Sept. 30, 1930. C. I. MATSON 1,777,009

TIRE PUMP

Filed Feb. 17, 1928

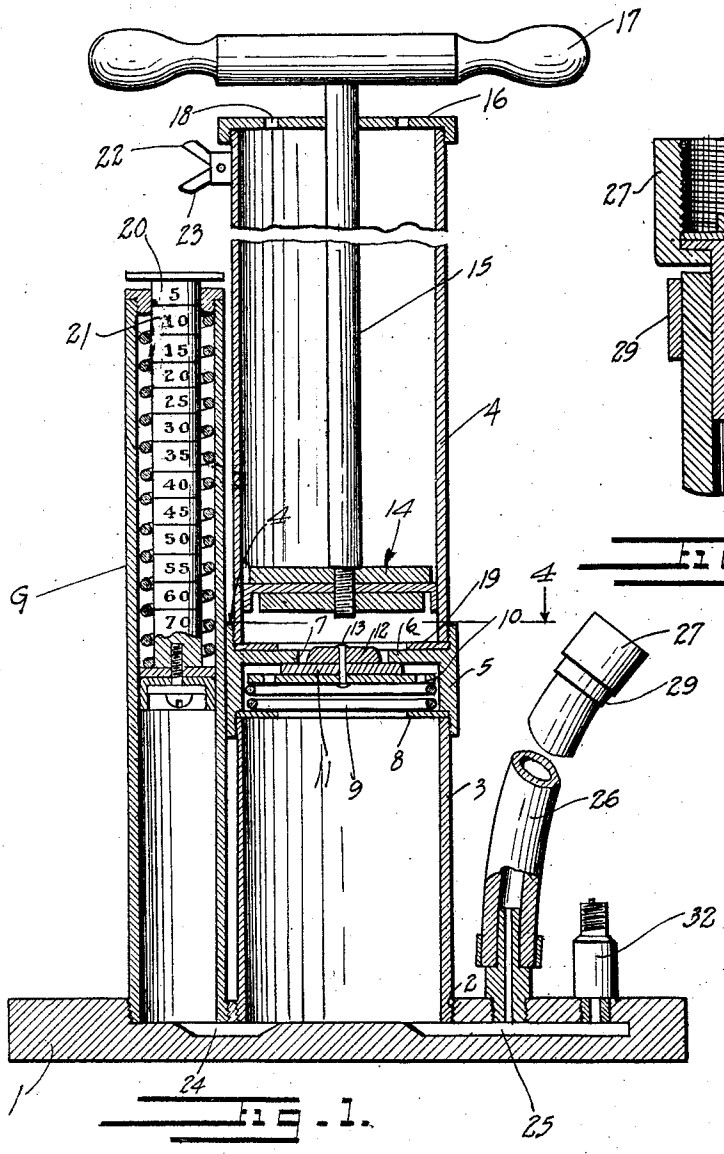


Fig. 1.

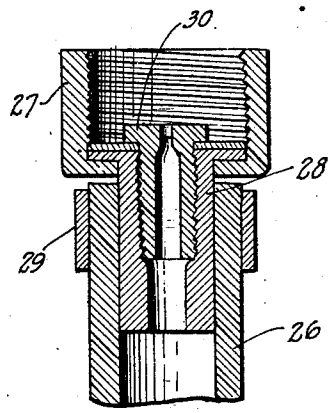


Fig. 2.

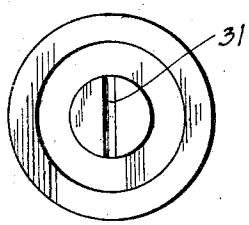


Fig. 3.

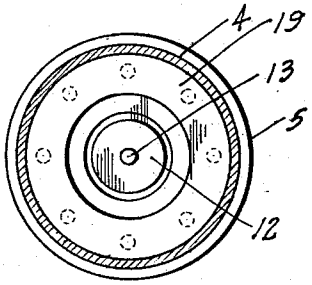


Fig. 4.

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Patented Sept. 30, 1930 1,777,009

UNITED STATES PATENT OFFICE

CHARLES IVER MATSON, OF CHICAGO, ILLINOIS

TIRE PUMP

Application filed February 17, 1928. Serial No. 255,081.

My invention relates to improvements in tire pumps, and it consists in the combinations, constructions, and arrangements herein described and claimed.

An object of my invention is to provide a tire pump of the type actuated by a reciprocating plunger, and in which an auxiliary chamber is provided for receiving the air compressed by the movement of the piston, from which chamber the compressed air may be permitted to pass into a tire independently of the movement of the plunger, thereby providing a pump which is relatively easy to operate.

A further object is to provide a tire pump which is relatively simple in construction and easy to operate, and in which means is provided whereby the air pressure may be read during the operation of the pump.

Other objects and advantages will appear in the following specification, and the novel features of the invention will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings, forming part of this application, in which

Figure 1 is a sectional view taken through my device.

Figure 2 is an enlarged sectional detail view of a portion of the device shown in Figure 1,

Figure 3 is a top plan view of the device shown in Figure 2, and

Figure 4 is a sectional view taken substantially along the line 4—4 of Figure 1.

In carrying out my invention, I make use of a base plate 1 having a threaded bore 2 in one face thereof within which the threaded end of a tubular member 3 is disposed. The tubular member 3 is connected with a tubular member 4 by means of a coupling 5. The tubular members 3 and 4 are disposed in longitudinal alignment. The coupling 5 is provided with a flange 6 having a central opening 7. A supporting ring 8 is disposed between one end of the tubular member 3 and a portion of the coupling 5. The ring 8 is preferably of fibrous materials and serves a two-fold purpose in that it acts as a sealing means and also a supporting means for a spring 9. A disc 10 is mounted upon the spring 9 and disposed relatively near the flange 6. A foot valve comprising a sealing disc 11 and a retaining member 12 is secured to the disc 10 by means of any suitable rivet 13. The foot valve is disposed concentrically with respect to the opening 7, as shown in Figure 1.

A piston 14 secured to a piston rod 15 is disposed within the tubular member 4. The piston rod 15 extends through an opening in a cover 16 disposed upon one end of the tubular member 4. A handle 17 is secured to the piston rod 15. Openings 18 are provided in the cover 16. A sealing disc 19 is disposed between one end of the tubular member 4 and the flange 6.

A gauge G is mounted upon the base plate 1 and adjacent the tubular members 3 and 4. The gauge G is provided with a plunger 20 having suitable indicia 21 thereon, as shown in Figure 1. Suitable stop members 22 and 23 are secured to the tubular member 4 and in longitudinal alignment with the plunger 20. The chamber portion of the gauge G communicates with the chamber within the tubular member 3 by means of a passageway 24. A second passageway 25 is provided in the base plate 1. The passageway 25 communicates with the chamber within the tubular member 3 and a pump hose 26 having a coupling means 27 adapted to be secured to the ordinary valve stem with which automobile tires are provided.

Referring to Figure 2, it will be noted that the coupling means 27 is rotatably mounted upon a hose stem 28 which is secured to one end of the pump hose 26 by means of a suitable collar 29. A valve stem releasing member 30 is disposed within the coupling means 27 and the hose stem 28. The valve stem releasing member 30 is provided with an elongated slot 31, see Figure 3. A suitable valve 32 is mounted upon the base plate 1 and is in communication with the passageway 25. Standard pressure gauges may be applied to the valve 32 for taking the pressure readings when desired.

From the foregoing description of the various parts of the device, the operation there-

of may be readily understood. The operation of the piston 14 is in the usual manner, that is to say, it is reciprocated within the tubular member 4 by means of the handle 17. Downward movement of the piston 14 will force the compressed air against the foot valve. The pressure of the compressed air is sufficient to move the foot valve away from the flange 6 against the tension of the coil spring 9, whereupon the compressed air will pass into the chamber within the tubular member 3. Prior to this however the coupling means 27 has been screwed down upon the valve stem in the tire which is being filled, resulting in a contact between the valve stem releasing member 30 and the valve stem for opening the valve stem in the tire. As soon as the valve stem in the tire is opened, the pressure in the tire and in the chamber within the tubular member 3 is equalized. Continued reciprocation of the piston 14 will increase the pressure within the tubular member 3, and as this pressure increases, the compressed air will flow gradually through the pump hose 26 and into the tire.

It will be seen that the foot valve is relatively large so that the air compressed by the movement of the piston 14 may easily pass the foot valve and immediately upon retraction of the piston 14, the foot valve will be closed by the spring 9, whereupon the compressed air is locked within the tubular member 3. Thus it will be seen that the compressed air within the member 3 will flow of its own pressure gradually into the tire, thereby relieving the operator of the pump of the additional work of forcing the compressed air through the constricted passageways in the pump hose and particularly around the valve stem in the tire.

During the operation of the pump, the plunger 20 will of course rise in accordance with the amount of pressure within the tire and is so arranged that the operator can easily take a pressure reading at any time. In order to further expedite the reading of the pressure within the tire, I have provided stop members 22 and 23 which may be adjusted to engage the plunger during its outward movement at a predetermined pressure, thereby indicating to the operator the amount of pressure without actually reading the indicia upon the plunger 20.

I claim:

1. A tire pump comprising a cylinder having plunger means disposed therein, a storage receiver, and valve means disposed between the cylinder and said storage receiver for permitting compressed air to be passed from the cylinder to the storage receiver and held therein when said plunger means is actuated, said storage receiver having a capacity sufficient to receive the compressed air from said cylinder, and means communicating with said storage receiver and arranged for connection with a tire valve, whereby the tire may be inflated by the compressed air flowing from said storage receiver.

2. A tire pump comprising a cylinder and a storage receiver, a partition disposed between the cylinder and the storage receiver and being provided with an opening, valve means for closing the opening, spring means for normally holding said valve in closing relation with the opening in said partition, and plunger means disposed within the cylinder for moving compressed air from the same beyond the valve and into said storage receiver, said storage receiver having sufficient capacity to receive an accumulated volume of compressed air from the cylinder.

3. A tire pump comprising a cylinder and a storage receiver, a partition disposed between the cylinder and the storage receiver and being provided with an opening, valve means for closing the opening, spring means for normally holding said valve in closing relation with the opening in said partition, plunger means disposed within the cylinder for moving compressed air from the same beyond the valve and into said storage receiver, said storage receiver having sufficient capacity to receive an accumulated volume of compressed air from the cylinder, and means communicating with said storage receiver and arranged for connection with an inflating valve, whereby compressed air from said storage receiver may pass through the valve.

Signed at Chicago, in the county of Cook, and State of Illinois, this 14th day of February, A. D. 1928.

CHARLES IVER MATSON.