

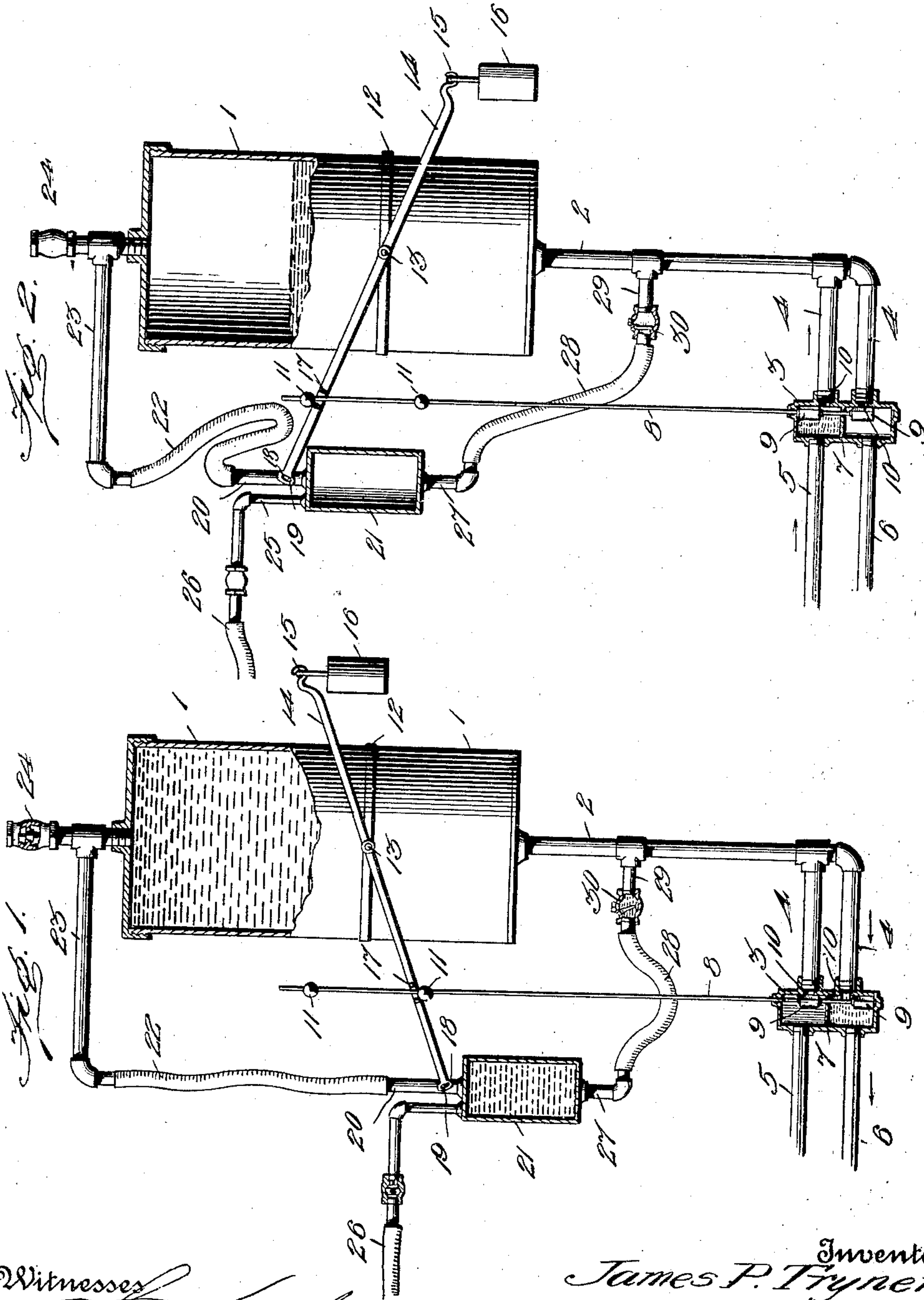
No. 686,784.

Patented Nov. 19, 1901.

J. P. TRYNER.
AIR COMPRESSOR.

(Application filed May 7, 1900.,

(No Model.)



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UNITED STATES PATENT OFFICE.

JAMES P. TRYNER, OF PUEBLO, COLORADO.

AIR-COMPRESSOR.

SPECIFICATION forming part of Letters Patent No. 686,784, dated November 19, 1901.

Application filed May 7, 1900. Serial No. 15,764. (No model.)

To all whom it may concern:

Be it known that I, JAMES P. TRYNER, a citizen of the United States, residing at Pueblo, in the county of Pueblo and State of Colorado, have invented new and useful Improvements in Air-Compressors, of which the following is a specification.

This invention relates to new and useful improvements in air-compressors especially adapted for inflating vehicle-tires; and its primary object is to provide a device of simple and inexpensive construction which is adapted to operate automatically under ordinary water-pressure.

To this end the invention consists in providing a cylinder of any desired form and material, connected at the bottom thereof to a water inlet and outlet which are adapted to be opened and closed automatically and alternately by means of a receptacle pivoted to one end of a weighted lever which has its bearing at the center, said receptacle being connected, by means of flexible tubes, to the top and bottom of the cylinder and to the storage-reservoir. An air-inlet is provided for the cylinder, and a valve of peculiar construction is arranged within the lower flexible connecting-tube and is for the purpose hereinafter more fully described.

The invention also consists in the further novel construction and combination of parts hereinafter more fully described and claimed, and illustrated in the accompanying drawings, showing the preferred form of my invention, and in which—

Figure 1 is a view, partly in section and partly in elevation, showing the lever of the compressor at one end of its stroke; and Fig. 2 is a similar view showing the lever at the opposite end of its stroke.

Referring to said figures by numerals of reference, 1 is a cylinder of ordinary construction and material, and connected to the bottom thereof is a pipe 2, having a four-way valve 3 connected thereto by means of pipes 4, and leading to this valve are a supply 5 and a discharge 6, as shown. The valve 3 is formed of a casing having a partition 7 in the center thereof and an upwardly-extending rod 8 therethrough, which rod is provided with plates 9 thereon, which are adapted to register alternately with the openings 10 within

the casing of the valve. The rod 8 is provided near its end with knobs or projections 11, which are arranged at a suitable distance apart. A band 12 is preferably secured around the cylinder 1, and this band is provided with a lug or extension 13, upon which is pivotally mounted a lever 14, which is engaged by a weight 16, which is suspended therefrom. Near the opposite end of said lever are two extensions 17, between which is mounted the rod 8, said lever lying between the knobs 11. A lug 19 is secured to a pipe 20, extending upwardly from a receptacle 21. The lever 14 has a hook 15 at the end thereof, which is elevated out of alignment with the lever and is adapted to engage the weight 16, before referred to. A ring attached to lug 19 enters the hook the same as at 15. The receptacle is of any desired form and is lighter than the weight 16 and is therefore held normally in a raised position. The pipe 20 thereof is connected, by means of a flexible tube 22, with a pipe 23, which is connected to the upper end of the cylinder 1 and is provided with a suitably-valved inlet 24. A second pipe 25 extends from the upper end of the receptacle 21 and is connected, by means of a flexible tube 26, with a suitable air-reservoir. (Not shown.)

Extending downward from the receptacle 21 is a short pipe 27, connected, by means of a flexible tube 28, to a pipe 29, which extends from the pipe 2, as shown. This pipe 29 is provided with a valve 30 therein, which opens outward from the receptacle and is for the purpose hereinafter more fully described.

In operation, presuming that the apparatus is partially filled with water, as shown in Fig. 2, the rod 8 will be held in raised position by means of the weighted lever 14, as shown in said figure. When the rod is in this position, the valve 9 within the supply portion of the casing 3 is open, while the discharge-valve within said casing is closed, as shown. Water will enter from the supply-pipe 5 to the pipes 4 and 2 and into the cylinder 1, as is obvious. Said cylinder will be gradually filled, and the air therein will be forced upward and through pipe 23 and flexible tube 22 into the receptacle 21 and thence out through the pipes 25 and 26 into the reservoir, the downward passage of the air from

the pipe 28 being prevented by the water-pressure within the pipes 2 and 29, as is obvious. Pipe 25 has a check-valve through which the air passes to the reservoir and is prevented from returning into receptacle 21. After the cylinder 1 has been filled by the water admitted thereto the same will flow outward through the pipes 23 and 22 into the receptacle 21, and when said receptacle is filled the weight thereof will overbalance the weight 16 upon the opposite end of the lever, causing the receptacle to drop into the position shown in Fig. 1, and thereby bringing the lever 14 into contact with the lower knob 11, forcing the rod 8 downward, and closing the supply and opening the discharge pipe. It is obvious that the water will flow direct from the cylinder 1 out through the discharge 6, and as the air-pressure upon both sides of the valve 30 is equal and as the position of receptacle 21, as shown in Fig. 1, is below the level of the cylinder 1 the weight of water in cylinder 1 will hold valve 30 closed until cylinder 1 is empty, when valve 30 will open and allow the discharge from receptacle 21 into the pipe 2 and out through the discharge-pipe. When a suitable amount has been discharged from the receptacle 21, the same will be overbalanced by the weight 16 and thrown upward, thereby carrying the rod 8 therewith and opening the supply and closing the discharge, when the operation hereinbefore described will be repeated. It will be seen that while the water is being discharged from the cylinder 1 and the receptacle 21 air will be drawn thereby through the inlet 24 into the cylinder 1, and the valve within this inlet is so arranged as to prevent the outward flow of air therethrough.

In the foregoing description I have shown the preferred form of my invention; but I do not limit myself thereto, as I am aware that modifications may be made therein without departing from the spirit or sacrificing the advantages thereof, and I therefore reserve the right to make such changes and alterations as fairly fall within the scope of my invention.

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

1. In an air-compressor, the combination with a cylinder having a water-inlet pipe, of a discharge and a supply to said inlet, a rod within said discharge and supply adapted to alternately open the same, knobs upon the rod, a lever adapted to engage said knob and pivoted to the cylinder, a weight upon one end of the lever, a receptacle hung to the opposite end thereof, a flexible connection between the tops of the receptacle and the cylinder, a flexible connection between the bottom of the receptacle and the water inlet and outlet of the cylinder, a hinged valve within said connection adapted to retain water within the receptacle until after the cylinder has been emptied, an air-inlet within the top of the

cylinder, and an air-outlet within the top of the receptacle.

2. In an air-compressor, the combination with a cylinder, of a water-inlet thereto, a discharge and a supply connecting with said inlet, valves thereto, an upwardly-extending rod connecting the valves and adapted to operate the same alternately, knobs upon the rod, a band encircling the cylinder having a stud thereon, a lever pivoted to said stud and having a weight at one end thereof, a receptacle suspended from the opposite end of the lever, a flexible connection between the tops of the receptacle and the cylinder, a valved flexible connection between the bottom of the receptacle and the water inlet and outlet of the cylinder, a valve therein adapted to automatically release the water from the receptacle after the cylinder has been emptied, an air-inlet within the top of the cylinder, and an air-outlet within the top of the receptacle, the lever adapted to operate the rod at the limit of its movements.

3. An air-compressor, comprising a cylinder having a valved air-inlet and an air-outlet, water-pipes for said cylinder to fill the same with water and to drain the water from the cylinder, valves for controlling the inflow and discharge of the water to and from the cylinder, a controlling device for said water inflow and discharge valves, said controlling device being controlled by the overflow of the water from said cylinder, and said controlling device comprising a lever for controlling said valves, to alternately open and close them, a receptacle on said lever, a connection between the upper end of said cylinder and said receptacle, to conduct the overflow-water from the cylinder into said receptacle to overbalance the lever and to cause the same to swing and change the positions of said valves, a tube leading from the receptacle and connected with the cylinder, and a valve therein adapted to release water from the receptacle after the cylinder has been emptied.

4. An air-compressor, comprising a cylinder provided with a pipe at its upper end, said pipe having an air-inlet valve secured thereto, a water-pipe leading from the bottom of the cylinder and having a supply and discharge pipe connected therewith, valves in the supply and discharge pipes, a pivoted and counterbalanced lever, a rod secured to the valves and arranged adjacent to the lever; knobs thereon adapted to be engaged by the lever at the limits of its movement; a receptacle suspended from the lever, a flexible pipe leading from the top of the receptacle to the top of the cylinder and a flexible tube leading from the bottom of the receptacle to the lower end of the pipe, and a hinged valve adapted to automatically release the water from the receptacle after the cylinder has been emptied.

5. An air-compressor, comprising a cylinder having a valved air-inlet and an air-outlet, water-pipes for said cylinder to fill the same

with water and to drain the water from said cylinder, valves for controlling the inflow and discharge of the water to and from the cylinder, a controlling device for said water inflow and discharge valves, said controlling device being controlled by the overflow of the water from said cylinder, and said controlling device comprising a lever, a rod secured to the valves and arranged adjacent to the lever; knobs upon the rod adapted to engage the lever, a receptacle on said lever, a connection between the upper end of said cylinder and said receptacle, to conduct the overflow-water from the cylinder into said receptacle to overbalance the lever and to cause the same to swing and change the po-

sitions of said valves at the limits of its movement, an outlet for the receptacle, said outlet comprising a valved flexible tube connecting the upper end of the receptacle with the air-reservoir, a flexible tube leading from the bottom of the receptacle to the water-pipe of the cylinder, and a valve therein adapted to automatically release the water from the receptacle after the cylinder has been emptied.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES P. TRYNER.

Witnesses:

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