N. E. BADGLEY.

PRESSURE REGULATOR FOR TIRE VALVES.

APPLICATION FILED APR. 7, 1917.

1,294,377. Patented Feb. 18, 1919.

Fig. 1

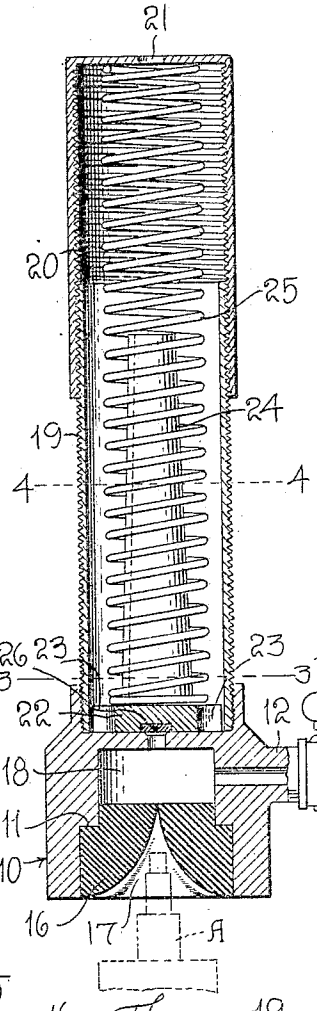


Fig. 2

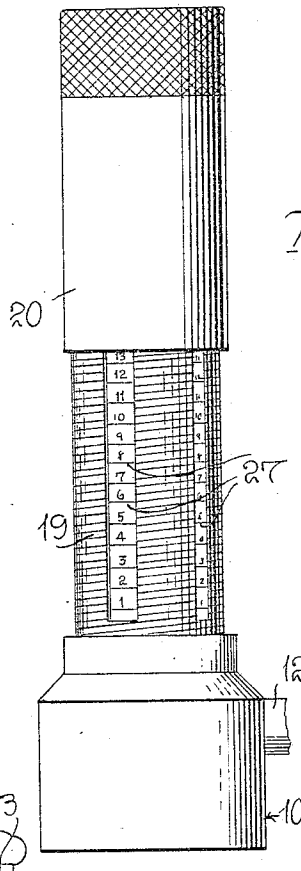


Fig. 3

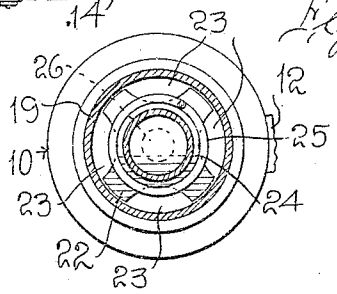


Fig. 5

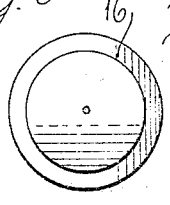
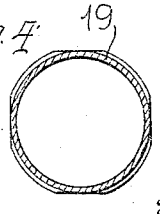


Fig. 4



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PRESSURE-REGULATOR FOR TIRE-VALVES.

1,294,377. Specification of Letters Patent. Patented Feb. 18, 1919.

Application filed April 7, 1917. Serial No. 160,446.

To all whom it may concern:

Be it known that I, NORMAN E. BADGLEY, a citizen of the United States, residing at Arcadia, in the county of Hamilton and State of Indiana, have invented certain new and useful Improvements in Pressure-Regulators for Tire-Valves, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to gages, and particularly to pressure gages to be used for the gaging of a pressure in pneumatic tires.

The general object of my invention is to provide a device of this character so constructed that it may be applied to the valve of a pneumatic tire, and so constructed that when a predetermined pressure has been reached within the tire, the gage will permit the escape of air so that the pressure cannot be increased beyond a predetermined amount.

A further object of the invention is to provide a device of this character, which is very simple in construction, easily operated, cheaply made, and adapted to be adjusted to any desired pressure.

A further object of the invention is to provide a valve operating connection with the gage head of the device normally holding the valve closed against pressure from within the tire and provide means for adjustably tensioning the spring so that it will resist the opening of the valve under different pressures within the tire.

Other objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a longitudinal section of my improved pressure regulator;

Fig. 2 is an elevation thereof;

Fig. 3 is a section on the line 3—3 of Fig. 1;

Fig. 4 is a section on the line 4—4 of Fig. 1, the tubular stem 24 and the spring being omitted;

Fig. 5 is a top plan view of the plug 16.

Referring to these drawings, 10 designates a base, which may be made of cast metal, or otherwise suitably formed, the lower end of the base being cut away and formed with an annular shoulder 11. Above this annular shoulder 11, the base has an inlet nipple 12 having therein a valve 13, the nipple being adapted to be connected to the tube 14 which leads from an air pump of any suitable construction, the air pump not being illustrated. At its outer end the base is formed with a small opening or port 15. Disposed within the open lower end of the base is a plug 16, which is preferably made of rubber or like material, this plug being formed with a central aperture 17. This aperture 17 is relatively large at its lower end and tapers upwardly to a very small diameter. The small upper end of the opening 17 is of such size as to just allow the valve stem of the tire to slip through snugly so that when air is pumped into the chamber 18, the air will not leak out around the valve stem.

Screw-threaded into the upper end of the base 10 is an upwardly extending tubular section 19, which has exterior screw-threads for its entire length and having screw-threaded engagement with this tubular section 19 is a tubular section 20, which is interiorly screw-threaded for its entire length and is formed at its upper end with a vent 21. Disposed in the lower end of the tube 19 is a valve 22 whose side edges are cut away at a plurality of points, as at 23, and which has fast to it an upwardly extending tapering tubular member 24. A coil spring 25 is disposed within the tubes 19 and 20 and bears against the upper end of the tube 20 and at its lower end bears against the valve 22, the lower end of this spring surrounding the guide tube 24. Preferably, the under face of the valve 22 is formed with a recess within which is disposed an insert 26 of rubber, or other suitable material, and of such diameter that it will close the passage 15. The tube 19, upon its exterior, is screw-threaded as before stated, but vertical indicating graduations 27 are disposed at predetermined intervals and at predetermined heights on the tubular member 19, these indicating marks being cut across the screw-threads, but not interfering with their function. There may be an indicating mark or index point on the tube 20 designed to coact with the indicating marks 27 but this is not necessary.

The operation of this invention will be obvious. When it is desired to pump up a tire, the stem of the valve A is inserted through the aperture 17, the tire pump is connected to the tube 14, or the tube 14 which has previously been connected to the tire pump is connected to the nipple 12, and then the valve 13 is turned to permit the compressed air to flow into the chamber 18

and thence through the opening 17 into the tire. Previous to the use of the gage, the member 20 is turned down to such a point that the spring 25 is given the desired tension to resist any movement of the valve up to a predetermined point. Now when the pressure within the tire has been brought to this predetermined point, the pressure within the chamber 18 will cause the valve 22 to lift against the tension of the spring 25 and then any excess pressure can escape into the tubes 19 and 20 and pass out through the opening 21. If the pressure is immediately reduced within the chamber 18 below a predetermined point, the valve 22 will close until the pressure within rises and thus the device will hold the pressure at any predetermined degree; then the valve 13 may be closed and the gage removed from the valve stem of the tire. The graduation marks or index marks 37 will preferably be arranged so as to indicate pressures of 20, 40, 60, 80, and 120 pounds, with intermediate graduations, one for each 5 pounds of pressure. The purpose of the member 24 is to support the spring 25 so that the spring will not tend to bend when pressure is placed upon it. I of course wish it understood that many changes might be made in this construction, without departing from the spirit of my invention.

Having described my invention, what I claim is:—

A pressure regulator of the character described comprising a hollow head open at one end and formed with a shoulder, a plug disposed within the opening of the head and against the shoulder and having an aperture adapted to receive a tire valve, the wall of the head opposite said plug being formed with a port, and the side wall of the head having a valve controlled nipple adapted to be connected to an air pipe, a tubular member having screw-threaded engagement with the head and disposed concentric to said air port, said member being exteriorly screw-threaded, a tubular member having screw-threaded engagement with the first named member and having a perforation at its upper end, a valve disposed within the first named tubular member and bearing against the port in the head, said valve having a stem, a coiled spring surrounding said stem and bearing against the valve at one end and at its other end bearing against the end wall of the second named tubular member, the exterior face of the first named tubular member having a plurality of longitudinally extending grooves bearing graduation marks with which the lower edge of the second named tubular member coacts to indicate the degree of compression of said spring.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

NORMAN E. BADGLEY.

Witnesses:
C. W. Guy,
O. T. Hill.