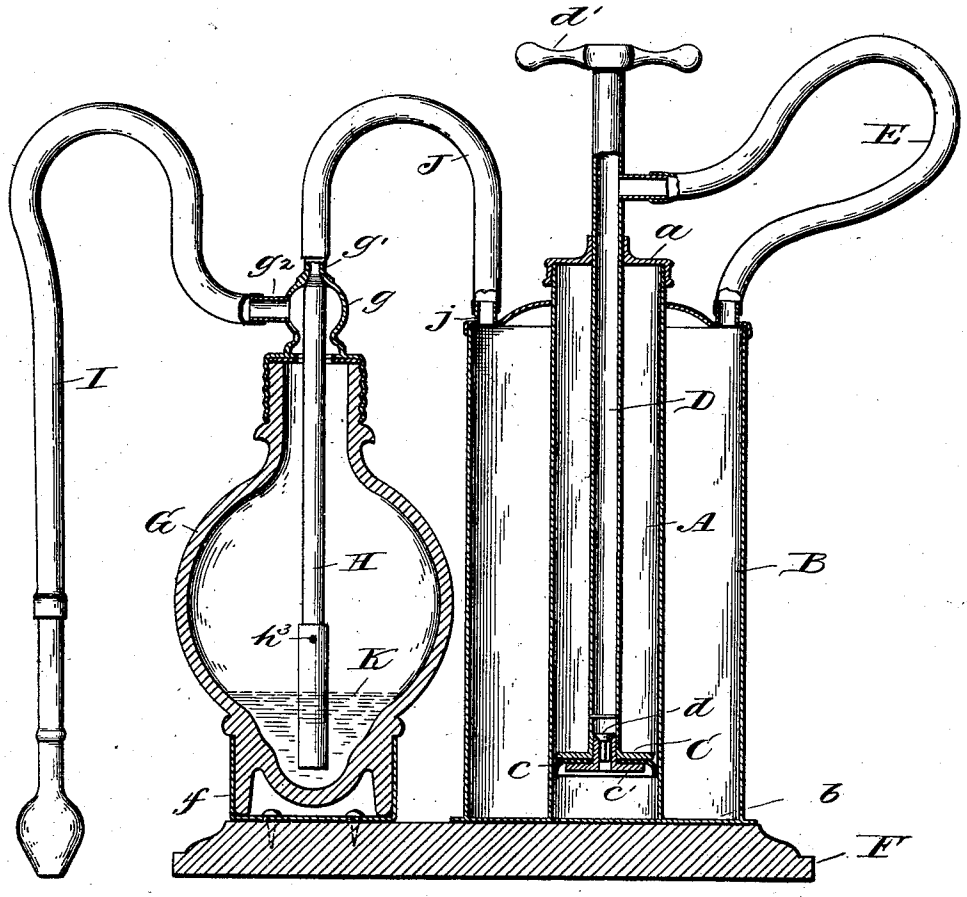
No. 694,666. Patented Mar. 4, 1902.

J. ROBERTSON.

PUMP FOR ATOMIZERS.

(Application filed Dec. 5, 1895.)

(No Model.)



Witnesses.
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UNITED STATES PATENT OFFICE.

JOHN ROBERTSON, OF CINCINNATI, OHIO.

PUMP FOR ATOMIZERS.

SPECIFICATION forming part of Letters Patent No. 694,666, dated March 4, 1902.

Application filed December 5, 1895. Serial No. 571,087. (No model.)

To all whom it may concern:

Be it known that I, JOHN ROBERTSON, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Atomizers, of which the following is a specification.

My invention relates to a novel apparatus for reducing and administering medicines.

The object of my invention is to produce an atomizing device which will be at once simple and economical in construction, convenient and efficient in operation, handy to adjust, and durable in use; and it consists of an air-compressor, an air-receiver, an atomizing-flask, and an atomizing-tube, all mounted upon one base, connected by appropriate tubing and forming one complete, harmonious, and efficient apparatus, and in the novel features shown and described.

In the drawing the figure is a central vertical section of the apparatus.

The air-compressor A and receiver B are constructed in combination preferably as follows: The cylinders (one smaller than the other) are secured together one inside the other, so that the space between forms an air-tight chamber, the lower end of both cylinders being closed by a common head *b*, which thus forms a flat bottom for both cylinders adapted to rest on and be conveniently attached to the base of the device, and the upper end of the small cylinder preferably projects above the head far enough to admit of a screw-cap *a*, which serves as a guide to a piston-rod. A plunger C with a hollow piston-rod D is inserted in the smaller cylinder. By means of flexible tubing E, detachably connected to a nipple on the hollow piston-rod, the same is connected with the air-chamber, so that when the plunger is forced downward the air contained in the smaller cylinder is forced over into the chamber between the two cylinders. By this construction when the cap *a* is unscrewed and the tubing E detached the piston-rod and plunger thereon may be removed from the cylinder A. A small check-valve *d* prevents the return of the compressed air when the plunger is being raised. The plunger is composed of a disk *c* of thin leather with its edges turned downward, so as to collapse and admit air on being raised and to expand and become air-tight on being pressed downward. This combined compressor and receiver is secured to a convenient base F. To the same base is secured a cup *f*, formed of a piece of metal having a raised annular edge wall in which rests the atomizing-flask G. The screws or other devices for holding the cup *f* to the base are passed through the bottom of said cup inside the raised edge wall thereof. The flask G is provided with an annular depending flange or skirt on its under side, at the upper part of which is formed an exterior circumferential bead to rest on the upper edge of the wall of said cup *f*. Inside said flange or skirt the flask is formed with a recess to receive the screws or other fastening devices of the cup to permit the flask to be held securely in the cup, as shown in the drawing. The flange or skirt of the flask affords a convenient support whereon the same may stand when removed from the cup *f*. The top of this flask is preferably fitted with a cap terminating in a ball or dome-shaped top *g*, with a nipple *g'* for connection of flexible tubing. The atomizing-tube H is screwed into the center of the dome-shaped top, so as to form a continuous passage with the nipple *g'*. Into the side of the ball-shaped top is inserted another nipple g^2 for connection with a flexible tube I, by which the atomized product is discharged.

The air-chamber is connected with the atomizing-tube by means of a flexible tube J and the nipples *g'* and *j*.

The medicine K to be atomized is placed in the bottom of the flask. By working the plunger by means of the handle *d'* air is forced into the chamber *b*, from which it passes over through the flexible tube J and down into the atomizing-tube, where it mixes with the medicine and escapes through the opening h^3 in the form of a fine spray, and by the force and expansion of the compressed air in the flask is reduced to fine particles and is carried out through the discharge-tube I. The compressor, in connection with the air-chamber, furnishes a constant flow of compressed air through the tubes by a comparatively slow and easy movement of the plunger.

The advantages of this apparatus are that it furnishes an easy and convenient method of applying atomized medicines. A full vol-

ume and steady current of air is furnished with little exertion on the part of the operator.

The principal advantage derived from the peculiar construction of the compressor and receiver is in the saving of expense. No valves or fittings are at the bottom or inside of the cylinder as in other compressors. The cost of these valves and fittings is saved, and in addition the trouble of getting at them for cleaning, &c., is avoided. Only one valve is employed, and that is easy of access on withdrawing the plunger. This valve is also inexpensive to make, as no additional fitting or fixture is required for a valve-seat, the seat being made in the piece *c'*, by which the plunger is attached to the piston-rod.

I claim—

In an atomizer the combination of a base, two cylinders of different diameters arranged one within the other to form between them a storage-reservoir, the inner cylinder forming a pump-barrel having its upper end extended above the upper part of the outer cylinder and closed by a removable cap, a tubular piston-rod passing through said screw-cap, and having at its outer end a nipple and at its inner end a piston adapted to compress the air beneath it and capable of removal from the cylinder when said cap is detached, a valve controlling the entry of air to said tubular piston-rod from beneath the piston and a flexible tube detachably connected at one end to the nipple of said piston-rod and having its other end connected to the storage-reservoir, and a flat sheet-metal plate extending across the lower ends of both cylinders and forming a flat bottom therefor adapted to rest on and be secured to said base, substantially as set forth.

JOHN ROBERTSON.

Witnesses:
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