until the piston tube is projected out of the casing to a greater or less extent, according to the pressure being measured. For indicating the degree of pressure, a gage tube 19 incloses the piston tube 10 beyond the piston thereon, being separate from said piston tube and loose therefrom. The outer end of said gage tube 19 is closed and adapted to seat against the outer closed end 11 of the piston tube when retracted, thus lying within or substantially within the casing. When the piston and piston tube are projected by a pressure being measured, the gage tube is car-

ried outward, too, and left in its position of farthest projection when the gage is removed from the tire valve and the piston and its tube are retracted by the spring. In order that the gage tube 19 remain securely in its position until read, it is surrounded and frictionally engaged by a packing 20 carried by the casing and held between an inwardly pressed rib 21 and an inwardly curled end edge 22 thereof, as shown. The outside of the gage tube has graduations, properly marked and numbered, and after a reading has been taken, the gage tube is pushed back into the casing 1. In this connection it may be noted that the packing 20 engages the graduated surface of the gage tube and because of its frictional contact therewith will wipe said gage tube as it is slid out and in and keep the same clean and polished whereby the graduations and numbering thereon may be easily read at any time.

The inner end of the gage tube 19 has its edges curled outward, as shown at 23, so as to form a stop to engage the package 20, or rib 21 of the casing, and limit outward escape of the gage tube. Said gage tube also has an aperture 24 at its outer end, preferably in its side walls, to serve as an air vent when either the piston tube or gage tube moves independent of the other, it being understood that they may fit so snugly together as to preclude the free passage of air between them.

The casing 1 preferably has near its end adapted to be seated upon the valve of a tire, a series of exterior grooves 25, which are preferably cut with a rectangular cross-section into the surface of the casing. These grooves not only enable the gage to be firmly and imperviously applied to a tire valve, but they also distinguish the inlet end of the gage from its other end, and which ends appear about the same, when the gage tube is completely retracted.

Having thus described the invention, what I claim is:

1. A pressure gage comprising in combination an outer casing forming at its interior a cylinder adapted at one end to connect with an air valve and open at the other end, a piston in said casing engaging with an air tight fit the walls of said cylinder, a piston tube extending from said piston toward the open end of the casing with its end adjacent the piston opening therethrough into the casing and with its other end closed, a gage tube telescopically mounted in the open end of the casing separate from the piston tube and inclosing the outer closed end portion of the same so as to be carried outward therewith, means at said open end of the casing for frictionally engaging said gage tube whereby the same will be retained at any position to which it

is pushed, and a spring mounted within the piston tube secured thereto at its closed end and extending through the other and open end of the piston tube and attached to the casing, whereby said spring normally retracts said piston and piston tube.

2. A pressure gage comprising in combination an outer casing forming at its interior a cylinder adapted at one end to connect with an air valve and open at the other end, a piston in said casing engaging with an air-tight fit the walls of said cylinder, a piston tube extending from said piston toward the open end of the casing with its end adjacent the piston opening therethrough into the casing and with its other end closed, a gage tube telescopically mounted in the open end of the casing separate from the piston tube and inclosing the outer closed end portion of the same so as to be carried outward therewith, the outer end of said piston tube nearly filling the gage tube thereat so as to be guided thereby, means at said open end of the casing for frictionally engaging said gage tube whereby the same will be retained at any position to which it is pushed, and a spring mounted within the piston tube secured thereto at its closed end and extending through the other and open end of the piston tube and attached to the casing, whereby said spring normally retracts said piston and piston tube.

3. A pressure gage comprising in combination an outer casing forming at its interior a cylinder adapted at one end to connect with an air valve and open at the other end, a piston in said casing engaging with an air-tight fit the walls of said cylinder, a piston tube extending from said piston toward the open end of the casing with its end adjacent the piston opening therethrough into the casing and with its other end closed, a gage tube telescopically mounted in the open end of the casing separate from the piston tube and inclosing the outer closed end portion of the same so as to be carried outward therewith, the portion of the piston tube extending into the gage tube nearly filling the same so as to retain it axially coincident therewith, means at said open end of the casing for guiding and frictionally engaging said gage tube whereby the same will be retained at any position to which it is pushed, said means cooperating with the piston to retain said piston tube and gage tube substantially in axial coincidence with the cylinder, and a spring mounted within the piston tube secured thereto at its closed end and extending through the other and open end of the piston tube and attached to the casing, whereby said spring normally retracts said piston and piston tube.

4. A pressure gage comprising a casing, a pressure responsive member, and an indicator, said pressure responsive member com-

prising a piston in sliding contact with said casing, a rigid tubular part, closed at its outer end, attached to said piston, and a spring within said tubular part adapted to resist movement of said part, and said indicator comprising a tubular part, arranged between said tubular part on the piston and said casing, and adapted to be moved to indicating position by the pressure responsive member.

5. A pressure gage comprising a casing, a pressure responsive member, and an indicator, said pressure responsive member comprising a piston in sliding contact with said casing, a rigid tubular part, closed at its outer end, attached to said piston at its inner end, and a spring within said tubular part adapted to resist movement of said part, and said indicator comprising a tubular part, arranged between said tubular part on the piston and said casing, and adapted to be moved to indicating position by the pressure responsive member.

6. A pressure gage comprising a casing, a pressure responsive member and an indicator said pressure responsive member comprising a piston in sliding contact with said casing, a rigid tubular part, closed at its outer end, attached to said piston, and a spring within said tubular part adapted to resist movement of said part, and said indi-

cator comprising a tubular part, arranged between said tubular part on the piston and said casing, and adapted to be moved to indicating position by the pressure-responsive member said piston and tubular part thereon, and said tubular part of the indicator, being adapted to telescope with one another and the casing so as to be contained within the length of the casing when pushed together and not under pressure.

7. A pressure gage, comprising a casing, a deflator, said deflator having an air passage therethrough to the interior of the casing, said air passage comprising a groove across said deflator at one side of the center, whereby the groove is out of line with the valve-stem of a tire valve.

8. A pressure gage, comprising a casing, a plate closing the inner end of said casing, said plate having a groove circumferentially thereof, said casing having a portion thereof pressed into said groove to fasten the parts, and said plate having a projecting part constituting a valve-stem depressor, and a packing around said projecting part, said casing being turned in at its edge to form a shoulder to confine said packing.

PRESTON E. GILLING.

In the presence of—

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FRANCES E. BLODGETT.