

No. 816,520.

PATENTED MAR. 27, 1906.

C. F. WRAY.
PUMP.

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Fig. 1.

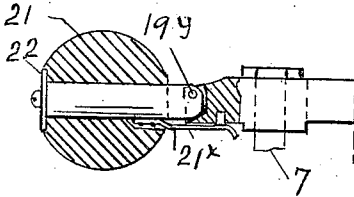


Fig. 2.

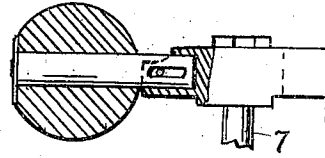
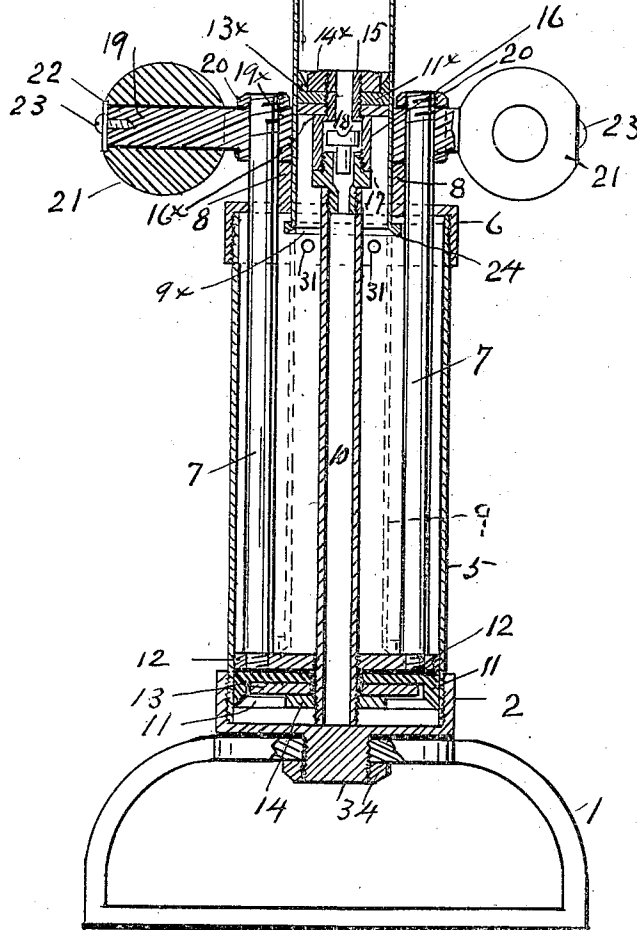


Fig. 3.



Inventor

Witnesses

C. M. Catlin
D. W. Gould.

By

Charles F. Wray.
Benj. R. Catlin
Attorney

UNITED STATES PATENT OFFICE.

CHARLES F. WRAY, OF ROCHESTER, NEW YORK.

PUMP.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES F. WRAY, a resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Pumps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

The invention relates to air-pumps and to that class in which the pump comprises a plurality of cylinders and pistons.

It has for its objects to simplify and cheapen the construction, reduce the dimensions, and secure other advantages.

The invention consists in the construction herein described and pointed out.

In the accompanying drawings, which form a part of the specification, Figure 1 is a central section of the pump, the cylinders being arranged for use and the pistons in their lowest positions. Fig. 2 is a partial side elevation showing a modified detail. Fig. 3 is a like view of another modification of said detail.

Numeral 1 denotes a base of stirrup form.

2 denotes a cap or socket having an extension or threaded boss 3 screwed into a suitable seat in the base and secured therein by a nut 4.

5 indicates a cylinder held in the socket. The upper end of said cylinder has a cap 6 screwed thereon and suitably perforated for the movement of rods 7 operatively connected to a piston in said cylinder, as will be explained. The cap 6 has a tubular base or extension 8, in which is movably supported and held a comparatively small cylinder 9. This tubular bar or cap extension 8 constitutes a guide for said cylinder 9 and a stop for the tubular portion of a handle-bar, to be described. Each cylinder has a piston, and the two pistons are connected by a hollow tube 10 constituting a piston-rod common to them. The piston of the larger cylinder comprises a flexible diaphragm or packing 11, a plate 12, to which rods 7 are secured, a washer 13, and a nut 14. This nut screws onto the tubular piston-rod and holds the washer and packing against the plate 12, which also is screwed or otherwise secured on the rod. The piston of the smaller cylinder 9 comprises a packing 11^x, washer 13^x, and nut 14^x. The latter screws onto a hollow boss or extension 15 of a part 16 of a valve-casing and holds the

packing and washer against a shoulder 16^x on the casing.

17 indicates a coupling constituting a part of the valve-casing secured to the part 16 and containing a valve-seat. 18 denotes a valve having a stem movable in the seat. The coupling 17 is hollow and is fixed to the hollow piston-rod in any suitable manner. By the described construction the two pistons are held in fixed relation to each other.

19 denotes a handle-bar secured upon the rods 7 by nuts 20, screwing onto threaded portions, as shown. The handle-bar has a portion 19^x surrounding cylinder 9 and resting on the boss 8 of cylinder-cap 6. The handles 21 are held on the handle-bar by washers 22 and screws 23. As shown in Fig. 2, these handles are hinged at 19^y and can be turned up to a situation near the axis of the cylinders to make the pump more compact for storage or transportation. 21^x denotes spring-hooks opposite the hinges. To further promote this object, the small cylinder can be forced down into the lower one, as indicated by broken lines.

24 denotes a ring fixed on the foot of cylinder 9 and provided with a bevel 9^x, whereby in assembling the cylinders for use said ring compresses the periphery of packing 11^x and guides it when the piston is inserted in said cylinder 9 from below. The cylinder is entered in the extension 8 of cap 6 from below and before the coupling 25 is fixed thereon. The ring 24 also prevents withdrawal of the cylinder from the extension 8.

The coupling 25, suitably secured in the upper end of cylinder 9, has an extension 26, to which is secured a hollow elbow-coupling 27, having a tubular extension 29, provided with ribs 30 to connect with a delivery-hose.

In operation the pistons are moved in their respective cylinders by means of the handles and the rods 7, fixed to the plate 12, to which also is fixed the tubular rod common to the two pistons. The downstroke draws air in through the ports 31, and the air below the larger piston is displaced through the hollow piston-rod and enters the smaller cylinder. Air also passes up about the smaller piston when the latter descends. In the return stroke air passes below the piston of the large cylinder and the air in front of the smaller piston and is forced into the hose, the check-valve preventing its return. The check-valve seated in coupling 25 being closed by back pressure, the cylinder 9 will

be held in its extended position (illustrated in Fig. 1) during the descent of the pistons by air displaced through the hollow piston-rod and compressed in said cylinder.

5 Having described my invention, what I claim is—

1. In a pump, a cylinder, a second cylinder concentric with the first, said cylinders being relatively movable, and a single tubular piston-rod having pistons at its opposite ends
10 working in the cylinders, and means for actuating the pistons.

2. In a pump, a cylinder, a piston, a cylinder-cap having an extension, piston-actuating rods movable through the cap, a handle-bar fixed to the rods, and a second cylinder supported in said cap, said bar embracing the second cylinder.
15

3. In a pump, a cylinder-cap having a tubular extension, piston-actuating rods movable through the cap, a handle-bar fixed to the rods, a second cylinder concentric with that first named and supported and guided in said cap extension, pistons, one in each cylinder,
20

and a hollow piston-rod connecting the pistons. 25

4. In a pump, a cylinder, a piston, a cylinder-cap, piston-actuating rods movable through the cap, a handle-bar fixed to the rods, a second cylinder supported in said cap, and movable therethrough, the rods also being adapted to be housed in said latter cylinder. 30

5. In a pump, the combination of a cylinder having a cap provided with a tubular extension, a second cylinder movable through the extension, a piston for the first-named cylinder, and a handle-bar operatively connected to said piston, said extension constituting a guide for the smaller cylinder and a stop for the handle-bar. 35 40

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CHARLES F. WRAY.

Witnesses:

EVERETT O. GIBBS,
HERBERT J. STULL.