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INFLATING DEVICE FOR PNEUMATIC TIRES

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Fig. 1.

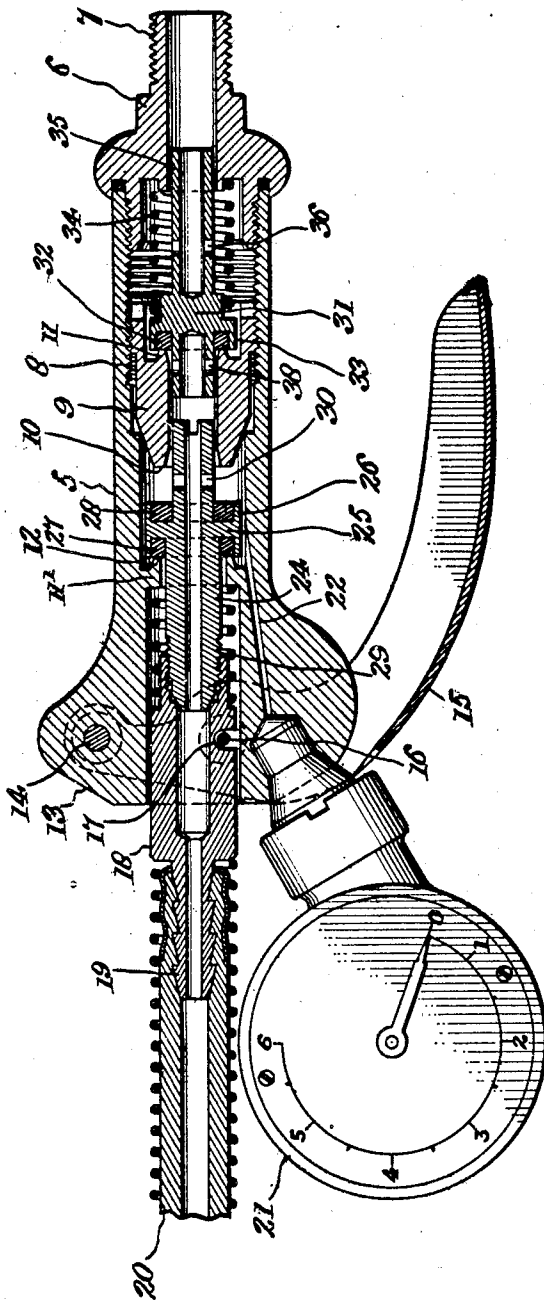
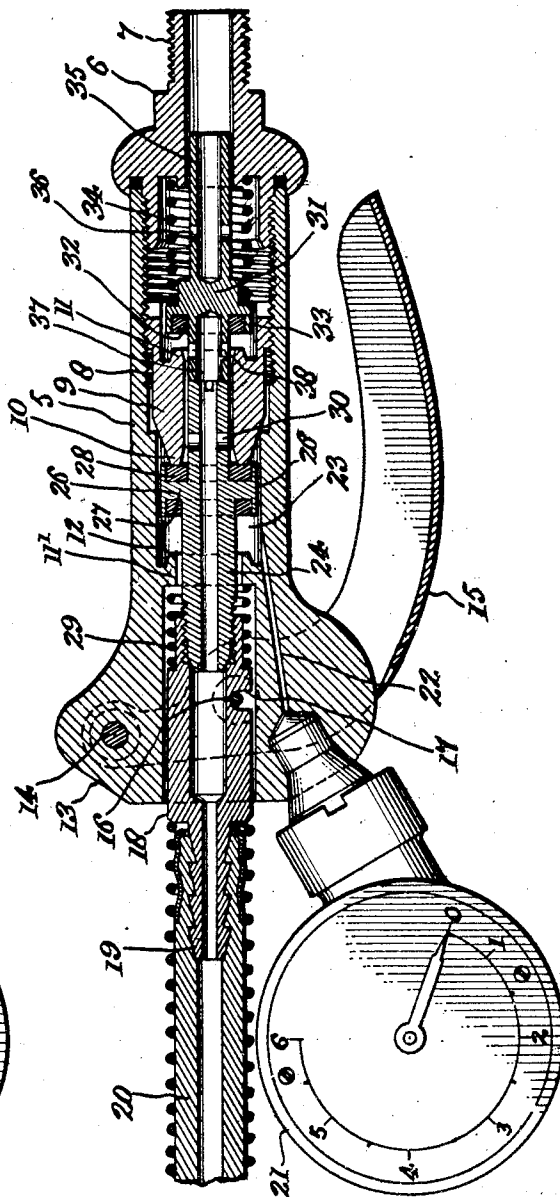


Fig. 2.



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UNITED STATES PATENT OFFICE

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INFLATING DEVICE FOR PNEUMATIC TIRES

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The present invention relates to improvements in inflating devices for pneumatic tires, and has for an object to provide an improved inflating device or pistol provided with a gauge for indicating the pressure obtaining in the tire.

It is another object of the invention to provide an improved device adapted to be connected between the tire and the source of compressed air, by which anyone of three operations may be performed, first, to inflate the tire by placing the source of compressed air in communication with the interior, or valve stem, of the tire; second, to measure the pressure existing in the tire, or, third, to permit of the escape of any excess pressure in the tire, so as to lower the pressure to that recommended.

A further object of the invention resides in providing an improved device for carrying out the above operations in an extremely simple way with the aid of a simple operating lever or member.

A still further object of the invention is to provide an improved device which is very strongly built and very compactly arranged so as to take up little space.

A still further object of the invention is to provide an improved device shaped after the fashion of a pistol for convenience in being held in the hand and squeezed to various positions for carrying out the purposes above related.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claim appended hereto.

In the drawings, wherein like symbols refer to like or corresponding parts throughout the several views,

Figure 1 is a longitudinal sectional view, with the gauge shown in elevation, of an improved inflating device constructed in accordance to the present invention, and

Figure 2 is a similar view, but with the parts in a subsequent position.

Referring more particularly to the drawings, 5 represents the barrel or cylinder of the device or pistol having the head 6 at one

end screw-threaded or otherwise carried by the barrel 5, and itself having a nipple 7 to receive a hose or pipe connected to a source of supply of compressed air. The interior portion of the cylinder 5 is threaded, as indicated at 8, to adjustably receive a seat member 9 having the valve seats 10 and 11 at opposite ends. The cylinder is also provided with a perforated diaphragm 11^a having the valve seat 12. At one end, the cylinder 5 is provided with an enlargement 13 to receive the pivot 14 of a lever 15 which extends in relation to the cylinder 5 to permit of the lever and cylinder being grasped in one hand and squeezed together. A pin 16 on the lever projects into a notch 17 on the plunger 18 for the purpose of moving the parts, as hereinafter described. This plunger at its outer end carries the nipple 19 coupled to the hose 20, by which the air under pressure is conveyed from the pistol to the valve stem and to the inner tube of the pneumatic tire.

An air gauge is shown at 21, being connected with the enlargement 13 of the pistol and connected by a passage 22 through this enlargement with a central chamber 23 in the barrel 5, which chamber is disposed between the valve seats 10 and 12. Mounted for reciprocation in the chamber 23 is a valve carried by a hollow stem 24 removably or otherwise coupled to the hollow plunger 18, and forming an extension of the plunger.

The stem is provided with the outstanding flange 25 having the overhanging rims 26 for confining the rubber or other valves 27 and 28 disposed at opposite sides of the flange 25 and adapted to seat, respectively, against the seat members 12 and 10. A coil spring 29 acts against the diaphragm 11^a and the plunger 18 to normally move the parts to the position shown in Figure 1, the lever 15 being utilized to move the parts to the position shown in Figure 2. The free end of the hollow stem 24 is open, and between this open end and the valve 28 are perforations 30 for placing the interior of the stem 24 in communication with the chamber 23. These openings 30 are so disposed as to be masked within the seat member 9 when the plunger

and its stem 24 are shifted to right hand position indicated in Figure 2.

A second plunger is indicated at 31 having an annular rubber or other valve 32 confined within a rim 33, and positioned and designed to close against the valve seat 11. A coil spring 34, acting against the head 6 and the plunger 31, serves to yieldably hold the yielding valve 32 against its seat 11, as shown in Figure 1. The plunger stem 35 at one side of the valve 32 is provided with the openings or perforations 36 to place the interior of the stem in communication with the outer surrounding space in the barrel 5; while an opposite stem 37 of this plunger is provided with perforations 38 adapted in the closed position of the valve 32, to be masked within the seat member 9, but in the open position of the valve 32, as shown in Figure 2, to communicate with the outer surrounding space in the cylinder 5.

In the operation of the invention, the parts are shown in the normal position in Figure 1. In this position of the parts, the compressed air from the source of supply entering the pistol at the end 7 is checked against any advance by the valve 32, which is held to its seat 11 by the action of the spring 34.

If we assume that in this position of the parts, the hose 20 is connected to a valve stem of a tire, the interior pressure of the tire will be registered on the gauge 21, as the gauge is in direct communication, at that time, with the interior of the tire through the hose 20, hollow plunger 18, and its extension stem 24, perforations 30, chamber 23, and passage 22. Thus, by simply applying the device to the tire, and without any operation on the part of the operator, the gauge will register the pressure within the tire and indicate whether additional air should be applied, in order to build up the required pressure, or whether the tire should be deflated and to what extent.

Assuming that the tire requires air, the lever 15 is squeezed as far as it is permitted, toward the pistol barrel 5. In so doing, the parts will be shifted to the position shown in Figure 2. The plunger 18, which connects directly with the pin 16 of the lever 15, is moved toward the right, compressing the spring 29 and shifting the valve 27 away from its seat 12. The opposed valve 28 is closed against the seat 10, the inner end of the hollow stem 24, engages the stem end 37 of the plunger 31, causing this second plunger 31 to be moved toward the right, compressing the spring 34 and opening the valve 32 away from its seat 11.

In this position, air from the source, entering the nipple 7, will pass into the plunger extension stem 35, out through the openings 36 and about the opened valve 32, to and through the perforations 38, and into the open end of the hollow plunger 24, which will con-

vey same to the hose 20 and to the interior of the tire. During this movement, the gauge 21 will be cut off by the valve 28, being closed against the seat 10. This valve 28 will also prevent any escape of the air either from the source or tire to the atmosphere.

Should the tire require deflation, the lever 15 is moved to an intermediate position, between the positions shown in Figures 1 and 2, so that neither valve 27 or 28 will be closed, and thereby not interfere with the closed position of the valve 32. The closed valve 32 will, of course, prevent any escape of the compressed air from the source, while the tire is being evacuated of its excess air. In the intermediate position, with both valves 27 and 28 open, the air from the interior of the tire will pass through the hose 20, hollow plunger 18, hollow stem 24, out through the unmasked openings 30 into the chamber 23, about the rim 27 of the valve assembly, and out through the perforation in the diaphragm 11^a through which the stem 24 fits loosely. The space 40 to the left of the diaphragm 11^a is in open communication with the atmosphere.

The improved device thus provides for:

(1) Checking the air pressure in the tire by the use of the gauge 21.

(2) Increasing the pressure if the same be too low, and

(3) Lowering the pressure if the same be too high, the last two mentioned operations being under the control of a single valve operable in a convenient and quick manner after the manner of squeezing the trigger of a pistol.

It will be obvious that many changes in the construction, combination and arrangement of parts could be made, which could be used without departing from the spirit of my invention, and I do not mean to limit the invention to such details, except as particularly pointed out in the claim.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States is:—

An improved inflating device for pneumatic tires comprising a barrel, an adjustable seating member therein having valve seats at opposite ends, a plunger having a valve adapted to seat against one of the seats, means to yieldably hold the valve seated, hollow perforated extension stems on said plunger at opposite sides of the valve, a second plunger mounted in said barrel, and having opposed valves thereon, one of which is adapted to seat against the opposite seat on said seating member, a perforated diaphragm in said barrel having a valve seat to engage the other opposite valve, a perforated extension on the second plunger adapted to engage the adjacent stem of the first plunger to unseat the first valve, yieldable means for normally urging the second plunger to a position with the respective valve against the diaphragm seat,

a flexible hose connected to the second hollow plunger, a gauge carried by said barrel in communication with an interior chamber of the barrel between the diaphragm and said seating member, and a handle pivoted at one end on the barrel, and having connection with the second plunger.

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