June 24, 1930. E. W. RICHARDSON 1,765,850

AUTOMATIC SAFETY PRESSURE GAUGE FOR INFLATING TIRES

Filed Jan. 17, 1927

Fig. 1.

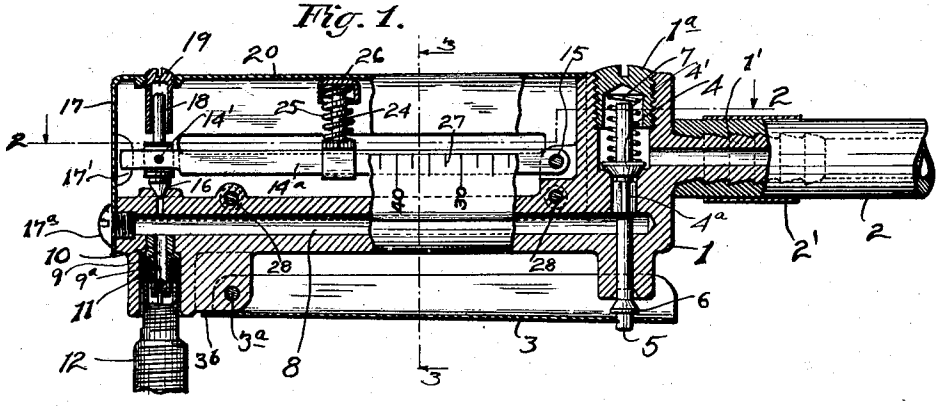


Fig. 2.

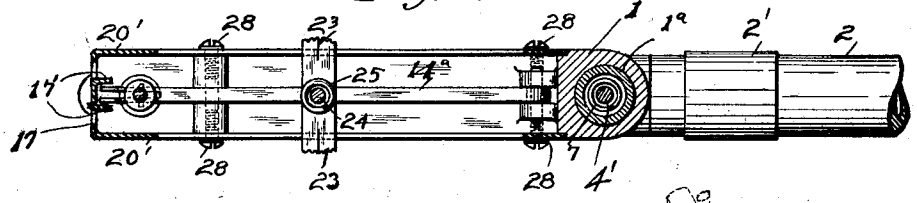


Fig. 3.

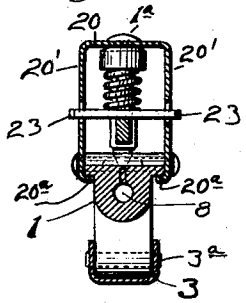


Fig. 4.

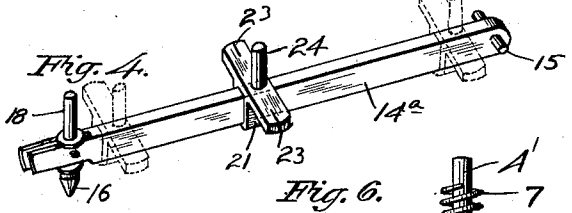


Fig. 5.

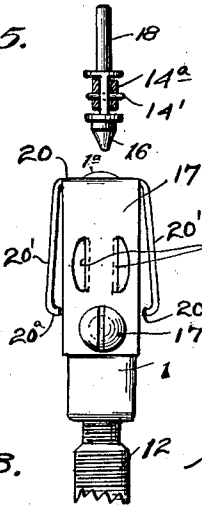


Fig. 6.

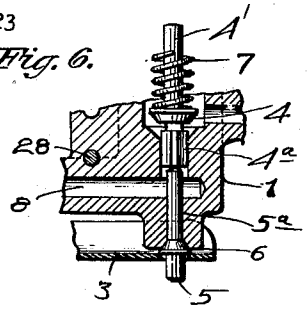


Fig. 7.

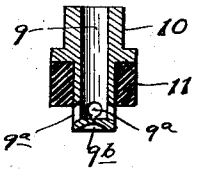


Fig. 8.

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UNITED STATES PATENT OFFICE

EMMETT W. RICHARDSON, OF OAKDALE, CALIFORNIA

AUTOMATIC SAFETY PRESSURE GAUGE FOR INFLATING TIRES

Application filed January 17, 1927. Serial No. 161,546.

This invention relates to a pressure gauge provided with safety mechanism for inflating pneumatic tires, and its object is to provide means whereby the person inflating the tires will not be liable to over-inflate the tires and thereby injure them.

One object of this invention is to provide means whereby the tire will give notice to the workman inflating it when it has been inflated to the proper pressure and thereby prevent him from holding the gauge on the stem of the tire tube too long.

Another object of this invention is to provide means whereby the gauge will be of extremely sturdy construction and dispense with expensive packing joints and other contrivances ordinarily found in such devices to prevent the leakage of air from the receiver beyond the main valve at the end of the pressure hose.

Another object of this invention is to provide means whereby the safety valve may be regulated to pop or give the alarm at different pressures, thereby enabling tires carrying different pressures to be readily inflated without danger of injury.

Another object of this invention is to simplify the construction as far as possible and to provide a casing for the operating parts which will be of considerable strength so there will be no danger of injury thereto owing to the rough usage that an apparatus of this kind usually receives.

Other objects of the invention will be apparent as the description proceeds.

An embodiment of this invention is shown in the accompanying drawings in which the same reference numeral is applied to the same portion throughout the several figures of the drawings and of which there may be modifications.

Figure 1 is a longitudinal sectional view of the complete apparatus, a portion thereof being shown in outer view to show the place for the indicator,

Figure 2 is a horizontal section on the line 2—2 Fig. 1,

Figure 3 is a transverse sectional view looking in the direction of the arrow on the line 3—3 Figure 1,

Figure 4 is a perspective view of the safety valve operating bar,

Figure 5 is a side elevation of the safety valve and its operating bar, the latter being shown in section,

Figure 6 is a vertical sectional view adjacent the main check valve, the handle for operating the same being shown with the said valve lifted,

Figure 7 is a vertical sectional view of the bushing to operate the stem in the air valve of the pneumatic tube,

Figure 8 is an end view of the apparatus showing the cover for the operating apparatus in process of being installed on the cast base.

The numeral 1 represents an elongated casting which has a nipple 1′ secured thereto over which the pressure tube 2 is placed, the latter being held in place by means of a band 2′.

The casting 1 has a bore to receive the main check valve 4 at one end and transversely extending into said bore are the holes through the tube 1′ to receive air from the air receiver, and the bore 8 to distribute the air to the pneumatic valve stem 12 and to the opening covered by the safety valve 16. The main check valve 4 moves in an opening extending transversely through the main casting 1. It is provided with a stem 4′ and with a guiding shank 4^a which is so shaped as to allow the air to pass from the tube 2 under the valve 4 and into the elongated passage 8.

The main check valve 4 is normally held seated by means of a small spiral spring 7, and said spring bears on the inside of a cap 1^a which is screwed into an opening over said valve 4. The main check valve 4 is unseated by means of a separate stem 5, which stem is provided with a flange at 6 which acts as a valve to prevent the escape of air through the stem passageway when pressure is applied to the passageway 8.

The stem 5 is operated by means of a sheet metal handle which bears on the flange 6 and seats it against the casting 1, said handle 3 being pivoted to a depending lug on the main casting as indicated at 3^a, the

end 3^b of said handle preventing the stem 5 from coming out of its place.

On the opposite end of the casting from the stem 5, there is a small nipple 10, which has a rubber gasket 11 placed thereon, and said nipple has holes 9^a to permit the air to escape from the bore 8 into the tube 12. In order to unseat the stem of the valve in the ordinary pneumatic tube, the nipple 10 is provided with a recess indicated at 9^b to catch and depress the valve stem. The gasket 11 seals the end of the tube 12 when inflating a tire.

In order to provide a cover for the bar 14^a the regulating device, and a small screw tube 19 which serves as a guide for the stem 18 the cap 20 is provided. This cap 20 has two depending sides 20′ as indicated in Figure 8 and at the bottom each of these sides is provided with an inturned flange 20^a. At the end the cap has the depending portion 17 which is provided with two cuts to form two inturned lips 17′ to afford a guide for the split end of the bar 14^a to make sure that it seats the valve 16 properly each time it is unseated. The cap 20, it will be seen, is pushed into place from the top and its end 17 is secured to the casting by means of a screw 17^a which is screwed into the end of the bore 8. Similarly the two sides 20′ stand slightly away from the casting when it is put into place, but when the screws 28 of which there are four, notice particularly Figure 2, are inserted in place, the two sides are brought snugly into position with the flanges of the cap under a reversely placed flange of the casting as indicated in Figure 3, this particular construction being convenient for the purposes of assembly of the parts of the gauge. The valve 16 is connected to the bar 14^a by the pin 14′.

Each of the opposite sides of the cap is provided with an elongated slot to receive the arms 23 of the slide 21, the object being to provide means whereby the indications on the outside of the cap may be used to determine what pressure the valve 16 will blow off at.

The slide 21 has the pin 24 to receive the spring 25, and a cap 26 fits over the spring and bears against the top of the cap 20.

The moving of the slide toward or away from the fulcrum 15 determines the point of blow off of the safety valve, the strength of the spring 25 and the scale being found by trial.

The operation of the safety valve is as follows: Assuming the tube 2 to be connected to an air reservoir, the workman takes the gauge in his hand and places the gasket 11 on the top of any ordinary pneumatic tube stem. This will unseat the small valve stem inside the larger stem, and at the same time he will bear upon the handle 3 with sufficient force to raise the stem 5 closing the stem passageway by the flange 6, and at the same time unseating the main check valve 4. This will permit air to pass through the passageway 8 into the pneumatic tube, and when the pressure in the pneumatic tube is high enough to unseat the safety valve 16, that pressure being determined by the position at which the slide 21 is placed in accordance with the scale on the outside of the sides of the cap 20, the safety valve will blow off and give the alarm that the desired pressure has been reached within the tube. The workman will, of course, at once release the handle 3 and remove the tool from the stem of the pneumatic tube.

Ordinarily the arrangement is such that the pressure to be indicated, will run from about twenty pounds to about one hundred and twenty pounds per square inch on the gauge on the outside of the sides of the cap 20.

Having thus described my invention, what I desire to secure by Letters Patent of the United States is as follows, but modifications may be made in carrying out the invention as shown in the drawings and in the above particularly described form thereof, within the purview of the annexed claim.

An automatic safety pressure gauge comprising an elongated base having a longitudinal bore therein, means to admit air under pressure to said bore at one end thereof, a small bore at the other end thereof, a safety valve for said small bore, a bar having one end attached to said safety valve, and the other end pivoted to said base, a slide on said bar, lateral arms on said slide, a detachable cap for said base adapted to cover said bar, slots on each side of said cap parallel with said bar through which said lateral arms extend a post on said slide, a spring on said post adapted to bear against the top of said cap and slide thereon, and a scale on the outside of said cap adjacent said slots.

In testimony whereof I have hereunto set my hand this 12th day of January, A. D., 1927.

EMMETT W. RICHARDSON.