April 19, 1927. 1,625,099

W. J. RUDOLPH

PUMP

Original Filed Nov. 23, 1921

FIG. 1

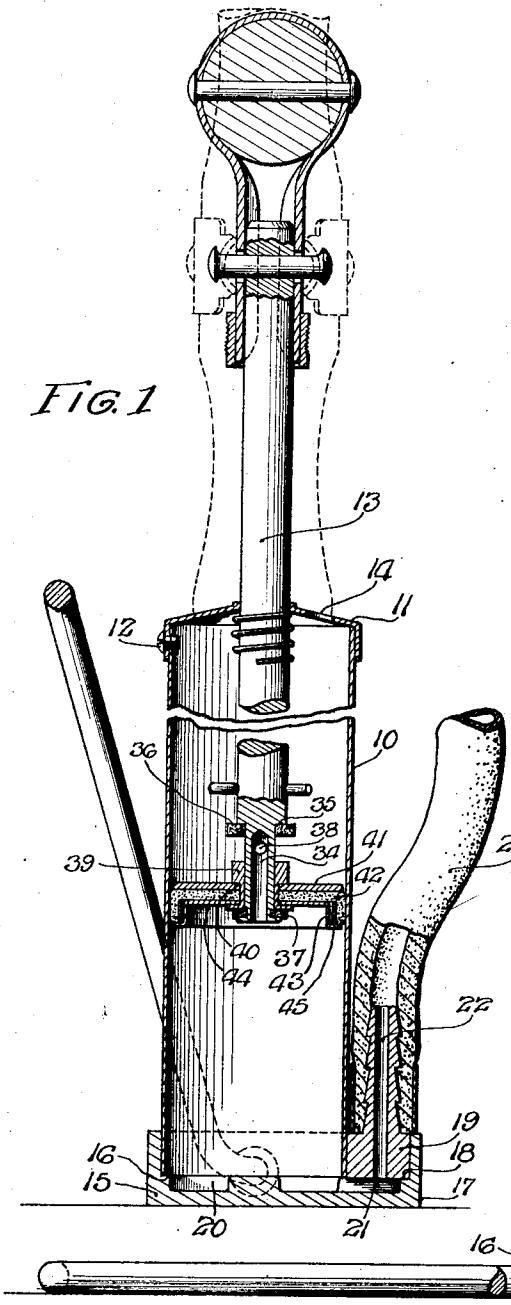
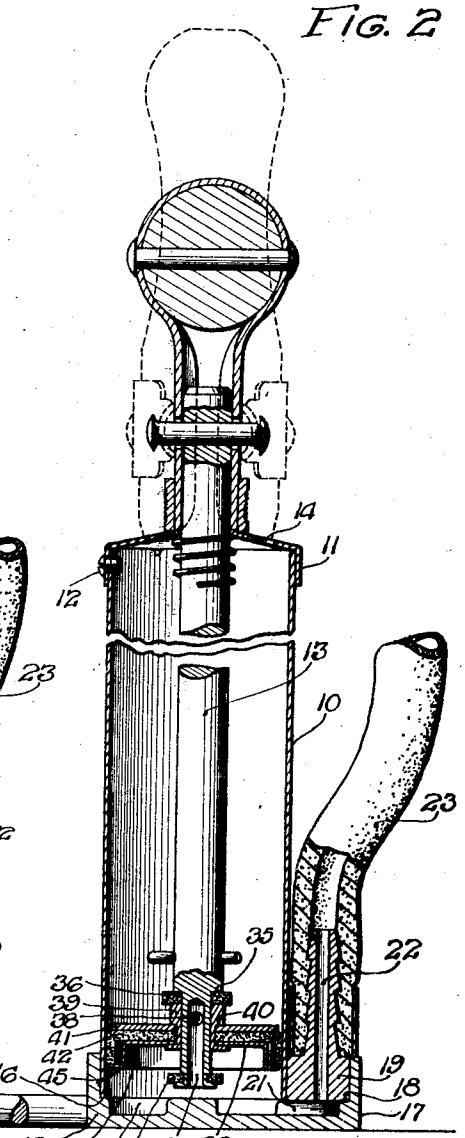


FIG. 2



INVENTOR:
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HIS ATTY.

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UNITED STATES PATENT OFFICE.

WALTER J. RUDOLPH, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE IMPERIAL BRASS MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

PUMP.

Original application filed November 23, 1921, Serial No. 517,208. Divided and this application filed December 20, 1924. Serial No. 757,224.

My invention is concerned with air pumps for pneumatic tires, etc., and is designed to produce a pump of the class described that shall be simple in its construction and which can be cheaply manufactured.

To illustrate my invention, I annex hereto a sheet of drawings, in which the same reference characters are used to designate identical parts in both the figures, of which,—

Fig. 1 is a central, vertical section of a pump embodying my invention, showing the parts in the position they occupy when the piston is being raised; and

Fig. 2 is a similar view, but showing the position of the parts when the piston is being forced down.

In carrying out my invention in its preferred form, I form the barrel 10 of a cylinder of sheet metal, closed at the upper end by the cap 11 secured thereto by the screw 12, and having the centrally located aperture through which the piston rod 13 slides in the customary manner. An aperture 14 in the cap permits the air to enter and escape from the cylinder above the piston, as is necessary in the operation of the device.

The other end is closed by the base piece 15, which preferably takes the form of a casting having the main portion circular in outlines, and provided with the annular seat 16 upon which rests the lower end of the barrel. Projecting from and formed integrally with this main portion is the smaller portion 17, likewise circular in outline, and provided with the annular seat 18, touching the annular seat 16 and arranged to have the end of the nipple 19 rest thereon. An annular recess 20 is formed in the portion 15 below the seat 16, and a passage 21 leading from this channel 20 below the bottom of the nipple permits the air from the pump to reach the discharge passage 22 extending through said nipple, which nipple of course will be provided with the customary flexible tube 23.

The handle on the upper end of the piston rod 13 may be of any desired construction, and the valve mechanism, which comprises the essentially novel feature of my invention, is constructed as follows:

A centrally located hole 34 is drilled upward through the bottom of the piston rod, substantially up to the shoulder 35 formed by reducing the diameter of the piston rod from that point downward, and against this shoulder I place the packing disk 36 of any suitable material, such as leather, rubber, etc. At the bottom of the rod I make a still further reduction, forming a shoulder against which is secured the smaller packing ring or abutment 37, preferably by swaging up the reduced end of the piston rod. In the reduced portion I form the port 38, and co-operating with this port is the piston, which is preferably formed with the sliding sleeve 39 as a basis, said sleeve having a shoulder 40 thereon, and against this shoulder 40 is placed a metallic disk 41, against which in turn is placed a leather cup 42, the turned down edges of which co-operate with the inner surface of the tube 10 to make it air tight, it being held outward by the split spring ring 43 placed therein and held in place by a thin metallic cup 44, which has the outwardly extending flange 45 to hold the split ring 43 in place.

The operation of my improved pump will be readily understood. When the piston is forced down, the parts are in the position shown in Fig. 2, and the port 38 is closed by the sleeve 39, the complete closure of this port being insured by the employment of the packing ring 36. When the piston rod is pulled up, the parts assume the position shown in Fig. 1, with the sleeve 39 below the port 38, so that air can pass through the port and down through the bottom of the tube and into the barrel to fill it again.

While I have shown and described my invention as embodied in the form which I at present consider best adapted to carry out its purposes, it will be understood that it is capable of modifications, and that I do not desire to be limited in the interpretation of the following claims except as may be necessitated by the state of the prior art.

What I claim as new, and desire to secure by Letters Patent of the United States, is:

1. In a valved piston construction, the combination with an integral piston rod having a hollow lower end and two shoulders of different diameters on said hollow portion formed by twice reducing the diameter of the piston rod, and a packing disc against each shoulder, the lower disc secured in place by swaging the metal below it, and the valve outlet from the hollow end adjacent the up-

per shoulder, of a sleeve sliding between the packing discs, and a piston secured to the sleeve.

2. In a valved piston construction, the combination with an integral piston rod having a hollow lower end and two shoulders of different diameters formed by twice reducing the diameter of the piston rod on said hollow portion, and a packing disc against each shoulder and a valve outlet from the hollow end adjacent the upper shoulder, of a sleeve sliding between the packing discs and having a shoulder of less diameter than the sleeve proper against which the piston is secured by swaging the lower end of the sleeve sliding between the packing discs and said piston.

3. In a valved piston construction, the combination with a piston rod having a hollow lower end and two shoulders on said hollow portion with a packing disc against each shoulder and a valve outlet from the hollow end adjacent the upper shoulder, of a sleeve having a shoulder against which a piston is secured by swaging the lower end of the sleeve sliding between the packing discs and said piston, consisting of a heavy disc, a leather cup backed by the disc, a thin metal cup inside the leather cup and having an outwardly directed flange extending beneath the edges of the leather cup, and an expanding split ring between the downwardly extending flanges of the two cups.

In witness whereof I have hereunto set my hand this 15th day of Dec., 1924.

WALTER J. RUDOLPH.