

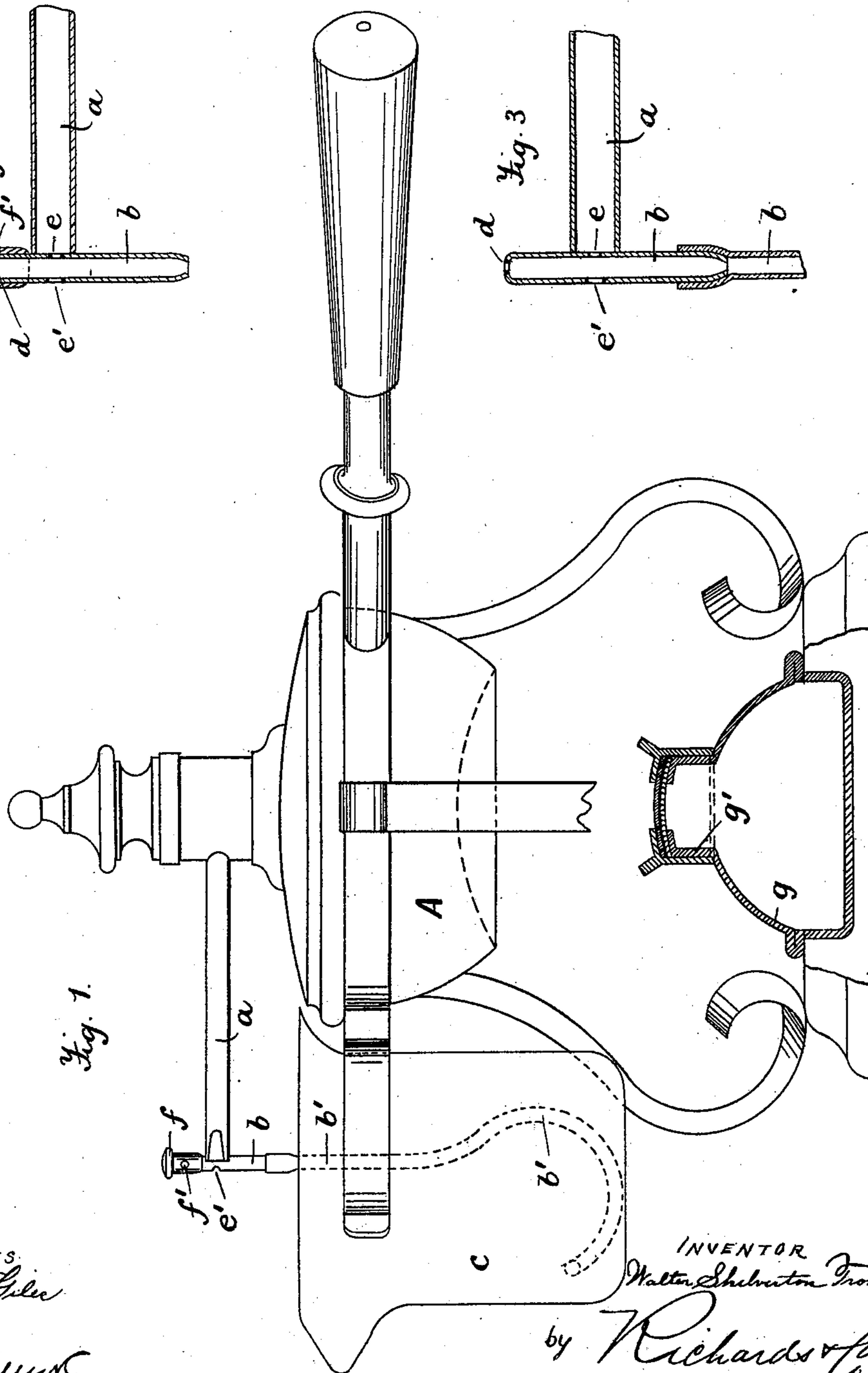
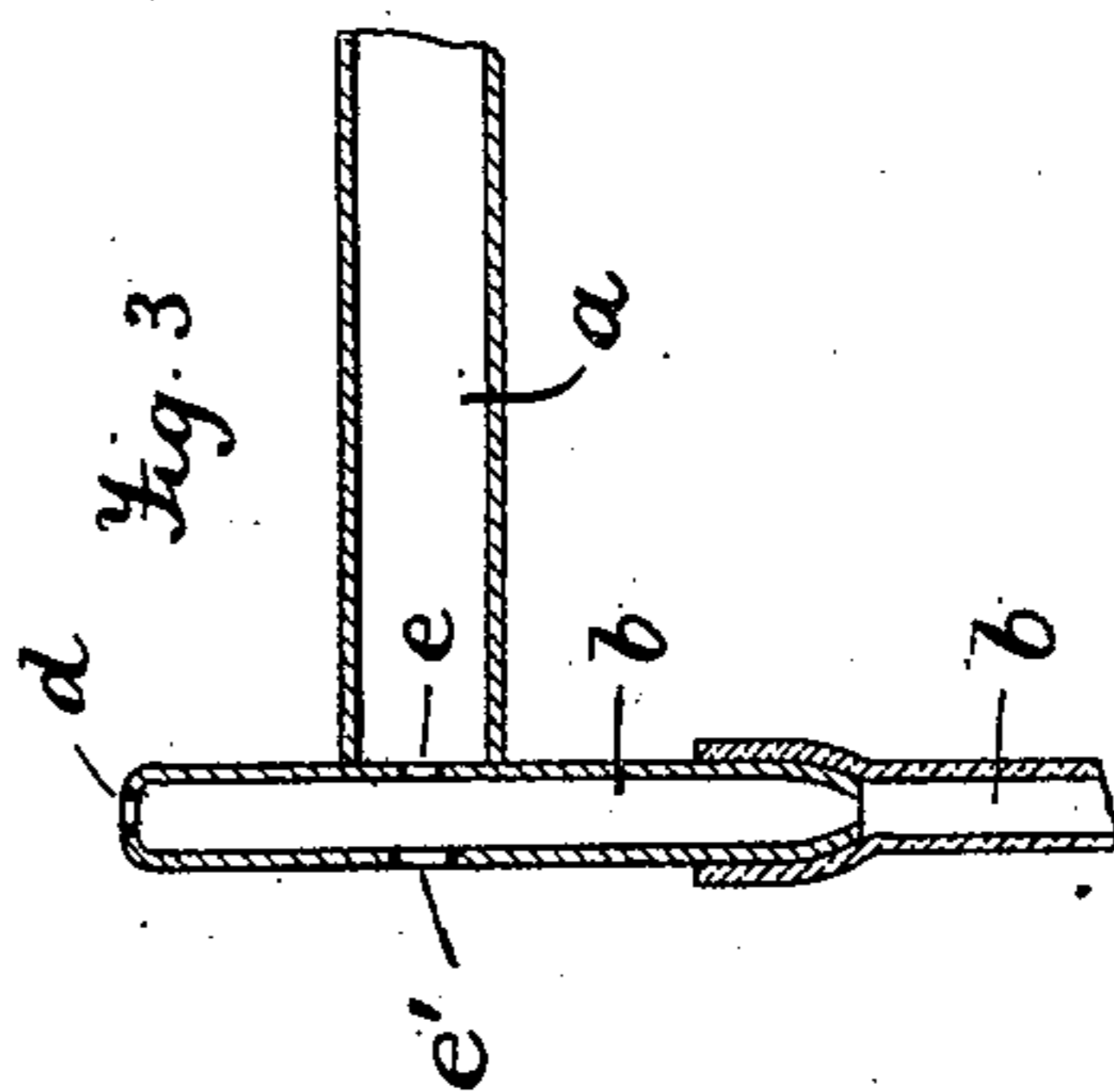
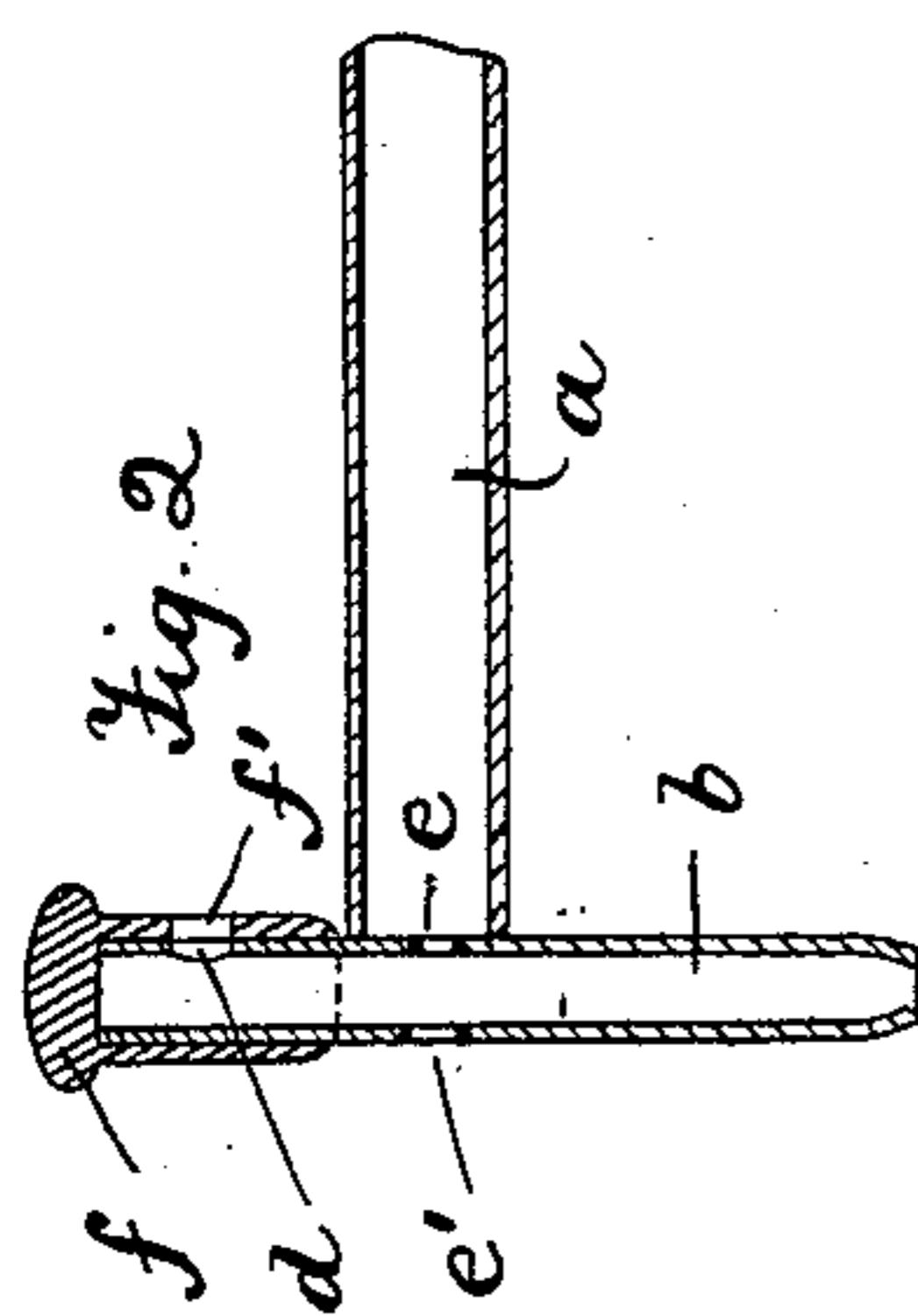
(No Model.)

2 Sheets—Sheet 1.

W. S. FROST.
ATOMIZER.

No. 602,070.

Patented Apr. 12, 1898.



WITNESSES

Edw. L. Gile

W. S. Frost

INVENTOR

Walter Shelton Frost

by

Richardson
ATTYS

(No Model.)

2 Sheets—Sheet 2.

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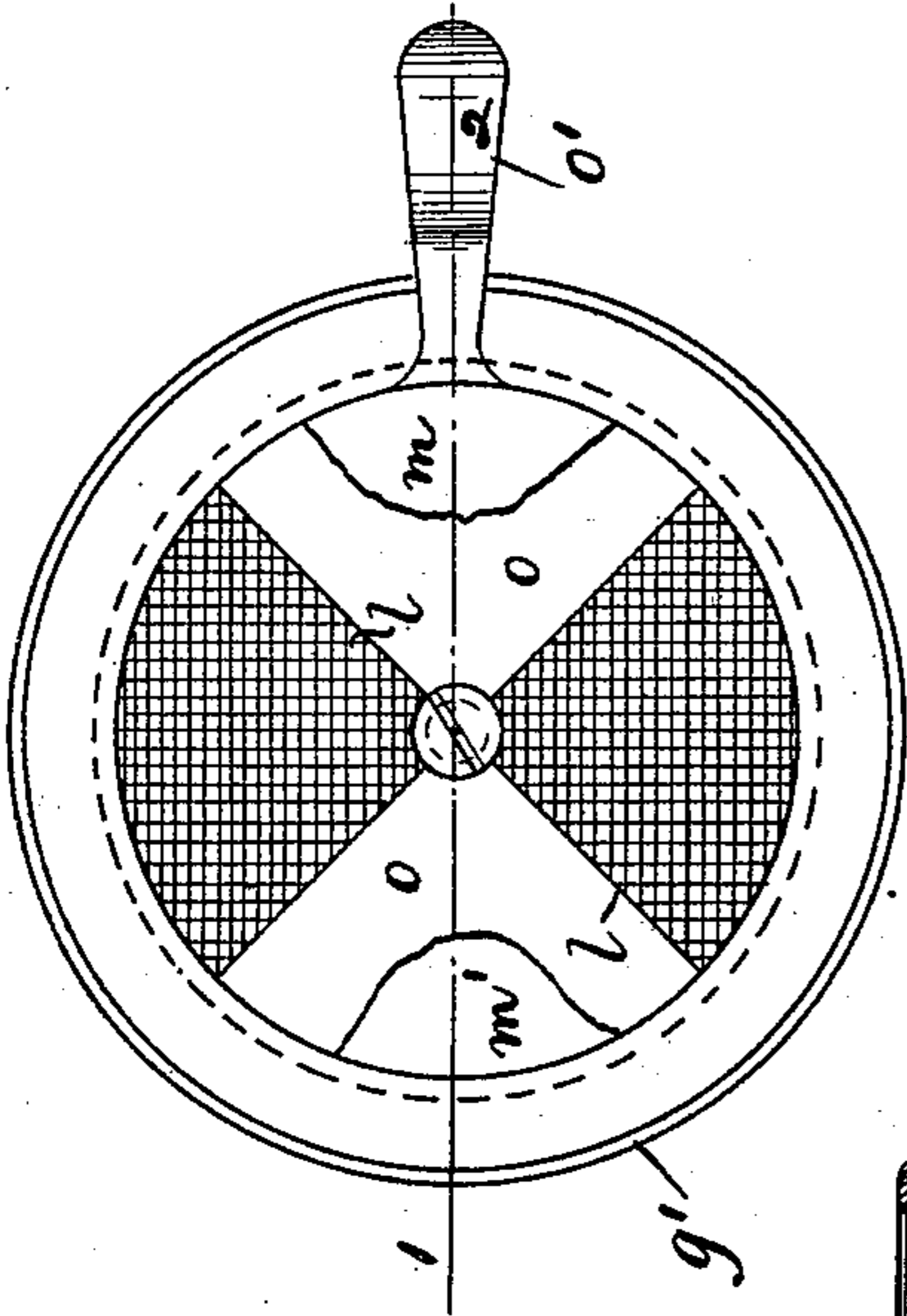


Fig. 4.

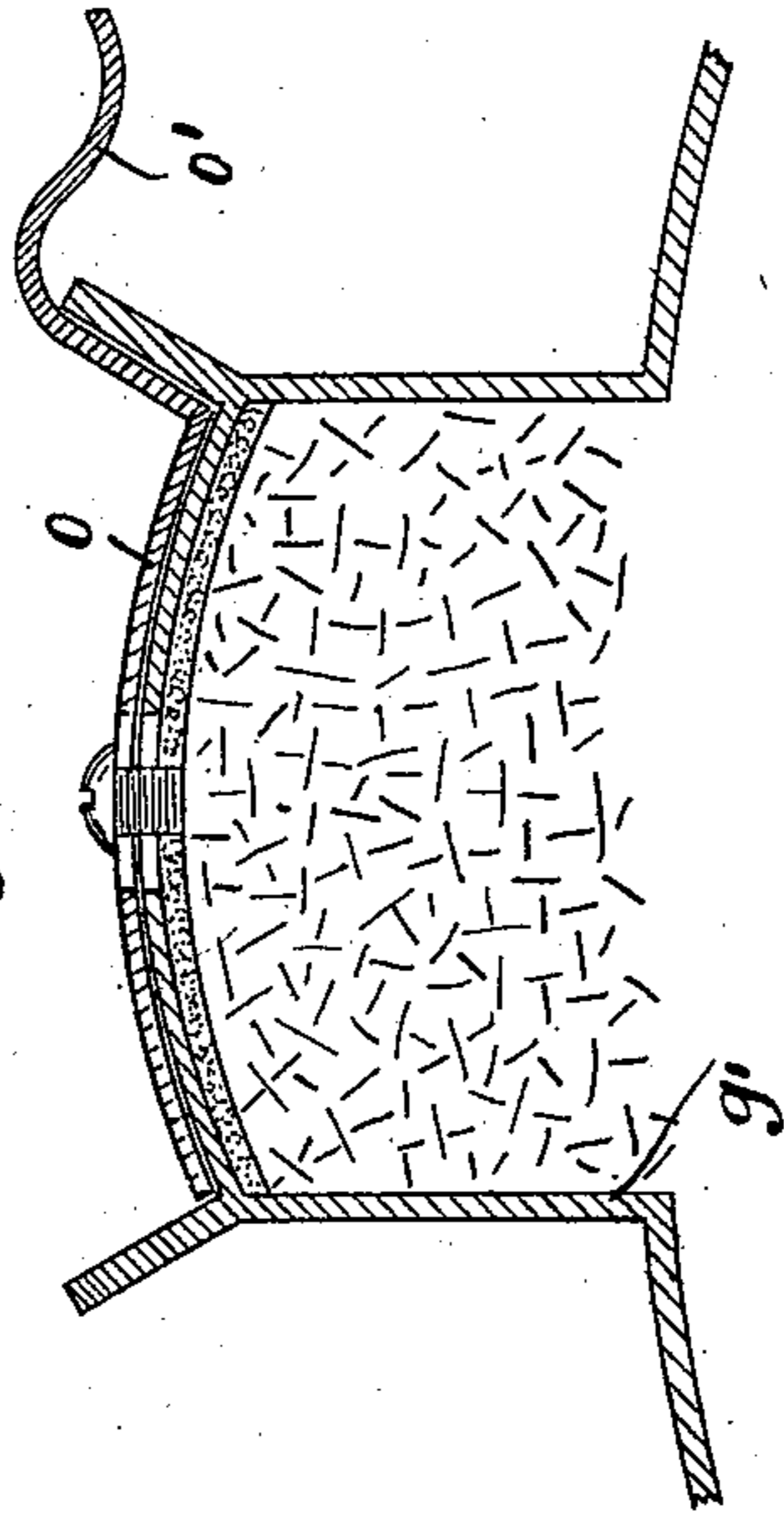


Fig. 5.

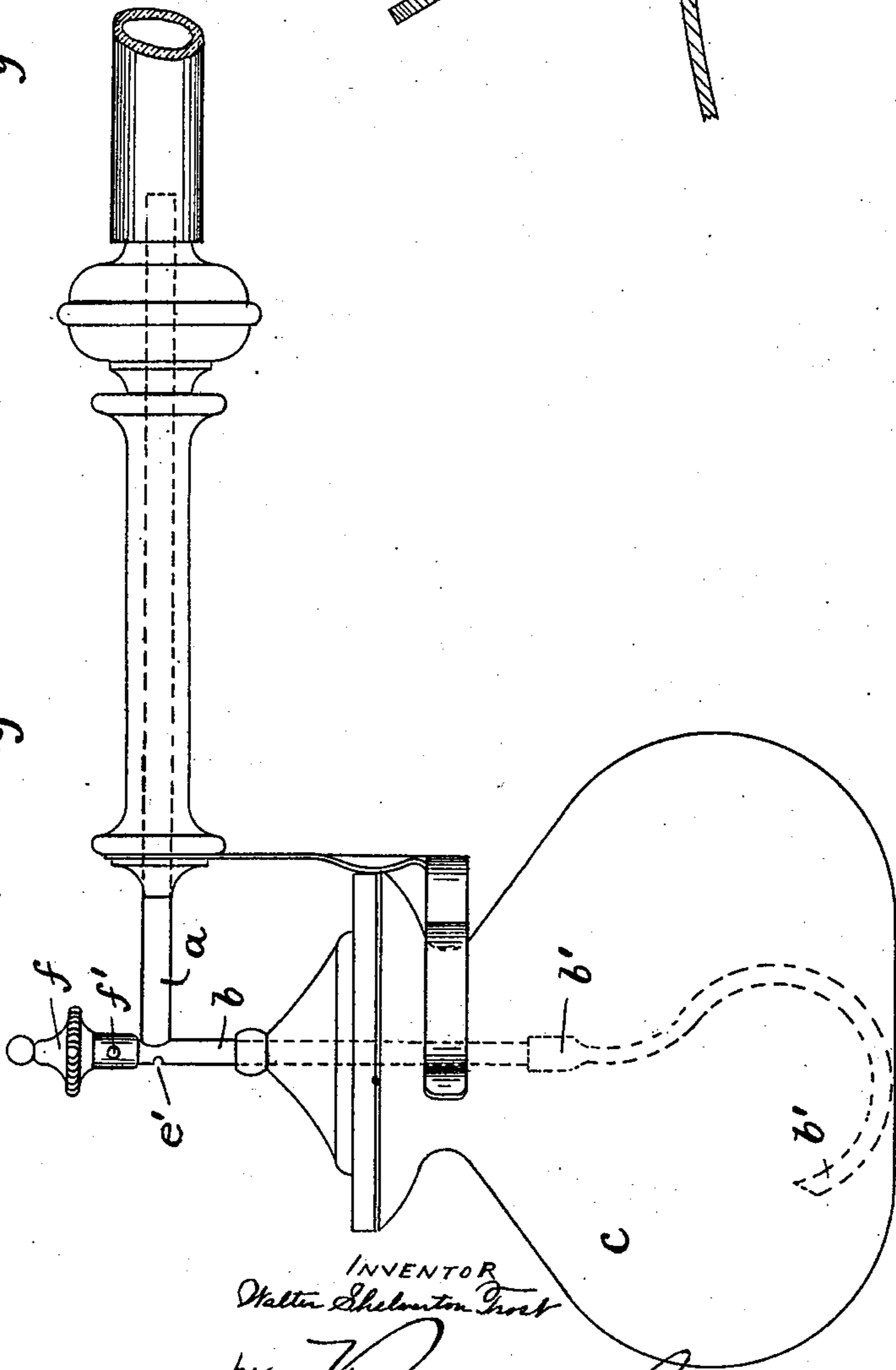


Fig. 6.

WITNESSES.
Ella L. Gile
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INVENTOR
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UNITED STATES PATENT OFFICE.

WALTER SHELVERTON FROST, OF LONDON, ENGLAND.

ATOMIZER.

SPECIFICATION forming part of Letters Patent No. 602,070, dated April 12, 1898.

Application filed February 16, 1898. Serial No. 670,466. (No model.)

To all whom it may concern:

Be it known that I, WALTER SHELVERTON FROST, engineer, of 92 Copeland Road, Peckham, London, England, have invented certain new and useful Improvements in and Relating to Spray-Producing Apparatus and the Like, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in the construction and regulation of spraying apparatus for toilet, medical, disinfecting, and other similar purposes, whether such apparatus be operated by steam, air, or other gas, whereby I am enabled to control the precise quantity of fluid atomized and to vary the same to any desired extent within the limits of and during the working of the apparatus; and it also provides means for preventing the possibility of accident should the lamp be upset and means for regulating or extinguishing the same, as desired.

My invention consists, essentially, in the use of a nozzle or suction-pipe firmly attached to and across the outer end of the steam or other jet pipe and provided with means for regulating or controlling the spraying of the fluid or the quantity thereof and in furnishing the neck or burner of the lamp with an arrangement whereby the flame of the burner may be reduced from its normal size or be extinguished altogether, as will be hereinafter described.

Upon the annexed sheet of drawings, illustrating my invention, Figure 1 is a side elevation of a sprayer adapted for toilet purposes, the lamp thereof being shown in section, Fig. 2 being an enlarged section through the nozzle and regulator shown in the first figure. Fig. 3 is a similar view, but shows the nozzle without the adjustable regulator. Fig. 4 is a plan view, also on an enlarged scale, of the lamp-neck, Fig. 5 being a section through the same on line 1 2. Fig. 6 is an elevation of a sprayer arranged to be connected by means of a flexible tube with a boiler or other gas-supply and suitable for disinfecting the walls of hospitals and similar purposes.

In carrying out my invention I secure across the mouth of a steam-pipe, jet-pipe, or spout *a*, suitably connected to a boiler or pressure-producing apparatus *A*, a suction-pipe *b*,

extending above and below the level of the steam-pipe, which latter may be approximately horizontal. The lower end of the suction-pipe *b* communicates with the liquid to be sprayed, contained in a suitable receptacle *c*, either directly or by means of a flexible rubber or other suitable pipe *b'*, as shown on Fig. 1. This pipe *b* is furnished at or toward the top with a hole *d* and at the portion where it joins the steam-pipe *a* with two suitable holes *e e'*, the one, *e*, being of a less diameter than the bore of the pipe *a*, and the outer one, *e'*, being of a larger size than the inner one. These two holes *e e'* are arranged in line and preferably concentrically with the tube *a*, so that a jet of steam issuing from the steam-pipe *a* may rush across the bore of the pipe *b* and escape at *e'*. In its passage across pipe *b* this jet of steam will draw air into the pipe *b* through the hole *d*, or, if this latter hole be closed—*e. g.*, by placing a finger over the same (see Fig. 3)—the steam will spray liquid drawn from the receptacle *c* up the pipe *b*.

In operation, therefore, the liquid may be sprayed or not, according as the hole *d* is closed or left open. Alternatively I may so form the hole *d* that by reason of its size and when uncovered a certain fixed amount of liquid may be sprayed by the steam-jet, the hole in this case being smaller than in the previous instance and allowing air as well as liquid to be drawn into the suction-pipe by the jet. In this case the amount of spray will be increased on cutting off the supply of air by closing the hole with the finger.

On Figs. 1, 2, and 6 I have illustrated a device for regulating this spraying. Upon the pipe *b* is arranged to be rotated a cap *f*, fitted with a milled head and having a hole *f'*, which latter, on the rotation of the cap, may be caused to coincide with the hole *d*, which in this case is placed at the side of the pipe *b*. The position of the holes may be varied in the cap and the pipe; but they are always so arranged that they can coincide when it is so desired and admit air into the suction-pipe. This cap serves to close or to open the hole *d* or to afford any of the intermediate positions. Thus the spraying of the liquid in the receptacle *c* may take place to the fullest extent possible, may be stopped entirely, or may be

regulated to a nicety by means of the rotation of this cap, and if air be allowed to enter the tube *b* through a hole at *d*, formed partly by the hole *d* and partly by the hole *f'*, but of lesser size than the hole *d* itself, the amount of liquid sprayed will be diminished as the air admitted increases until finally on fully opening the hole *d*, the holes in the cap and pipe coinciding, the amount of liquid sprayed will be reduced to the minimum or no liquid at all will be sprayed, according to the size of the hole *d* and to predetermined arrangements.

The other portion of my invention relates to an improvement on the lamp or burner for heating the boiler, such as is usually employed in these small portable sprayers.

The lamp consists of a cup or receptacle *g*, arched over to form a neck *g'*, the interior being filled with sponge, &c., upon which methylated spirit may be poured. This sponge is provided at top with a layer of asbestos or similar unflammable material, over which the usual wire-gauze may be placed.

As will be seen from Fig. 4, the usual heating-surface of the lamp is divided into four equal portions, whereof two, *l l*, are protected with wire-gauze and the remaining two, *m m'*, are covered with metal plates. These covered and uncovered portions are arranged alternately, and the neck *g* of the lamp is fitted with a revoluble plate *o*, having an extension or handle *o'*. The revoluble plate has suitable flanges formed thereon and is secured to the neck, as shown on Fig. 5. It is shaped to the forms of the equal portions of the usual heating area, so that the flame on the gauze portions may be extinguished or reduced from its normal size by revolving the segmental plate. When not covering the whole or portions of the flame area, the revoluble plate is arranged to be located over the covered portions *m m'*. (See Fig. 4.) The boiler *A* may be heated by a lamp of this improved construction or by any suitable means.

Where I do not use steam, I may use air or

other gas under pressure to cause the spraying of the liquid, in which case the pipe *a* will be connected directly or indirectly to the supply or source of compressed gas.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A spraying device comprising the receptacle for the liquid to be sprayed, the suction-pipe depending therein and having oppositely-located openings near its upper end, the supply-pipe for the fluid under pressure communicating with one of said openings, and means for admitting a varying quantity of air to the suction-pipe above the said openings for regulating the supply of liquid to be sprayed, substantially as described.

2. In spray-producing apparatus, a regulating device consisting of a cap provided with a hole and rotatable upon a suction-pipe also furnished with a hole, these holes being capable of coinciding, the suction-pipe being secured across a jet pipe or spout and said suction-pipe communicating with the liquid to be vaporized and being furnished with two diametrically opposite holes allowing the vaporizing steam or gas to pass from said jet-pipe across the suction-pipe and to escape from the outer larger hole, the amount of liquid sprayed by said jet of gas being variable or reducible by admitting air into the suction-pipe through the regulating-cap, substantially as described.

3. In spray-producing apparatus and the like, the combination with the jet-pipe of the apparatus, of a suction-pipe secured thereto and having holes *d e e'*, and a regulating-cap *f* rotatable upon said suction-pipe and having a hole *f'*, substantially as and for the purposes described.

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

WALTER SHELVERTON FROST.

Witnesses:

GEO. W. WHITTON,
WILMER M. HARRIS.