A. TRUESDALE & W. S. VIRGIN.

SURGICAL ATOMIZER.

APPLICATION FILED MAR. 29, 1910.

984,619. Patented Feb. 21, 1911.

Fig. 1.

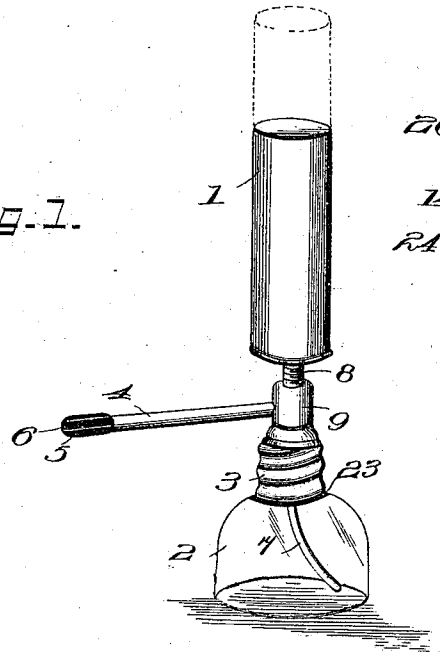


Fig. 2.

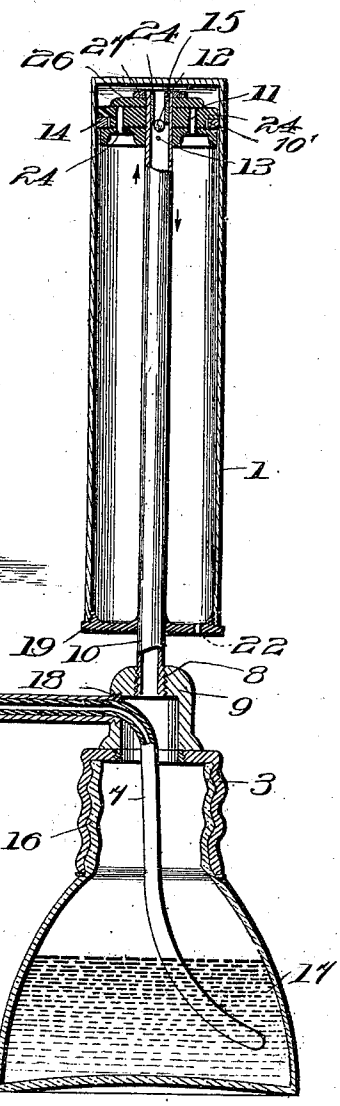


Fig. 3.

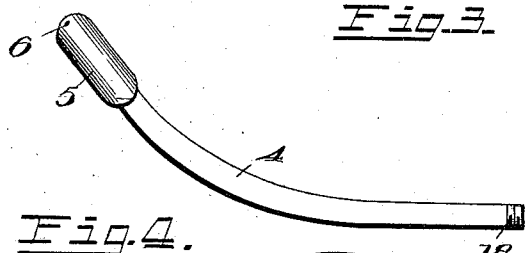
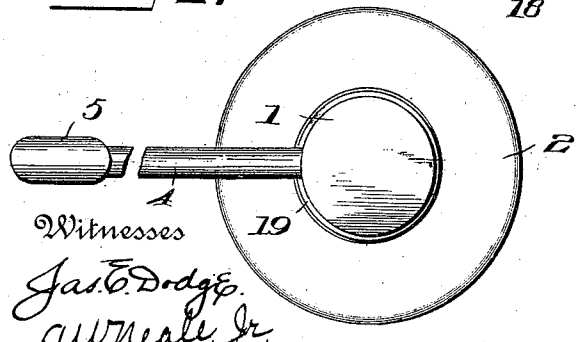


Fig. 4.



Witnesses

Jas. E. Dodge.

A. W. Neale Jr.

Inventors

Andrew Truesdale

Walter S. Virgin

UNITED STATES PATENT OFFICE.

ANDREW TRUESDALE AND WALTER S. VIRGIN, OF WASHINGTON, DISTRICT OF COLUMBIA; SAID TRUESDALE ASSIGNOR TO SAID VIRGIN.

SURGICAL ATOMIZER.

984,619. Specification of Letters Patent. Patented Feb. 21, 1911.

Application filed March 29, 1910. Serial No. 552,215.

To all whom it may concern:

Be it known that we, ANDREW TRUESDALE and WALTER S. VIRGIN, citizens of the United States of America, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Surgical Atomizers, of which the following a full, clear, and exact specification.

This invention relates to new and useful improvements in atomizers, and has for its object the doing away with the well known rubber bulb as a means of air-forcing, now in use and well known to those skilled in this art, and the substitution thereof of a force pump operated on the ball and disk valve principle, eliminating the use of rubber, leather, or springs in the pump.

To these ends the invention consists in the novel details of construction and the combination of the several parts as will be more fully hereinafter disclosed and set forth, and particularly pointed out in the claims.

The invention is fully described in the following specification and illustrated in the accompanying drawings, in which like numerals refer to like parts in all the views.

Referring to the drawings,—Figure 1 is a perspective view of one of the well known types of atomizers having the improvement attached thereto; Fig. 2 is a vertical section centrally through the atomizer and force pump applied thereto; Fig. 3 is a modification of the atomizing tube and shows it bent in a desired shape for nasal use, and which may be bent in the reverse way for use in the throat; Fig. 4 is a top plan view of the whole apparatus.

1 represents a pump, which is used to supply or force air currents into the receptacle or reservoir 2, containing the liquid or medicine to be sprayed. A cap 3 of metal or of other suitable material is attached by means of interior screw-threads to the exterior screw-threads of the bottle neck 16 of the container receptacle 2. A small washer 23 fits between these parts. Into the cap 3 is screwed a stopper 9 and to this, by means of threads 18, is connected an atomizing tube 4. On the free end of the tube is a discharge nozzle 5, of hard rubber or other suitable substance and containing at its end an aperture 6, from which the material is sprayed. Inside of the atomizing tube is a second tube of hard rubber, or other suitable material, 7, this tube has a fine bore through which the substance is forced up through 7 to the discharge aperture 6.

The pump 1 is attached to the stopper 9 by means of threads 8, on the lower end of the piston rod 10 of the pump. On the inside of the pump and attached to the piston rod is a piston head 11. When the piston head works in the direction of the downward stroke, the air in the barrel has no place to go except in the bore of the piston rod, thus driving the ball 12 before it until the ball is stopped by the pin 13. When the piston rod moves in the reverse direction, and consequently the piston head, the ball is pushed back on its seat which is against the bore of a small cylinder 24 inserted in the piston rod, and held there by four small pins 15, one only being shown on the drawings. On the ball seating itself a vacuum is formed when the piston rod operates and thus holds the ball on its seat during the entire length of the movement. Disk valve 26 is held in its working position by hollow cap 27, which is pressed onto top end of hollow piston rod 10. While the ball is being held on its seat, the disk valve 26 is raised from its seat due to the air current flowing in through vent ports 22 and 24. When the piston moves in a reverse direction the disk valve 26 seats itself and closes vent ports 24. The casing of the pump may be removed by unscrewing the cap 19, for such purposes as cleaning the piston head or oiling. Around the piston head is applied a metal packing ring 10′.

The operation of the device is as follows: The barrel casing 1, being grasped in either hand, is worked as an ordinary force pump, up and down, as shown best in dotted lines in Fig. 1. The air is thus forced from the pump down into the container receptacle, thus compressing the liquid and driving it up through the bore of the tube 7, and out through the aperture of the discharge nozzle in a spray form.

It is understood that any change in details will not be considered a departure from this invention.

Having thus described our invention, what we claim as new and useful and desire to secure by Letters Patent is:—

In an atomizer, the combination of a liquid-containing receptacle or reservoir, an inwardly screw-threaded cap, said reservoir having an outwardly screw-threaded neck adapted to engage with said inwardly screw-

threaded cap, an atomizing tube provided with a discharge nozzle, said tube screwed to said cap, said tube containing within it a second tube extending its entire length and down through the neck of said reservoir below the line of level of the liquid, a force pump attached by means of screw-threads to said cap, a ball valve in said pump, said pump comprising a cylinder casing, piston rod, piston head, metal packing ring, a sleeve in said piston rod and said ball valve adapted to operate between said sleeve and a pin, on the operating of the air current by the movement of the casing itself; and a disk valve comprising a disk and vent ports, said disk adapted to be raised from its seat by the inflowing air through said vent ports, and lowered by the downward stroke of the piston casing, substantially as described.

ANDREW TRUESDALE.
WALTER S. VIRGIN.

Witnesses:
E. H. PARKINS,
HAZEL LONGLEY.