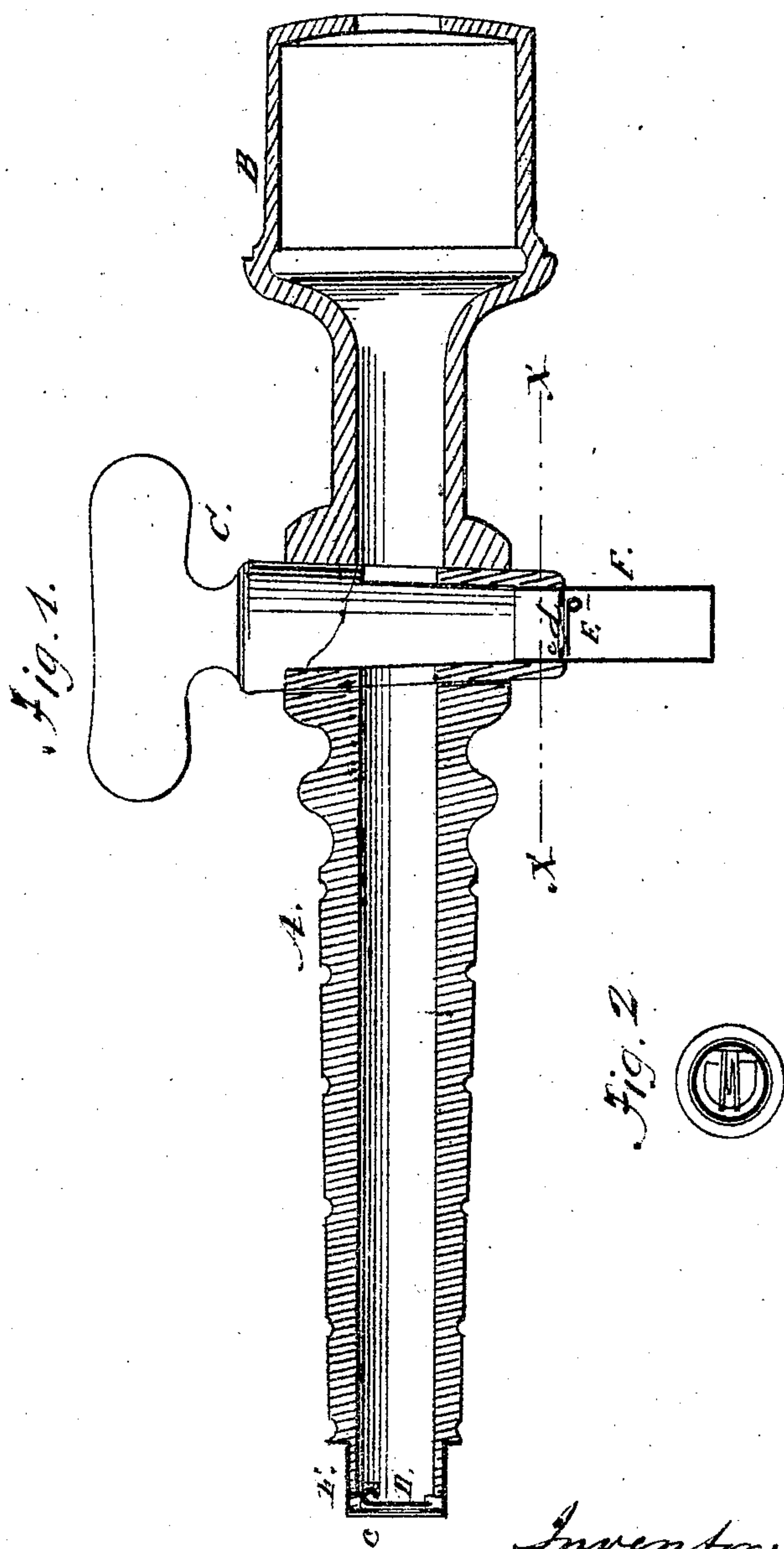


S. W. Sine.

Inhaling-Tubes.

N^o 72234

Patented Dec. 17, 1867.



Witnesses
Geo. Crocker
J. Alison Crane

Inventor,
Saml W. Sine
Per Munroe
Attorneys

United States Patent Office.

SAMUEL W. SINE, OF EASTON, PENNSYLVANIA.

Letters Patent No. 72,234, dated December 17, 1867.

IMPROVEMENT IN INHALING-TUBES.

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, SAMUEL W. SINE, of Easton, in the county of Northampton, and State of Pennsylvania, have invented a new and improved Inhaling-Tube; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to an instrument which is used for inhaling gas or anæsthetic agents, for producing insensibility in surgical, dental, and other operations, or for other purposes; and it consists in providing and operating metallic valves in a suitably formed inhaling-tube, as will be hereinafter described.

Figure 1 represents a longitudinal central section of the instrument, showing the manner of its construction and the position of the valves.

Figure 2 is a cross-section through the line *x x* of fig. 1.

Similar letters of reference indicate corresponding parts.

A represents the tube, B is the mouth-piece, C is the stop-cock. D is a valve on the end of the tube, which opens inwardly or when inhaling. E is a valve in the stop-cock C, which opens outwardly or when exhaling. The gas-pipe is attached to the tube at the end D.

In the instruments hitherto used for the inhalation of nitrous oxide or other gas, for the purposes before mentioned, the valves have been made of fine elastic material, which, during the inhaling operation becomes covered or saturated with moisture, which renders them liable to stick and become inoperative, especially at the time when the patient is losing consciousness or falling into the anæsthetic state. The respiratory organs at that time become relaxed, requiring valves of the most delicate description to allow of the proper action of the instrument.

From experiments made, with the design to overcome the difficulty with the elastic valve, I have found that the light metallic valves, aided by delicate metallic springs, arranged as shown in the drawing, obviates all difficulty.

The valve E is formed of silver, or other suitable metal, covering the orifice through the metallic diaphragm *c*, in the metallic thimble F of the tube, as seen in the drawing. The valves are attached to the thimbles F by hinges which form a stop, thus preventing their opening beyond a certain point, as seen at *e*. The valves are arranged in thimbles for the purpose of adjusting them to the tube with greater facility. In metallic tubes the arrangement might be different.

For the purpose of assisting the valves in opening, or to insure their perfect operation, I place metallic springs behind one or both of them, as seen at *d* in the drawing. In the example shown, the spring is only seen behind the valve E. The peculiar form and construction of this spring is seen in fig. 2, attached to the diaphragm *c*.

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

1. The metallic valves D and E, the diaphragm *c*, stop *e*, and spring *d*, in combination with an inhaling-tube, substantially as and for the purposes described.

2. A metallic valve, either with or without a stop and spring, in combination with an inhaling-tube, substantially as described.

The above specification of my invention signed by me, this 6th day of September, 1867.

S. W. SINE.

Witnesses:

WM. F. McNAMARA,
ALEX. F. ROBERTS: