

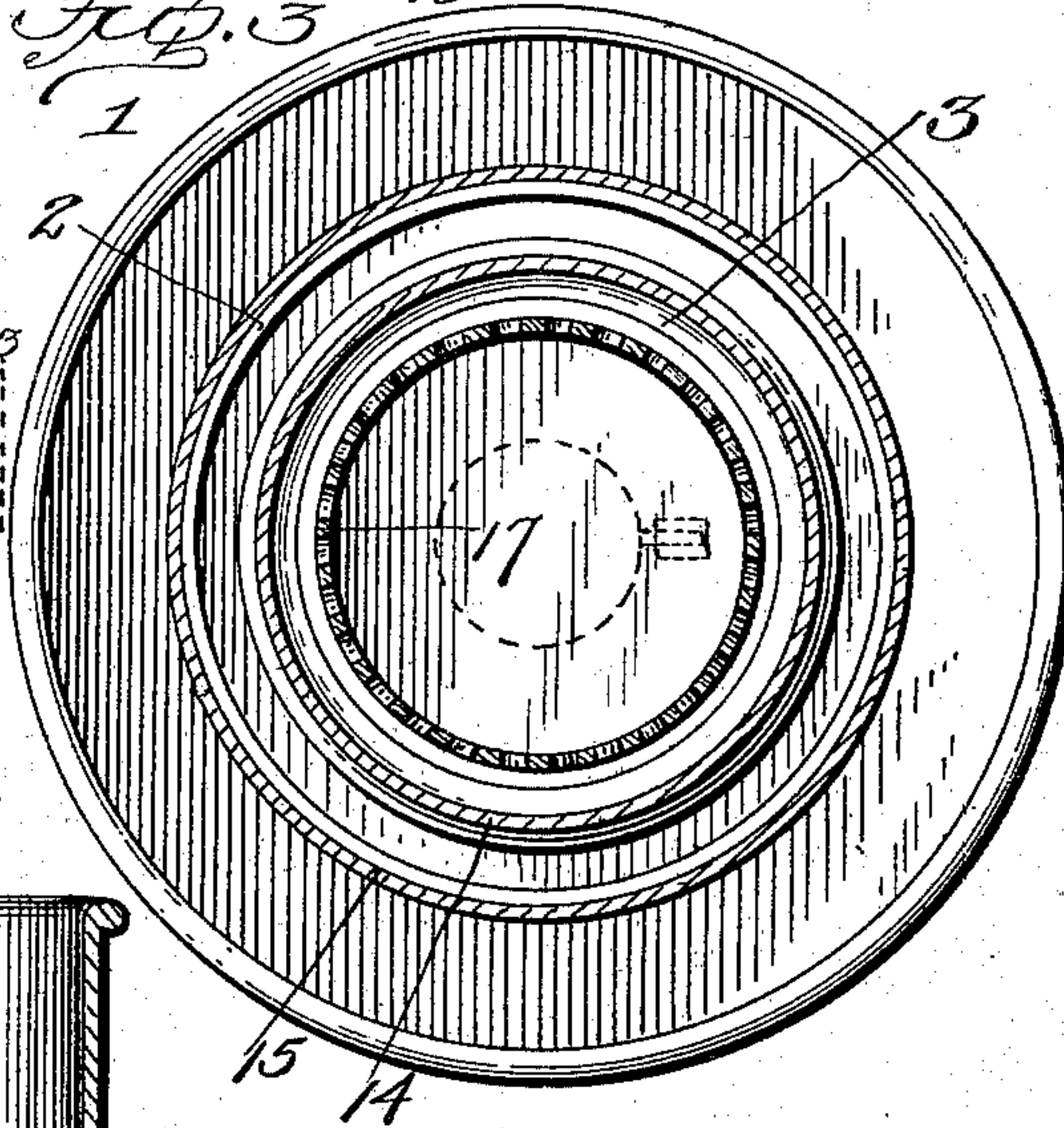
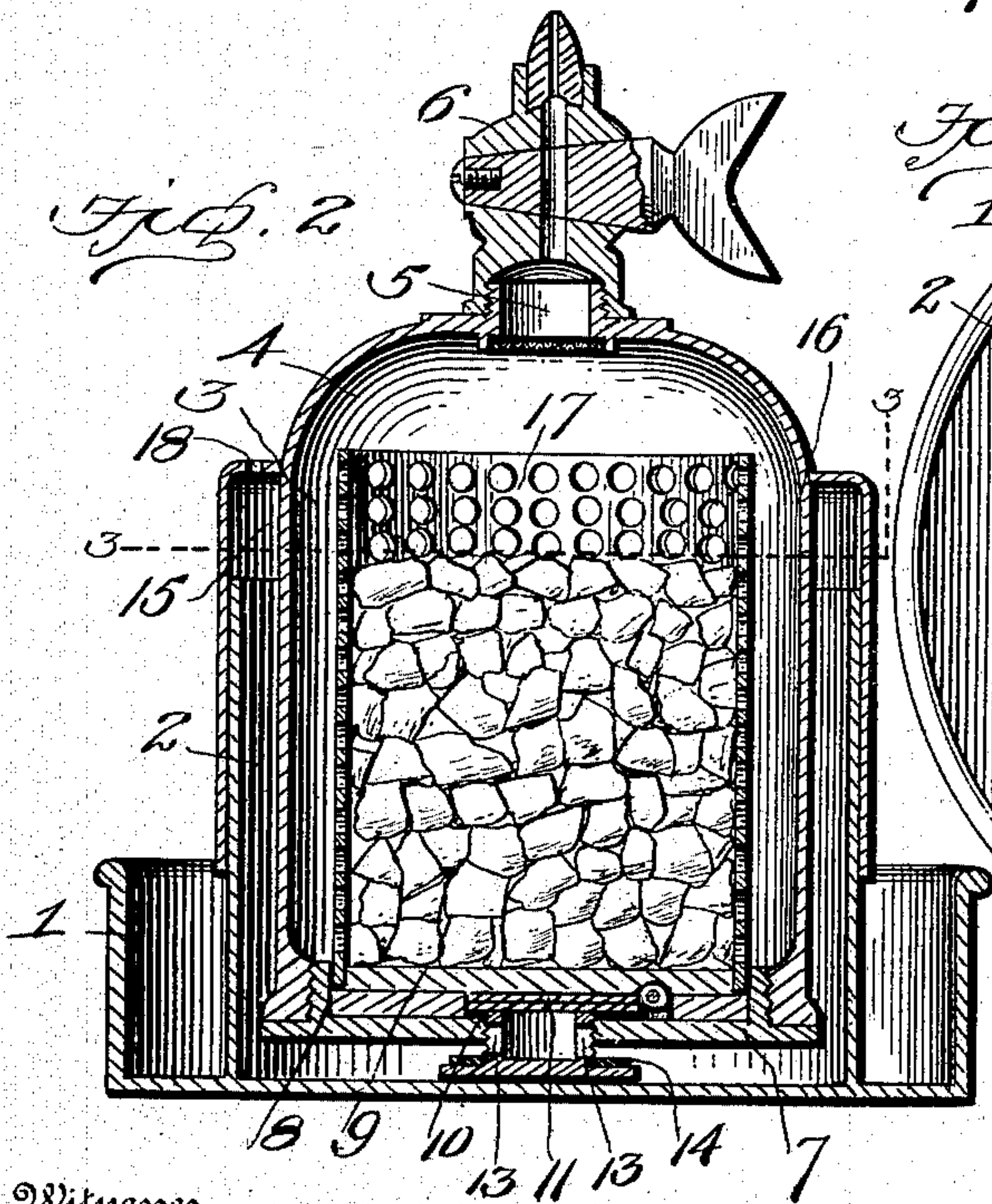
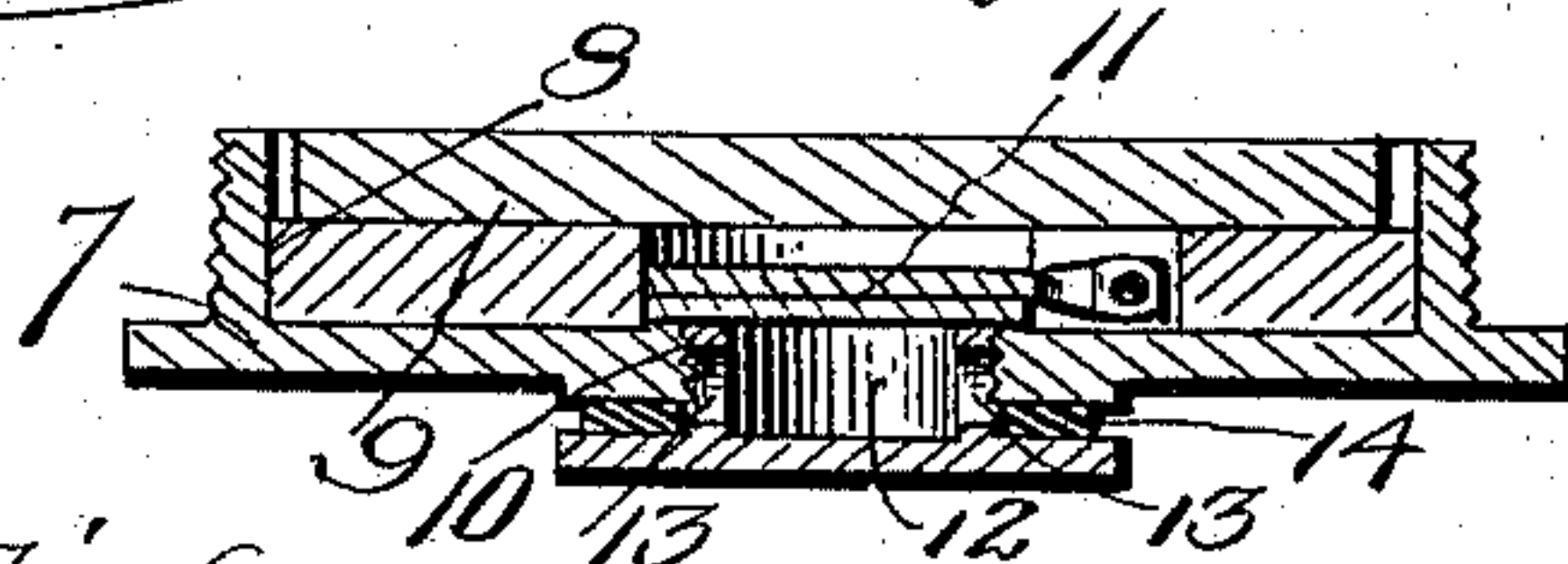
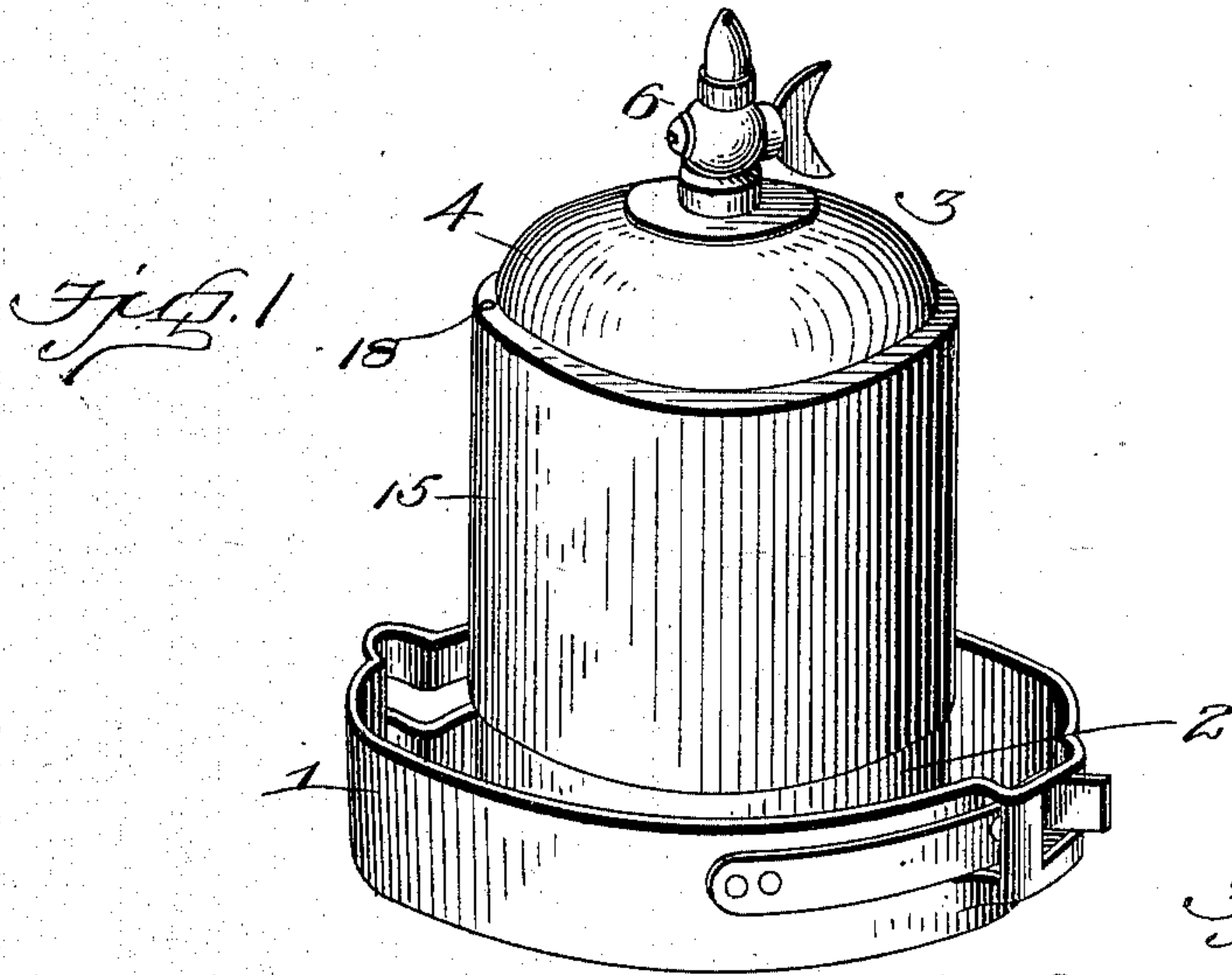
No. 714,318.

Patented Nov. 25, 1902.

F. M. MOORE.  
ACETYLENE GAS GENERATOR.

(Application filed Feb. 13, 1902.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

FRANK M. MOORE, OF PROVIDENCE, RHODE ISLAND.

## ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 714,318, dated November 25, 1902.

Application filed February 13, 1902. Serial No. 93,925. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK M. MOORE, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Acetylene-Gas Generators; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in acetylene-gas generators.

The primary object of the invention is to provide a generator of this character which shall be simple, cheap, and durable in construction, efficient in operation, and of such compact form as to adapt it to be used as a gas-generator for hand-lanterns of the character used by switchmen and railway-conductors without the necessity of increasing the size of the lantern.

A further object of the invention is to provide a generator which is susceptible of general use, which embodies features of construction applicable to different forms of generators, which is so constructed as to prevent clogging of the carbid-holder by the waste or residuum, and which is provided with simple and effective means for preventing overgeneration.

With this and other objects in view, which will readily appear as the nature of the invention is better understood, the said invention consists in certain novel features of construction and combination and arrangement of parts, as will be hereinafter fully described, defined in the appended claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of an acetylene-gas generator embodying my invention. Fig. 2 is a central vertical section of the same. Fig. 3 is a horizontal section on line 3 3 of Fig. 2. Fig. 4 is a section through the cap and washer on an enlarged scale.

Referring now more particularly to the drawings, the numeral 1 represents a base, which may be of the form shown to adapt the generator for application to a lantern of the character stated or of any other approved form suitable to the use to which the genera-

tor is to be put. This base carries the water tank or receptacle 2, which is open at top to receive the generator 3. The generator 3 consists of a casing 4, provided in its top with an eduction-opening 5 for the outflow of the generated gas and suitably constructed to receive the burner-fitting 6. The lower end of the casing is open for the insertion and removal of the carbid-holder, &c., and is adapted to be closed by a screw-cap 7. This cap has a seat or chamber 8 for the reception of a disk or washer 9, formed of felt or some other suitable absorbent material, and is provided with a feed-opening 10 for the flow of water from the tank 2 to the generator, the feed of which is controlled by a pivoted upwardly-opening valve 11. Below this valve the opening 10 is screw-threaded to receive a hollow screw-threaded cap-plug 12, formed with ports 13, through which when said plug is loosened to expose said ports the water from the reservoir 2 passes to the opening 10. The edges of the heads of the cap 7 and plug 12 are milled or serrated for affording a firm grip in manipulating them, and the said plug carries a washer 14 to effect a gas and water tight closure of the opening 10 when the plug is screwed up tight to close said opening. The casing 4 has a sleeve 15, which when the casing is fitted in the water-tank 2 incloses and frictionally engages the wall of said tank to close the tank and hold the parts connected. The sleeve also forms, with the generator-casing, a well 16, surrounding the generator and into which the water from the tank rises when the parts are assembled.

The carbid-holder 17 is in form of an open-ended perforated cylinder cage or basket and seats at its lower end within the chamber 8 of the cap 7 and is closed at its said lower end by the absorbent disk 9, which covers and protects the valve 11 from the carbid. The cylinder or basket is of sufficiently less diameter than the casing to form between it and the casing an annular chamber large enough for the reception of the slaked carbid or residuum, as hereinafter described. In the sleeve or shield 15 is formed an aperture 18, which allows air to enter as the water lowers in the well.

In priming the generator for operation the tank 2 is supplied to the desired height with



water, the carbid-holder filled with carbid, the holder inserted, with the cap 7, in position, the plug 12 unscrewed to open the ports 13, and the generator then fitted in the tank, as clearly shown in Fig. 2. The insertion of the generator into the tank displaces a quantity of the water, which rises in the well 16 and creates the necessary head or pressure by which the feed of the water to the carbid is secured. The water feeds from the tank through the ports 13 into the passage 10, and under its pressure the valve 11 is opened and the water enters the carbid-holder and is taken up by the absorbent disk 9. The generation of gas then commences and is continued so long as the water is supplied and the carbid lasts or until the amount of gas generated exceeds the amount being consumed and the pressure of the gas is greater than the head on the column of water, when the valve 11 is closed against the water-pressure by the confined gas. When the pressure of the gas decreases to the proper degree, the valve is again opened under the pressure of the water, water is supplied to the absorbent disk, and the generation of gas is resumed. The device is thus entirely automatic in action in controlling the generation of gas according to the amount being consumed and insures safety against over-pressure and explosions. This is also the case when the burner is temporarily extinguished by the closing of the valve controlling the flow of gas thereto and the generator contains water and carbid. Generation will continue, unless the plug 12 is closed, until the pressure of the gas is sufficient to close the valve. As leakage and condensation cannot be prevented, the pressure of the gas confined in the generator will decrease and the generation of gas will again commence; but as soon as the pressure of the gas reaches a certain point generation will again be arrested, and this will continue until the supply of carbid and water is exhausted.

When it is desired to stop the generation of gas for any considerable time, as when the lantern is extinguished and put aside for a number of hours or days, the plug 12 is preferably closed to prevent waste of the carbid; but in the event that the closing of the plug should be forgotten no harm beyond the waste of the carbid could ensue, as the generation of gas would be automatically arrested in the manner before described before the pressure could reach the danger-point.

The object of employing a perforate carbid-holder and forming a space between said holder and the wall of the generator-casing is to provide for the automatic discharge of the slaked carbid or residuum from the holder before it packs in the holder and interferes with the access of the water to the carbid and the generation of gas. It has been found in practice that where this construction is employed in a portable lantern which is kept in more or less constant motion or

swung, as railway-lanterns are in giving signals, that the agitation produced causes the waste carbid to discharge through the meshes or perforations of the holder and to bank up in the space around the holder, thereby preventing the objection referred to.

The absorbent or bibulous disk 9 is of peculiar importance in its specified relation to the carbid-holder and valve 11, as it acts in the nature of a barrier in the water-feed passage to prevent the water from gushing or spurting or feeding too fast to the carbid and insures the feed of an even and regular amount of water at all times, the amount being determined by the quantity which the disk is capable of absorbing or taking up, thereby preventing any sudden variations of pressure. This is of prime importance in lanterns of the character stated, wherein the motion of the lantern tends to feed the water with force to the generator. The disk also prevents choking of the valve by the access of the carbid thereto and affords a surface of the requisite area against which the gas may act to close the valve when the pressure of the gas reaches the maximum.

From the foregoing description, taken in connection with the accompanying drawings, it is thought that the construction, operation, and advantages of my improved acetylene-gas generator will be readily apparent without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus fully described my invention, what I claim as new and useful, and desire to secure by Letters Patent of the United States, is—

1. An acetylene-gas generator comprising a water-receptacle, a generator-casing of less diameter than the water-receptacle and adapted to seat therein, said casing having a bottom opening, a cap for closing said bottom opening and provided with a feed-passage, a valve controlling said passage and adapted to open under the pressure of the water and to close automatically when the pressure of the gas exceeds the pressure of the water, a carbid-holder within the generator and insertible and withdrawable through the bottom opening, and a sleeve or shield carried by the generator and adapted to fit about the water-receptacle and forming a well for the reception of the water rising from the receptacle when the generator is fitted therein, substantially as described.

2. An acetylene-gas generator comprising a water-receptacle, a generator-casing adapted to seat within the water-receptacle and detachable therefrom, a carbid-holder arranged within the generator-casing, a cap closing the lower end of the generator-casing and provided with a feed-passage for the flow of water from the receptacle to the carbid-holder,



a valve controlling said passage and adapted to open under the pressure of the water and to be closed automatically when the pressure of gas exceeds the pressure of the water, and means for closing the passage to the entrance of water, substantially as set forth.

3. An acetylene-gas generator comprising a water-receptacle, a generator-casing adapted to seat within the water-receptacle and detachable therefrom, a carbid-holder arranged within the generator-casing, a cap closing the lower end of the generator-casing and provided with a feed-passage for the flow of water from the receptacle to the carbid-holder, a valve controlling said passage and adapted to open under the pressure of the water and to be closed automatically when the pressure of gas exceeds the pressure of the water, and a ported plug for closing the passage to the entrance of water, substantially as set forth.

4. An acetylene-gas generator comprising a water-receptacle, a generator-casing of less diameter than the water-receptacle and adapted to seat therein, said casing having a bottom opening, a cap for closing said bottom opening and provided with a feed-passage, a valve carried by the cap and controlling said passage and adapted to open under the pressure of the water and to close automatically when the pressure of the gas exceeds the pressure of the water, a carbid-holder within the generator and insertible and withdrawable through the bottom opening, said holder being supported by the cap, a barrier of absorbent material located above the valve and closing the bottom of the holder, and a sleeve or shield carried by the generator and adapted

to fit about the water-receptacle and forming a well for the reception of the water rising from the receptacle when the generator is fitted therein, substantially as specified.

5. An acetylene-gas generator comprising a water-receptacle, a generator-casing of less diameter than the water-receptacle and adapted to seat therein, said casing having a bottom opening, a cap for closing said bottom opening and provided with a feed-passage, a valve carried by the cap and controlling said passage and adapted to open under the pressure of the water and to close automatically when the pressure of the gas exceeds the pressure of the water, a carbid-holder supported by the cap and insertible and withdrawable through the bottom opening, said holder comprising a perforated cylinder of less diameter than the generator, leaving an intervening space for the reception of the waste carbid which discharges through the perforations in the cylinder, a barrier of absorbent material between the valve and carbid and closing the lower end of the carbid-holder, and a sleeve or shield carried by the generator and adapted to fit about the water-receptacle and forming a well for the reception of the water rising from the receptacle when the generator is fitted therein, substantially as specified.

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

FRANK M. MOORE. [L. s.]

Witnesses:

HARRY T. VIOLL,  
HARRY JORDAN.