No. 646,491. Patented Apr. 3, 1900.

H. M. DUNLAP.

SPRAY TUBE FOR ATOMIZERS.

(Application filed Mar. 9, 1899.)

(No Model.) 2 Sheets—Sheet 1.

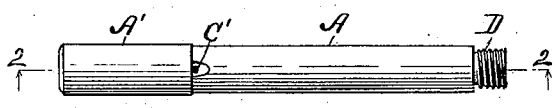


Fig. 1

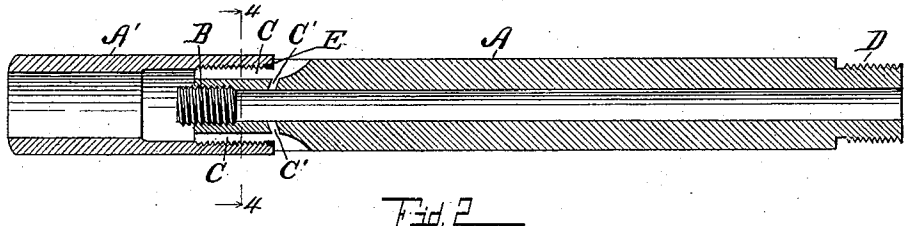


Fig. 2

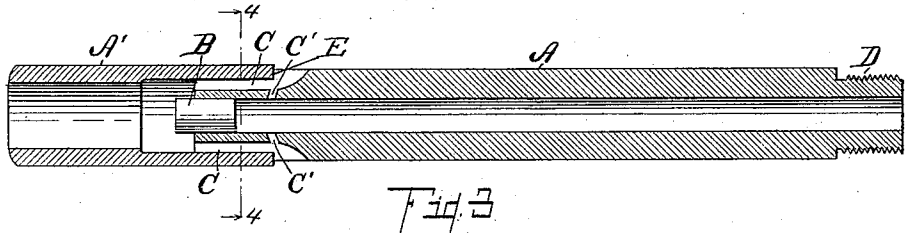


Fig. 3

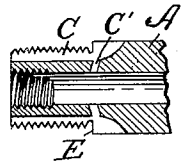


Fig. 5

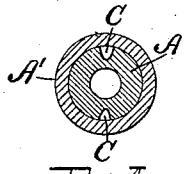


Fig. 4

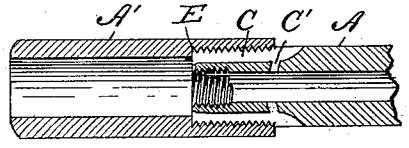


Fig. 6

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Carrie M. Chappell

Inventor,
Harley M. Dunlap
By Fred L. Chappell
Att'y.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 646,491. Patented Apr. 3, 1900.

H. M. DUNLAP

SPRAY TUBE FOR ATOMIZERS.

(Application filed Mar. 9, 1899.)

(No Model.) 2 Sheets—Sheet 2

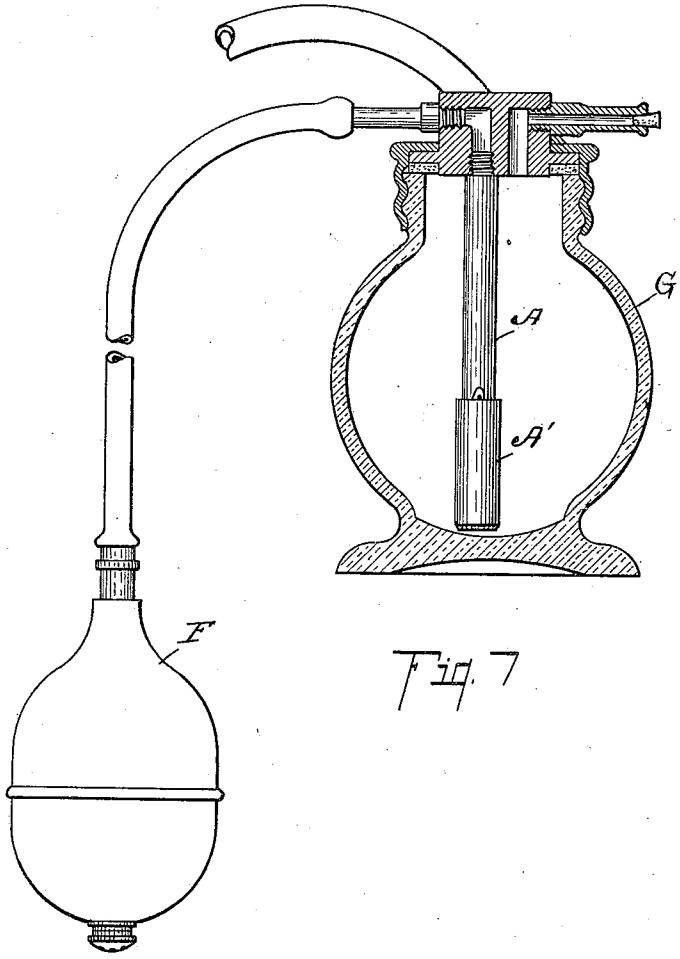


Fig. 7

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HARLEY M. DUNLAP, OF BATTLE CREEK, MICHIGAN.

SPRAY-TUBE FOR ATOMIZERS.

SPECIFICATION forming part of Letters Patent No. 646,491, dated April 3, 1900.

Application filed March 9, 1899. Serial No. 708,443. (No model.)

To all whom it may concern:

Be it known that I, HARLEY M. DUNLAP, a citizen of the United States, residing at the city of Battle Creek, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Spray-Tubes for Atomizers, of which the following is a specification.

This invention relates to improvements in spray-tubes for atomizers, and particularly to improvements in spray-tubes for atomizers similar to the atomizer described in my Patent No. 483,435, of September 27, 1892. In the construction of this style of atomizer-tube considerable difficulty has been encountered in securing a tube which was easily adjustable to secure the best effect of the current or jet of air in combination with the column of liquid upon which it acts to produce the spray, and in the structure of the patent to which I have just referred if for any reason the parts are not exactly and accurately adjusted within a very narrow margin the effectiveness of the device is somewhat interfered with. I have also endeavored to produce a structure which could be adjusted to secure a spray of indefinite volume, but find that many people who use the same cannot be made to understand the principle of operation, and for this reason such structures are highly unsatisfactory.

The object of this invention, therefore, is to provide a spray-tube of the class described the parts of which are easily put together without adjustment, thus avoiding the necessity of an understanding of the operation of the device in order to adjust and operate the same in the most satisfactory manner.

A further object is to provide a structure of the class described which is easy to manufacture and, further, after it is produced, easy to keep in order.

I accomplish these objects of my invention by the devices and means described in this specification.

The invention is definitely pointed out in the claims.

The structure is fully illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a view of the spray-tube detached from the atomizer and about the full size of the same. Fig. 2 is an enlarged detail longitudinal sectional elevation taken on line 2 2 of Fig. 1. Fig. 3 is a similar sectional view of a slightly-modified construction, in which the screw-threads joining the various parts are omitted and friction depended upon to retain the various parts together. Fig. 4 is a detailed sectional view taken on a line corresponding to line 4 4 of Figs. 2 and 3. Fig. 5 is a detail view of the lower end of the main tube A, showing the shoulder and the passages cut through the same for the passage of the liquid and air. Fig. 6 is an enlarged detail sectional view through the lower parts of the tube of a modified construction, the view being taken on a line corresponding to the line 2 2 of Fig. 1. Fig. 7 is a view showing the spray-tube attached to the atomizer, the liquid-receptacle and cap being shown in section.

In the drawings similar letters of reference refer to similar parts throughout the several views, and all of the sectional views are taken looking in the direction of the little arrows at the ends of the sectional lines.

Referring to the lettered parts of the drawing, A is the main tube, which is preferably provided with the screw-threaded portion D for joining it to the cap or top of an atomizer or vaporizer of the class described in my former patent referred to, though the tube might be secured to this part in any suitable way, and indeed might be made integral with the same. At the lower end of this tube a screw-threaded portion, preferably reduced in size, is provided to receive the bottom section A'. A shoulder E is formed above the threaded portion of the tube A to serve as a stop and secure the proper relation of parts to each other. The bottom end of the tube A is closed by the plug B, which is preferably also threaded, though it could be made as appears in Fig. 3 and be retained in position by friction. One or more apertures C' are made through the tube A near the bottom, which are directed in an upwardly direction across the upper edge of the lower section A'.

One or more passages C, preferably in the form of a groove, are cut longitudinally through the reduced or threaded portion at the lower end of the tube A, which are completed by the lower section A', through which

the fluid or medicine desired to be atomized is drawn up by aspiration when air is forced through the perforations C′. The air forced through the perforations C′ acts by aspiration to draw the fluid up through the passage C and dash it in the form of a spray against the inside of the bottle or receptacle of the atomizer, thus securing its perfect vaporization. In this connection I desire to state, however, that the exact location and relation of the shoulder is not material so long as the proper adjustment of the tube A and lower section of the tube A′ is secured, and it may in certain instances be found an advantage to form the shoulder in the section A′ and allow the bottom end of the tube A to shut against it, as clearly appears in Fig. 6. It will be noticed that the passage C′ is directed close over the upper edge of the section A′, so the same result is secured.

The parts are preferably screw-threaded together, which I prefer on account of the strength of the same; but I am aware that the same result can be obtained by careful fitting of the parts and forcing them together, so they will be retained in position by friction.

By making the plug B removable it is readily understood that all passages in the spray-tube can be easily cleansed, which is very desirable if any gummy substances are attempted to be used in this connection. The device would operate the same without making the plug removable, though it would be a matter of some difficulty to keep the parts properly cleansed.

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

1. In an atomizer the combination of the main tube A, suitably plugged at the bottom, with the shoulder E, thereon and containing an upwardly-projecting perforation C′, and a passage C, cut through the lower portion; and a lower section of the tube A′, intended to fit against the shoulder to form, in connection with the upper tube, a passage for liquid leading up to the passage for air, co-acting together for the purpose specified.

2. In an atomizer the combination of a main tube plugged at the bottom, and having an upwardly-projecting air-passage and a portion cut away for a fluid-passage leading up thereto; and a lower section of tube fitting onto the same, with its top extending to the air-passage, the parts being shouldered together whereby they can be fitted together without adjustment for the purpose specified.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

HARLEY M. DUNLAP. [L. S.]

Witnesses:
FRANK H. COGGESHALL,
JOHN ANKENEY STARR.