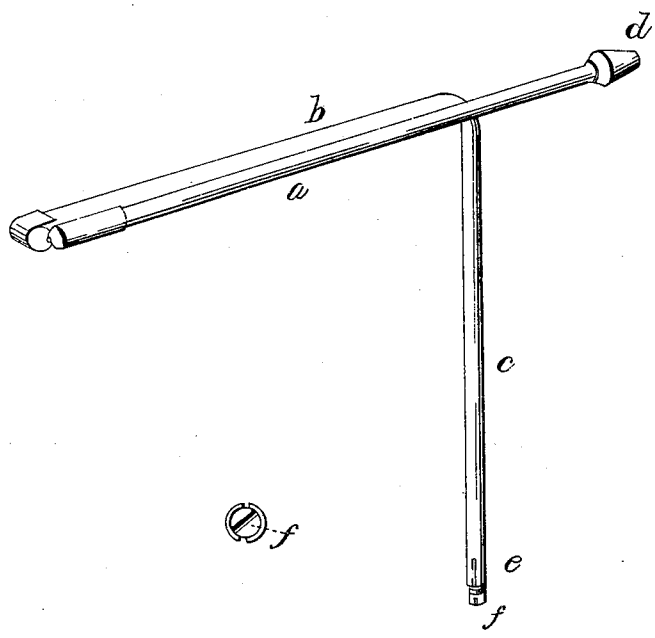
A. M. SHURTLEFF.

ATOMIZING TUBE.

No. 60,580. Patented Dec. 18, 1866.



Witnesses:
S. S. Kidder
M. W. Frothingham.

Inventor:
A. M. Shurtleff
by his Attys
Crosby & Gould.

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

United States Patent Office.

IMPROVEMENT IN ATOMIZING TUBES.

ASAHEL M. SHURTLEFF, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO HIMSELF, BENJAMIN S. CODMAN AND F. O. WHITNEY.

Letters Patent No. 60,580, *dated December* 18, 1866.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, ASAHEL M. SHURTLEFF, of Boston, in the county of Suffolk, and State of Massachusetts, have invented an Improvement in Atomizing Tubes; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention, sufficient to enable those skilled in the art to practise it.

The invention relates to the construction of the instrument now used more particularly for producing local anæsthesia, and known as atomizing or nebulizing tubes and as spray producers and to that class of these instruments in which the evaporative fluid to be atomized is drawn through its tube and discharged at the point thereof in atomized form, by a current of air driven through an air tube, and discharged at an eduction orifice immediately adjacent to the corresponding orifice of the fluid tube. My improvement in the instrument has particular reference to a means or provision for regulating at will, and with facility, the quantity of evaporative fluid entering the fluid tube. Such provision is desirable, in that in using fluids more or less highly evaporative, the effect produced varies with a given amount of fluid atomized, so that it is important to be able to correspondingly vary the capacity of the fluid tube for the use of different fluids. For this purpose I combine directly with the fluid tube an adjustable plug, by which the induction orifice of the tube may be more or less obstructed, to regulate the amount of fluid drawn through the tube by the current of air expelled at the mouth of the air-tube. It is in this provision or combination that the invention consists. The drawing represents an atomizing instrument embodying my improvement, *a* denoting the air, and *b* the fluid tube, the latter having a leg, *c*, which is dipped into the atomizing fluid, and the former a piece, *d*, for attachment of an elastic bulb or other air-forcing device. The general arrangement and formation of these tubes and their mode of operation is precisely the same as in other instruments of like character. At the induction end, *e*, however, of the tube *b*, I slit the tube a short distance, as seen in the drawing, and upon one or more sides, and in the tube at this end, I cut a screw-thread, and apply thereto a screw-plug, *f*. As this plug fills the bore of the tube, and as its length is nearly equal to, and perhaps a little greater than, the length of the induction slits in the tube, it will be obvious that the extent of orifice may be increased or diminished at pleasure, or in accordance with the nature of the fluid being atomized, or the local surface operated upon, and that by this means the quantity of fluid expelled and atomized will be correspondingly regulated. Instead of placing this bulb at the end of the tube, as shown, a cock may be placed at some point intermediate between the atomizing end of the tube and the end *e;* but for simplicity of arrangement and ease of manipulation I prefer the arrangement shown.

I claim combining with the atomizing tubes, operating as described, an adjustable plug, or its equivalent, placed in or connected with the tube *b*, substantially as set forth.

ASAHEL M. SHURTLEFF.

Witnesses:

F. GOULD,

S. B. KIDDER.