R. H. HENEMIER.

EXHAUST VALVE AND PRESSURE GAGE FOR PNEUMATIC TIRES.

APPLICATION FILED MAY 10, 1913. RENEWED FEB. 26, 1915.

1,137,209. Patented Apr. 27, 1915.

Fig. 1.

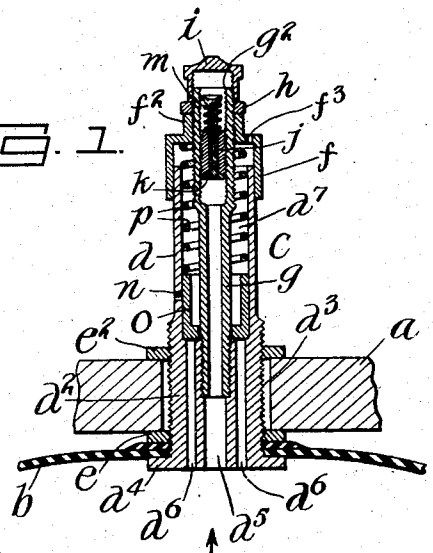


Fig. 2.

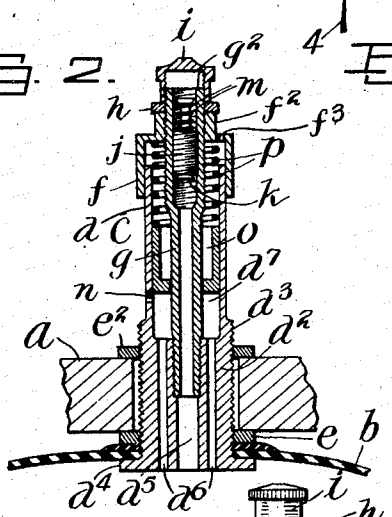


Fig. 3.

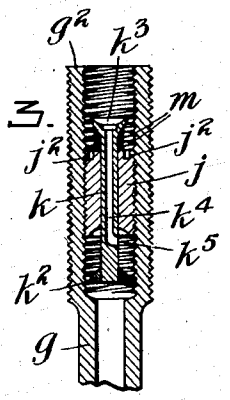


Fig. 4.

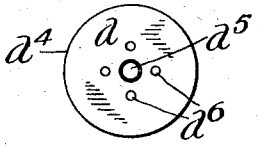
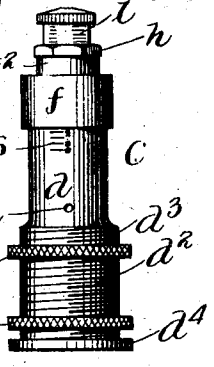


Fig. 5.



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UNITED STATES PATENT OFFICE.

ROBERT H. HENEMIER, OF NEW YORK, N. Y.

EXHAUST-VALVE AND PRESSURE-GAGE FOR PNEUMATIC TIRES.

1,137,209. Specification of Letters Patent. Patented Apr. 27, 1915.

Application filed May 10, 1913, Serial No. 766,734. Renewed February 26, 1915. Serial No. 10,856.

To all whom it may concern:

Be it known that I, ROBERT H. HENEMIER, a citizen of the United States, and residing at Manhattan, in the county of New York and State of New York, have invented certain new and useful Improvements in Exhaust-Valves and Pressure-Gages for Pneumatic Tires, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to blow-off or exhaust valves for pneumatic tires, and the object thereof is to provide an improved device of this class which may also be used as a filling nozzle or valve device through which the tire may be inflated and which will automatically act to relieve the pressure on the tire whenever such pressure rises beyond a predetermined point.

The invention is fully disclosed in the following specification of which the accompanying drawing forms a part, in which the separate parts of my invention are designated by suitable reference characters in each of the views, and in which;—

Figure 1 is a sectional view of my improved blow-off or exhaust valve and showing the same applied;—Fig. 2 a view similar to Fig. 1 but showing the parts in a different position;—Fig. 3 a view similar to Fig. 1 but showing only a detail of the construction and showing the same on an enlarged scale;—Fig. 4 a bottom plan view of the device detached, or looking in the direction of the arrow 4 of Fig. 1, and:—Fig. 5 a side view of the device detached.

In the drawing forming part of this specification I have shown at *a* a part of the rim of the wheel of an automobile or similar vehicle, and at *b* a part of the inner or inflatable tube of a pneumatic tire, and in connection therewith I have shown at *c* my improved blow-off or exhaust valve and gage device through which the tube *b* may be inflated.

In the construction of this device I provide a tubular casing *d* which is adapted to be passed through the rim *a* and to be secured therein, and the end portion d^2 of the tubular casing *d* which is adapted to be secured in the rim *a* is solid and threaded, as shown at d^3, and provided inwardly and outwardly of said rim, in the form of construction shown, with nuts *e* and e^2 and the inner end of said tubular casing is provided with a flange d^4 between which and the nut *e* the wall or walls of the inflatable tube *b* are secured.

The solid end d^2 of the tubular casing *d* is provided with a central longitudinal bore or passage d^5 around which are supplemental longitudinal bores or passages d^6, and the bores or passages d^6 communicate with a chamber d^7 in the outer end of the tubular casing *d*, which chamber is closed by a cap *f* having a neck f^2 and mounted in the tubular casing *d* is a tube *g* the inner end of which is screwed into the central bore or passage d^5, and the outer end portion g^2 of which is enlarged and screw threaded to correspond with a similar internal thread in the neck f^2 of the cap *f*.

In practice, after the tube *g* is screwed into the central bore or passage d^5, the cap *f* is screwed onto the outer end portion g^2 of the tube *g* after which a set nut *h* is screwed onto said end g^2 of the tube *g*, which end is inclosed by the threaded cap *i*. Screwed into the outer end portion g^2 of the tube *g* is a plunger valve device comprising plug *j* in which is placed a longitudinally movable valve stem *k* provided at its inner end with a detachable valve k^2 and at its outer end with a head k^3, and the valve stem *k* is also provided with a central longitudinal bore k^4 which opens outwardly through the head k^3 and opens laterally above the valve k^2, as shown at k^4, and a fine spiral spring *m* is mounted on the valve stem *k* between the plug *j* and the head k^3 thereof and normally serves to hold the valve stem *k* and the valve k^2 in the closed position of said valve, as shown in Figs. 1 and 2, and the position of the plug may be adjusted in the tube *g* or the enlarged end portion g^2 thereof by simply turning said plug, as will be readily understood, and this may be done by means of a suitable spanner, the outer end portion of said plug being provided with notches or recesses j^2 for this purpose.

The tubular casing *d* is provided in one side thereof with an exhaust port *n* and placed in said tubular casing is a plunger *o* which is in the form of a thimble and through which the tube *g* passes, and said plunger *o* is freely movable on said tube and closely fits the inner walls of the tubular casing *d*, and in its normal position, as shown in Fig. 1, closes the port or passage *n*, and mounted in the tubular casing *d* and bearing on said plunger is a spiral spring *p*

which also has a bearing on the top of the cap *f*.

In the operation of filling or inflating the tube *b*, the cap *i* is removed and an ordinary filling device is connected with the outer end of the tube *g* in the usual manner and through which air under pressure passes into the tube *b*, or is forced thereinto by an air pump in the usual manner. The pressure of the air forces the valve stem and valve k^2 downwardly or inwardly, as indicated in Fig. 3, during the operation of inflating the tube *b*, but when the air pressure in the tube *b* reaches the desired point the valve stem *k* and valve k^2 are forced outwardly, as shown in Fig. 1, and the air, under normal conditions, cannot escape from the tube *b*.

The object of the exhaust port *n* and the spring depressed plunger *o*, which operates as a valve to open and close the port *n*, is to provide means whereby any over pressure in the tube *b* beyond the desired point will be exhausted so as to prevent the bursting of said tube or the tire.

It frequently happens that in the operation of an automobile, or any vehicle the wheels of which are provided with pneumatic tires, if the said tires be inflated to say 80 pounds pressure, the temperature in the tire will be increased either by the heat of the sun or otherwise so as to increase the pressure therein to such an extent that the tire will burst, but with my improvement any increase of pressure in the tire over that at which it is designed to operate, will result in the valve-plunger *o* being forced outwardly, as indicated in Fig. 2, and the exhaust port *n* will be opened and no injury whatever will be done to the tire, but immediately on the escape of the over pressure in the tire, the valve-plunger *o* will be forced back into position to close the port or passage *n* by the spring *p*, and the pressure or force of the spring *p* may be regulated at any time by turning the cap *f* in the desired direction. I also preferably provide the tubular casing *d* which constitutes the barrel of the device with a scale *s*, as shown in Fig. 5. In the accompanying drawing, this scale consists of scale marks provided with numerals 6, 7, 8 and 9, and these numerals may stand for, or indicate 60, 70, 80 and 90 pounds pressure, and as will be understood, the cap *f* operating in connection with this scale may be manipulated so as to indicate the exact pressure in the tire, or the pressure desired therein and under which the tire is supposed to be working.

My invention is not limited to the exact means herein shown and described for connecting the barrel or casing of my improvement with the rim of a wheel, or the tire or the inflatable tube therein, and various changes in and modifications of these features of the construction herein shown and described, as well as of the operative parts thereof may be made, within the scope of the appended claims, without departing from the spirit of my invention or sacrificing its advantages, and while I have shown and described my improvement as particularly adapted for use in connection with pneumatic tires, it will be evident that the same may be used in connection with other devices or articles using air, gas or steam under pressure and for purposes similar to those herein shown and described, or for any other purposes for which the device may be applicable.

In the use of this device, as hereinbefore described, the cap *f* is first preferably set so as to indicate the pressure desired in the tire, and the operation of inflating the tire, when the pressure reaches the desired point, any increase of pressure will be blown off or exhausted through the port *n* and this, of course, indicates that the tire is properly inflated.

Having fully described my invention what I claim as new and desire to secure by Letters Patent is;—

1. A device of the class described comprising a tubular casing or barrel one end portion of which is provided with a central longitudinal chamber and the other end portion of which is provided with a central bore or passage around which are other bores or passages, the open end portion of said chamber being closed by a cap provided with an internally threaded neck, said casing or barrel being also provided with an exhaust port, a plunger-valve mounted in said casing and adapted to open and close said port, a spring mounted in said casing and having a bearing on said plunger-valve and in said cap, a tube passing through said cap and the neck thereof and into said bore or passage and having a threaded connection with said cap, and an air valve mounted in said tube and normally closed and adapted to open inwardly.

2. A device of the class described comprising a tubular casing or barrel in one end of which is a longitudinal chamber and the other end of which is provided with a central bore or passage around which are other bores or passages, the other end of said casing or barrel being closed by a cap having a neck, said tubular casing or barrel being also provided in one side thereof with an exhaust port, a plunger-valve mounted in said chamber and adapted to open and close said exhaust port, a spring mounted in said chamber and bearing on said plunger valve and on said cap, a tube passing through said cap and the neck thereof and into said central bore or passage and having a threaded connection with the neck of said cap, and a threaded plug mounted in said tube and

through which passes a valve stem provided at its inner end with a valve, and on the outer end portion of which is mounted a spiral spring adapted to move said valve stem outwardly, said valve stem being provided with a central longitudinal bore which opens outwardly through said head, and laterally and adjacent to said valve.

In testimony that I claim the foregoing as my invention I have signed my name in presence of the subscribing witnesses this 9th day of May 1913.

ROBERT H. HENEMIER.

Witnesses:

C. MULREANY,

S. ANDREWS.