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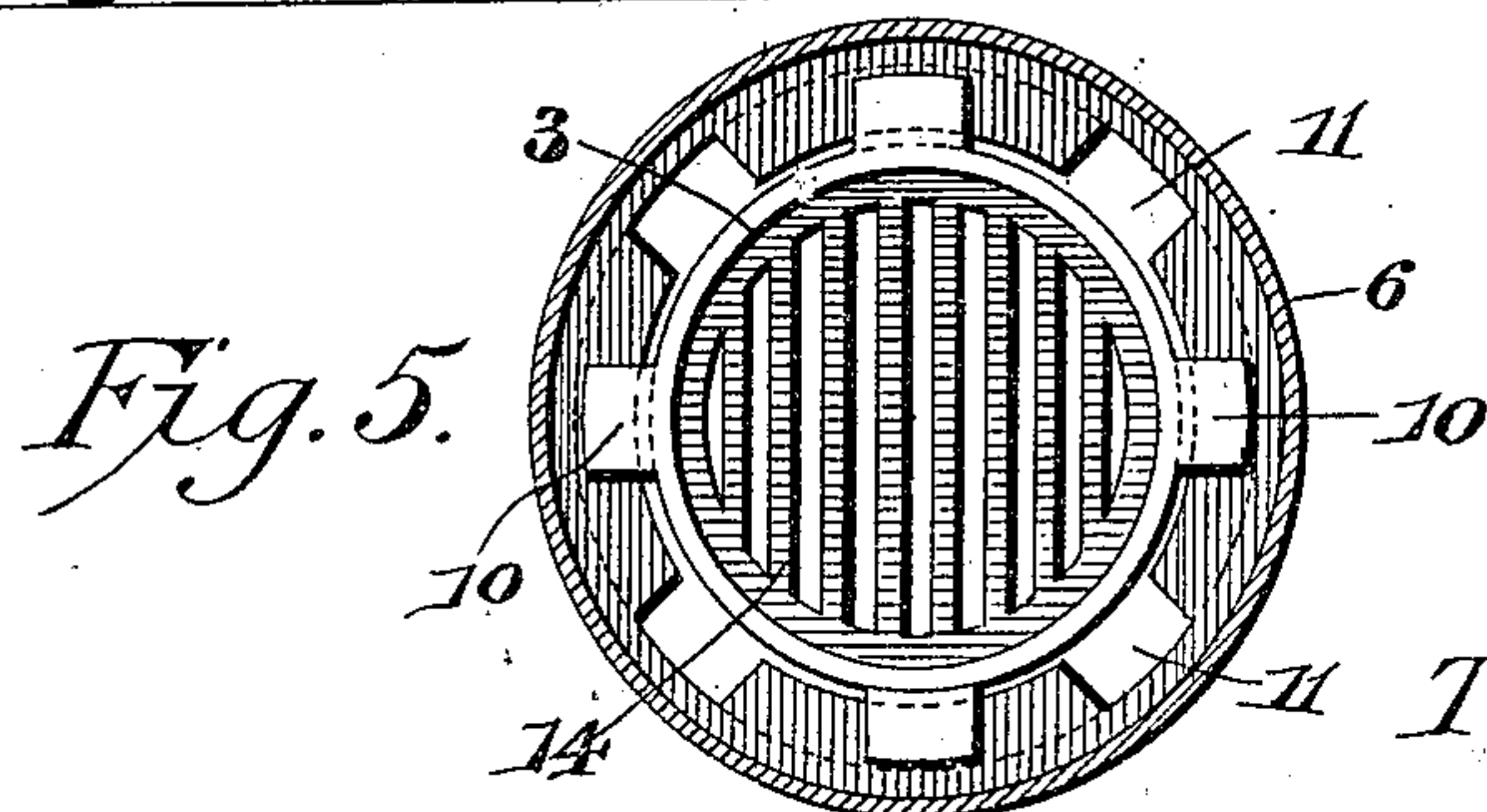
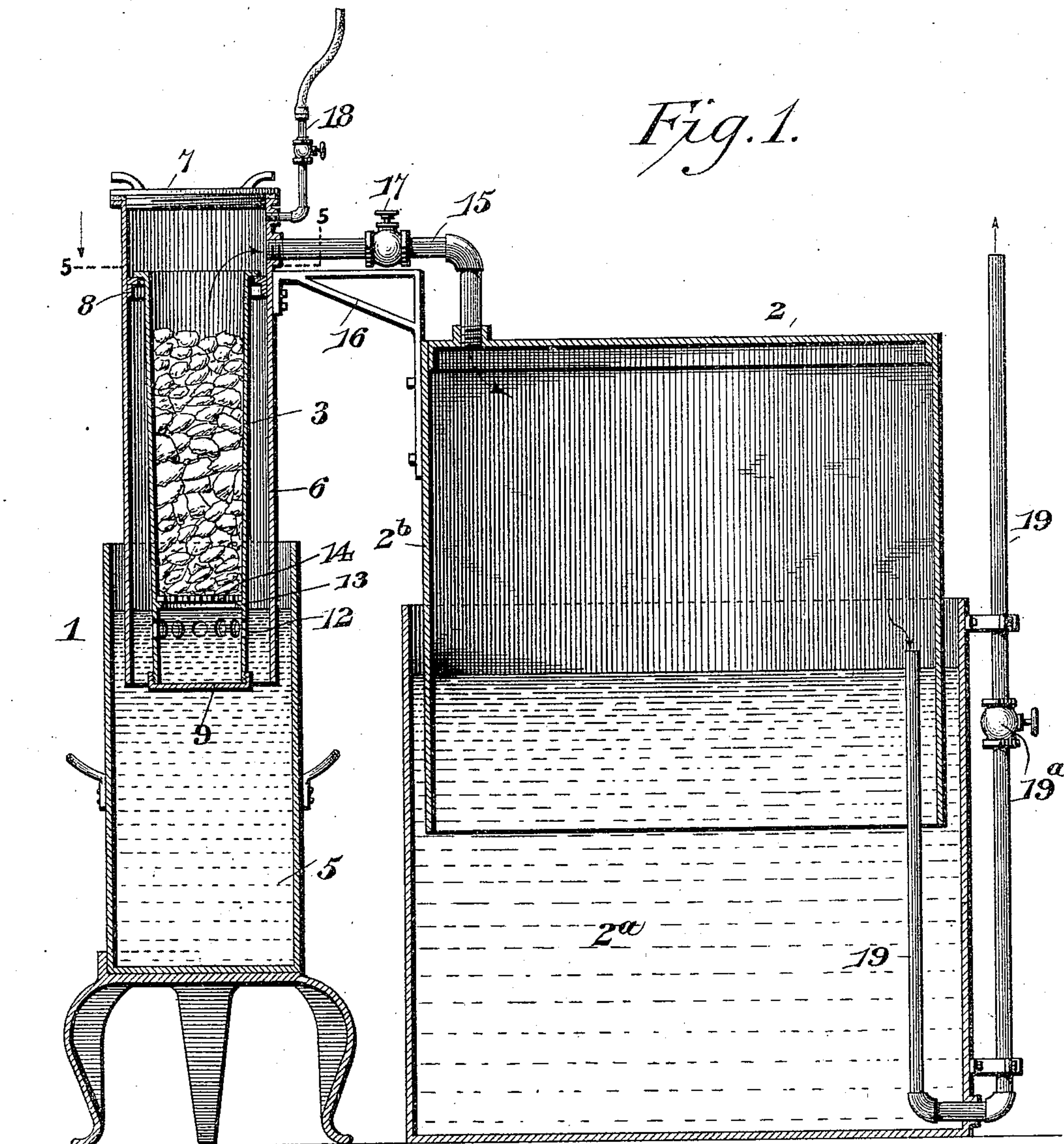
Patented Jan. 17, 1899.

T. E. SCANTLIN.
ACETYLENE GAS GENERATOR.

(Application filed Aug. 27, 1897.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses

Jas. L. McCathran
H. A. Bernhardt

By *his* Attorneys,

Inventor

Thomas E. Scantlin

C. A. Snow & Co.

No. 617,775.

Patented Jan. 17, 1899.

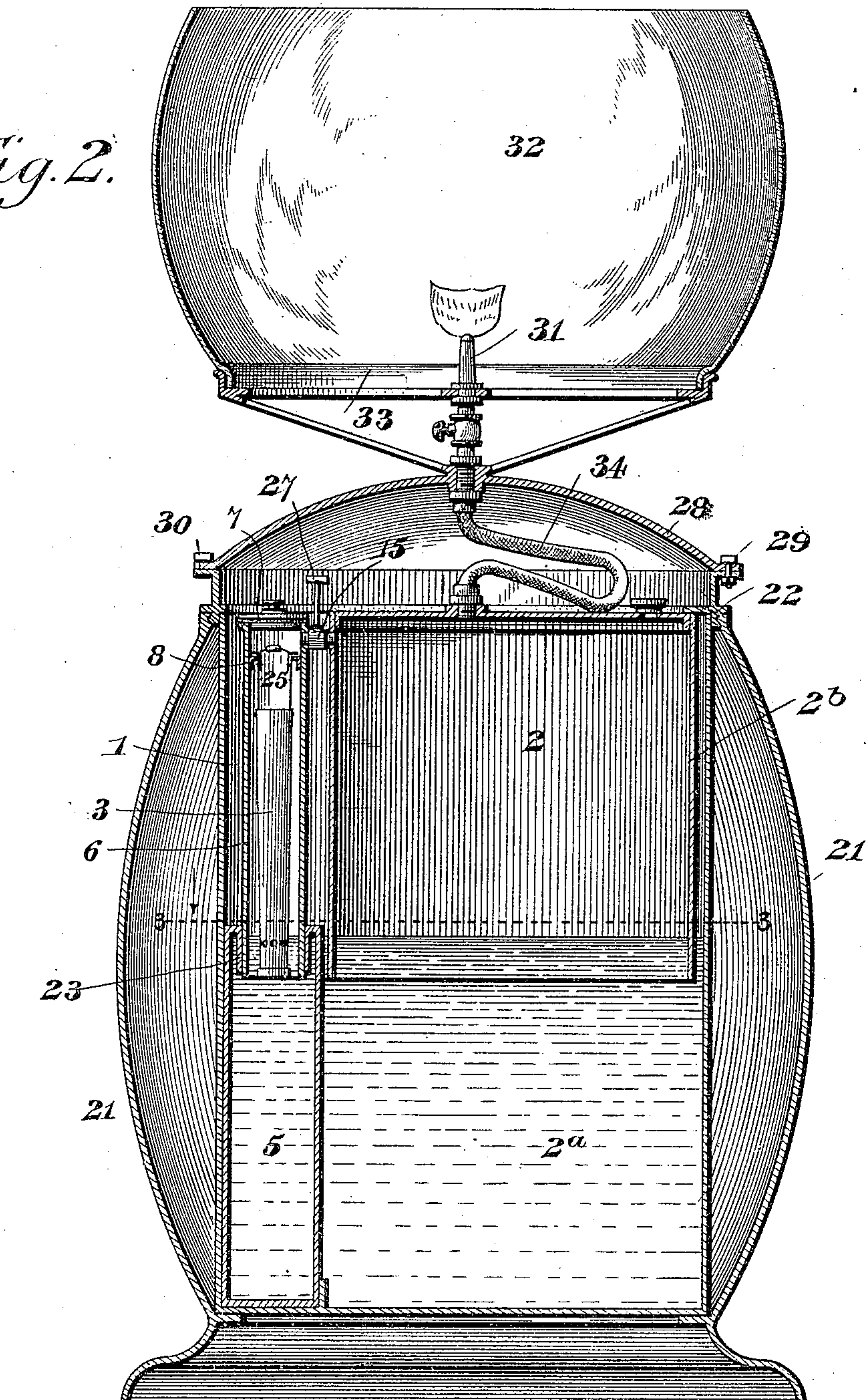
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4 Sheets—Sheet 2.

Fig. 2.



Inventor

Thomas E. Scantlin

Witnesses

Jas E. McLaughlin
H. A. Bunker

By His Attorneys,

C. A. Snow & Co.

No. 617,775.

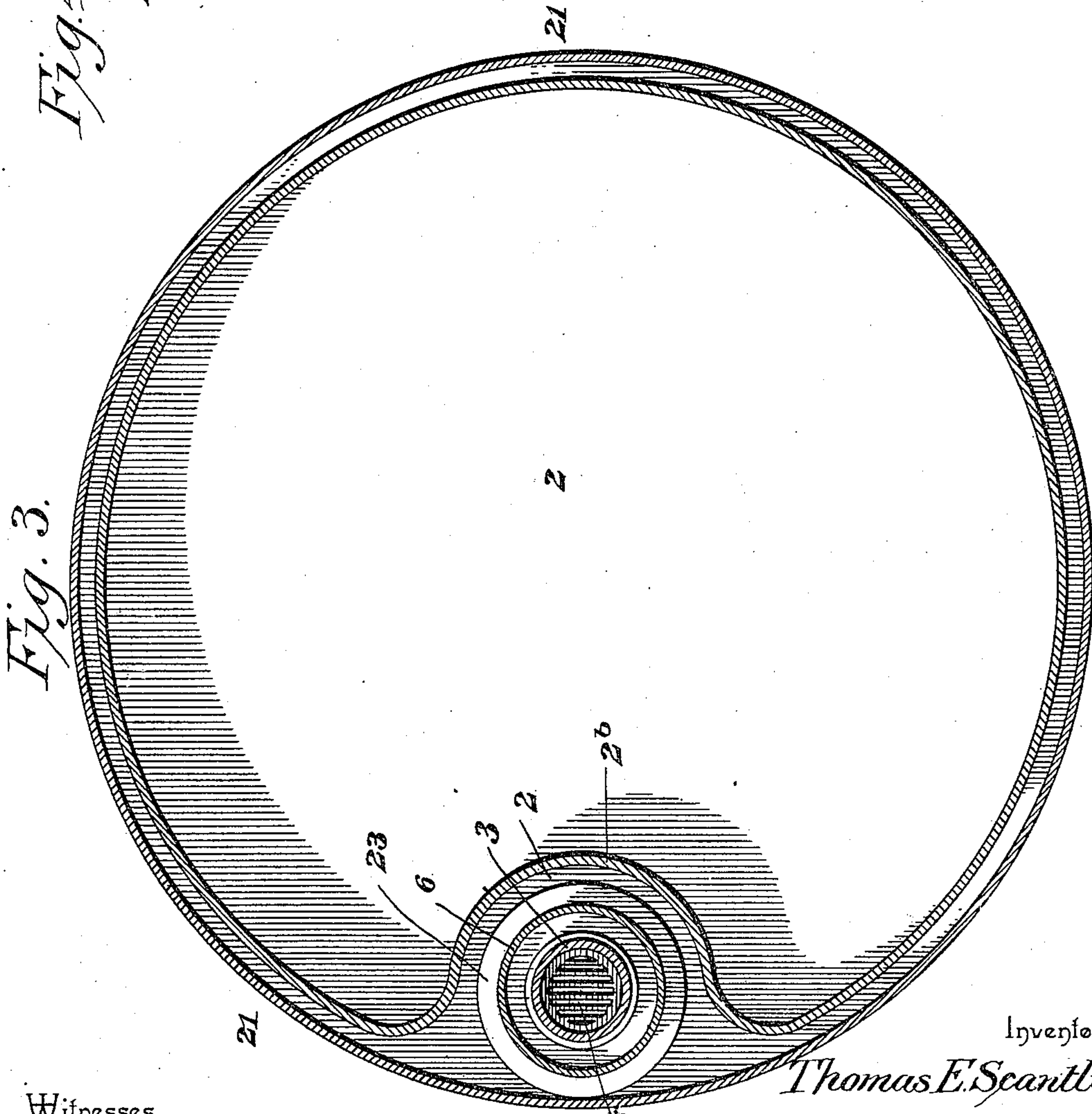
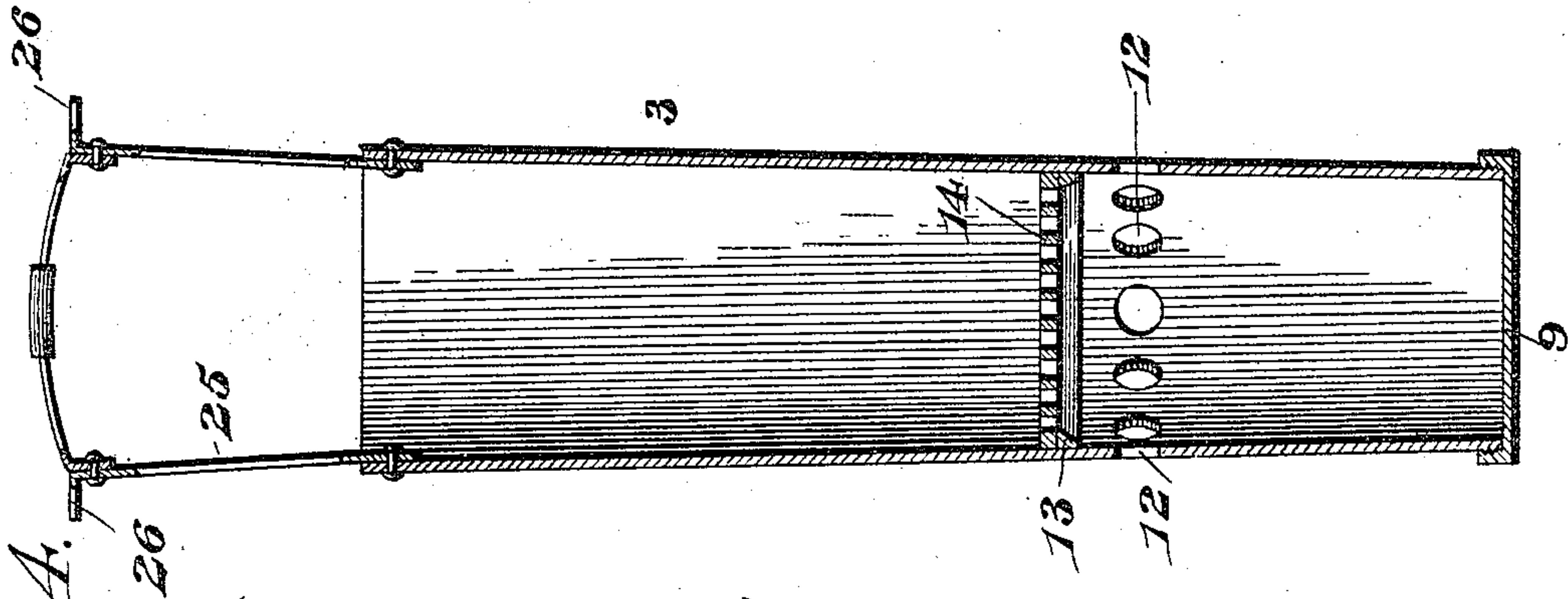
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4 Sheets—Sheet 3.



Witnesses

Jas E. McLathran
H. J. Bernkopf

By his Attorneys,

Cash & Co.

Inventor

Thomas E. Scantlin.

No. 617,775.

Patented Jan. 17, 1899.

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4 Sheets—Sheet 4.

Fig. 6.

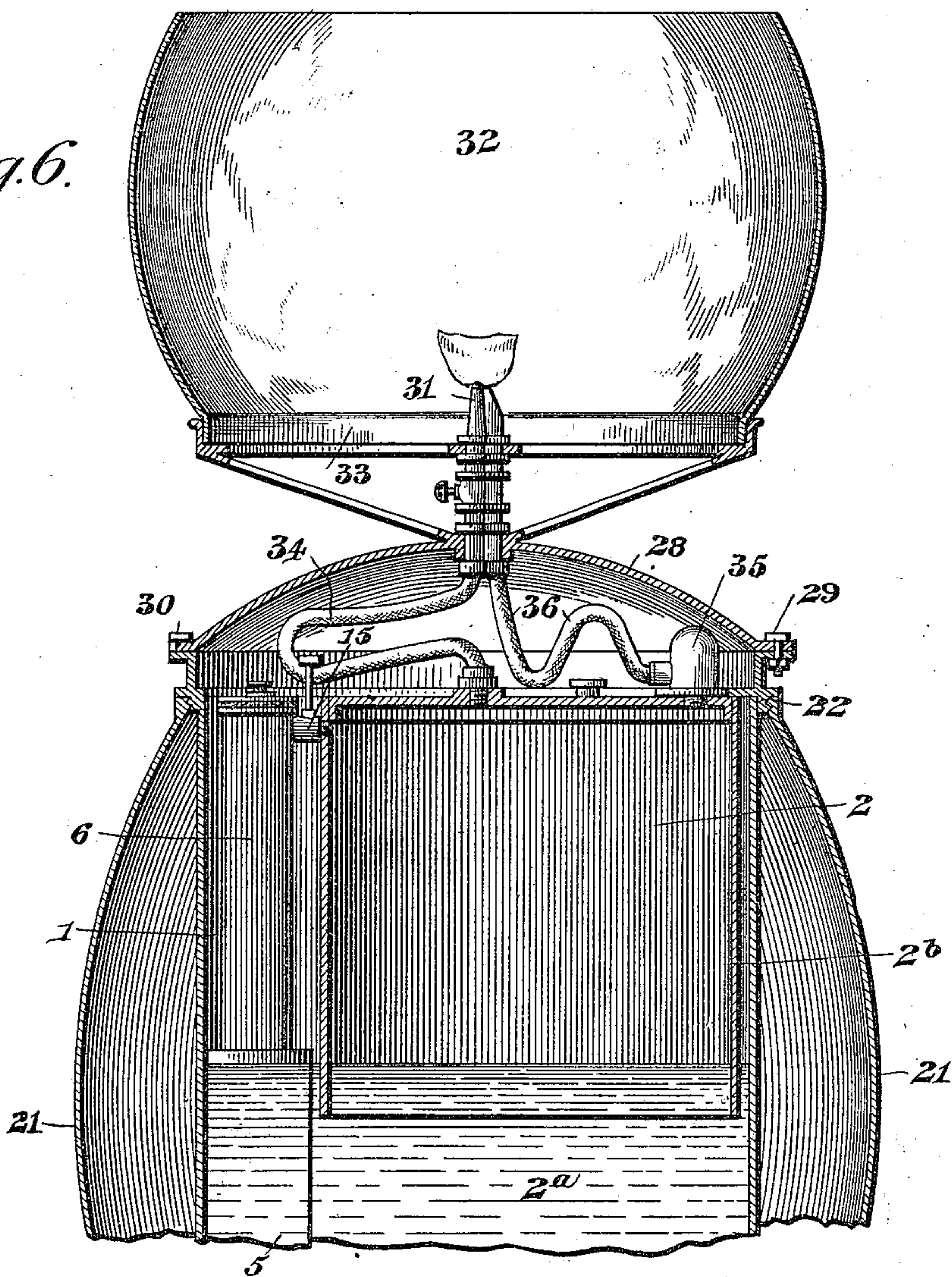
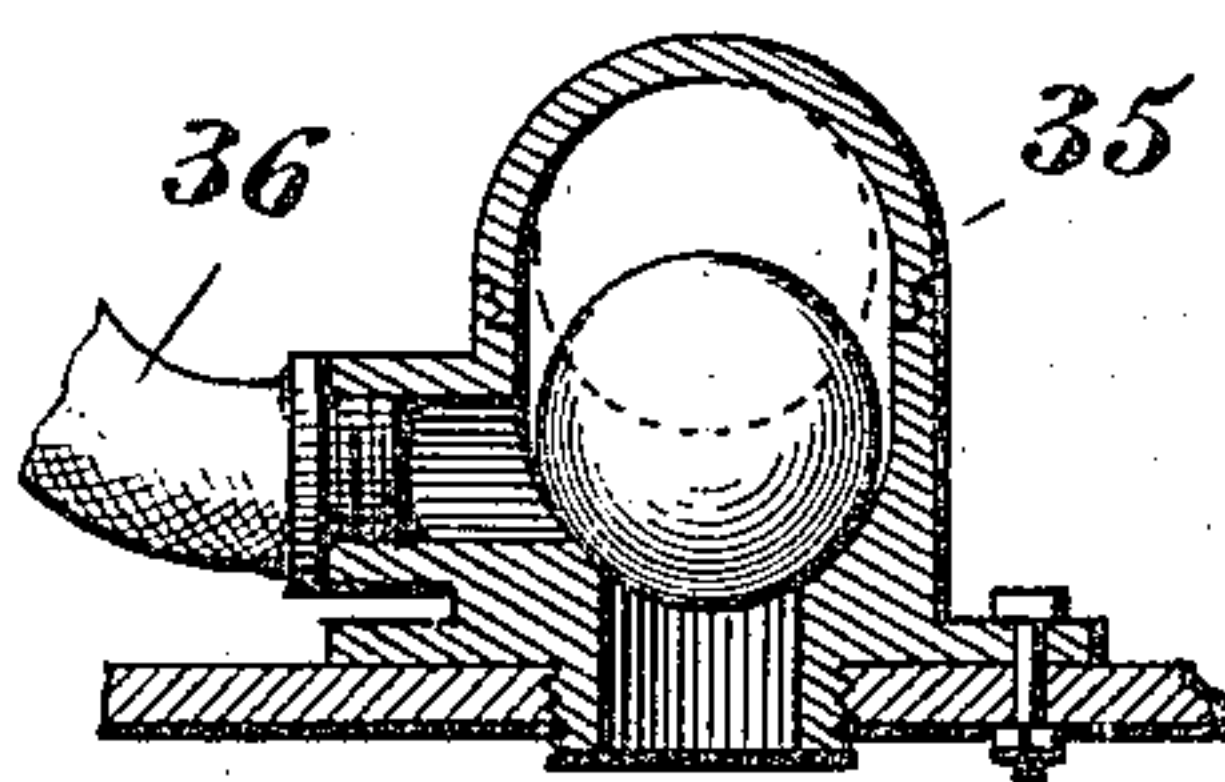


Fig. 7.



Witnesses

Jas. L. McLaughlin

H. J. Bensdorf

By His Attorneys,

C. A. Snow & Co.

Inventor

Thomas E. Scantlin

UNITED STATES PATENT OFFICE.

THOMAS E. SCANTLIN, OF LAFAYETTE, INDIANA, ASSIGNOR OF ONE-HALF
TO JOHN ROSS, OF SAME PLACE.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 617,775, dated January 17, 1899.

Application filed August 27, 1897. Serial No. 649,770. (No model.)

To all whom it may concern:

Be it known that I, THOMAS E. SCANTLIN, a citizen of the United States, residing at Lafayette, in the county of Tippecanoe and State of Indiana, have invented a new and useful Acetylene-Gas Generator, (Case A,) of which the following is a specification.

My invention relates to improvements in acetylene-gas generators in which I have combined and arranged the several working elements in a manner to provide for the safe storage of a large quantity of gas evolved by immersing calcium carbide in water.

A further object of the invention is to provide the apparatus with means whereby the carbide holder or carrier is controlled automatically in its vertical movements or play by the pressure of the gas stored in the gas-holder or "gasometer" of the apparatus, so that as the quantity and pressure of the gas decreases the carbide-holder will be lowered to start afresh the generation of the gas and as the quantity and pressure of the gas increases the carbide-holder is raised and withdrawn from the water to arrest the generation of the gas, obviate waste of the calcium carbide, and prevent the gas from being enriched beyond the point where such enrichment is undesirable.

A further object of the present invention is to so arrange and combine the parts as to secure uniform working or coöperation of the movable elements of the generator and the gas-holder to render the generator dependent for its operation upon the quantity and pressure of the gas in the holder.

To the accomplishment of these ends the first part of my invention consists in an apparatus for generating acetylene gas comprising a gas-holder, a gas-generator, the movable element of which carries the carbide-receptacle, and means for uniting the movable elements of said gas-holder and the gas-generator, whereby the carbide-receptacle which is carried by the movable element of the gas-generator will be lowered into the water of the gas-generator tank when the pressure of gas in the gas-holder is decreased, and vice versa, and the carbide-receptacle is raised out of the water when the pressure of the gas in the gas-holder is sufficient to raise its mov-

able element or the gas-bell to the desired height.

The invention further consists in the novel combination of devices and in the construction and arrangement of parts, which will be hereinafter fully described and claimed.

The principle of my invention is applicable to acetylene-gas generators designed for service either as a house or dwelling gas-generator to supply the pipe-line and the burners distributed through the house or dwelling, or to a gas-generator designed for service in connection with a burner to produce an apparatus similar to a portable lamp, which may be moved about from one place to another.

I have illustrated these different embodiments of my invention in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a sectional elevation of a gas-generating apparatus for house or dwelling service embodying my invention. Fig. 2 is a vertical sectional elevation of a portable gas-generator similar to a lamp. Fig. 3 is a transverse sectional view on the plane indicated by the dotted line 3 3 of Fig. 2. Fig. 4 is a detail sectional elevation of the carbide-receptacle especially designed for service in connection with the apparatus shown by Figs. 2 and 3. Fig. 5 is a detail sectional view on the plane indicated by the dotted line 5 5 of Fig. 1, showing the manner of suspending the carbide-receptacle removably within the movable element or bell of the gas-generator forming part of the apparatus for dwelling-service shown by Fig. 1. Fig. 6 is a view of another embodiment of my generator embodied in the form of a portable gas-lamp and equipped with means for permitting excess of gas to escape and be consumed at the burner, and Fig. 7 is a detail of the vent or safety-valve.

Like numerals of reference denote corresponding parts in all the figures of the drawings.

The apparatus forming my present invention consists of the following elements, to wit: a gas-generator 1, a gas-holder or gasometer 2, a carbide-receptacle 3, carried by the movable element or bell of the gas-generator 1, and means for coupling together the movable elements or bells of the gas-generator

and the gas-holder or gasometer to insure simultaneous movement of said bells and to immerse the carbid-receptacle in and withdraw the same from the water in the tank of the gas-generator as the bell of the gasometer or gas-holder is lowered or raised according to the pressure of the gas in said gasometer or gas-holder. These elements of my apparatus, combined and arranged for service as described, are common to or present in both forms of the apparatus shown by the drawings as adapted for dwelling-service or for use as a portable lamp.

I will first proceed to describe in detail the apparatus for supplying dwellings or houses with acetylene gas. (Shown by Figs. 1 and 5 of the drawings.) The gas-generator 1 of the apparatus consists of the tank 5 and the movable element or bell 6, which is adapted to play or reciprocate vertically in the tank 5, according to the pressure of the gas in the gas-holder 2. The tank 5 of the gas-generator may be supported in any suitable way, and it is designed to be filled with water up to a suitable line near its upper open end. The vertically-movable bell 6 of the gas-generator is open at its lower end and the upper end thereof is designed to be closed by means of a removable head or cover 7, which may be fastened detachably in place in any suitable way. The movable bell 6 of the gas-generator is provided with an interior flange or ledge 8, which is arranged near the upper end of the said bell, and this flange provides a seat from which may be suspended the carbid-receptacle 3. This carbid-receptacle consists, preferably, of an open-ended cylindrical vessel having a removable head 9 at its lower end. The upper open end of the carbid-receptacle is provided with a flange or with a series of lugs 10, as shown by Fig. 5, and this flange or the lugs extend outwardly from said receptacle 3 to rest upon the seat-flange 8 of the movable bell of the gas-generator. In the drawings, Fig. 5, I have shown the seat-flange 8 as provided with a series of notches 11 and the carbid-receptacle as provided with a series of lugs 10, which are spaced apart a distance corresponding to the spacing of the notches 11. This construction enables the carbid-receptacle to be suspended from the seat-flange when the receptacle is turned to a position where the lugs 10 of the receptacle are out of coincidence with the notches in the seat-flange 8; but by turning the receptacle around partly the lugs may be brought into alinement with the notches to permit the carbid-receptacle to be removed from the lower end of the movable bell of the gas-generator. I prefer, however, to remove the carbid-receptacle from the bell of the gas-generator by detaching the cover or head therefrom and then lifting the carbid-receptacle out through the open upper end of the bell of said generator. This carbid-receptacle is provided near its lower end with a series of radial openings 12, which are formed in the shell of the receptacle above the detachable

lower head 9 thereof, and above these water-inlet openings 12 the receptacle is further provided with an annular flange or ledge 13, on which rests the grating or perforated plate 14; that sustains the quantity of calcium carbid in the receptacle 6. The employment of the closed removable head 9 at the lower end of the carbid-receptacle below the water-inlet openings thereof is advantageous in that the receptacle is constructed to contain but a limited volume of water to be admitted to the carbid contained within the receptacle, and the head forms, with the shell of the receptacle below the openings therein, a closed chamber to contain the residuum that may be deposited in the receptacle. This residuum is thus contained in the subchamber of the carbid-receptacle to prevent its precipitation into the water contained in the tank 5 of the gas-generator, and the residuum may be easily emptied by detaching the head 9 from the receptacle, as will be understood.

The gas-holder or gasometer 2 is similar in construction to the common devices of this nature in that it consists of a water-tank 2^a and a vertically-movable bell 2^b, which is adapted to play freely in a vertical direction within the tank 2^a and in the water contained therein.

The vertically-movable bells of the gas-generator and the gas-holder are coupled together by rigid connections to insure the simultaneous movement of said elements of the apparatus. I prefer to employ the discharge-pipe 15 as the means for joining these movable elements together; but the pipe may be supplemented by the brace 16. (Shown by Fig. 1.) The discharge-pipe 15 is of elbow form, although this is not essential, and one end of this pipe 15 is rigidly attached to the bell 6 of the gas-generator, while its other end is attached in like manner to the bell 2^b of the gas-holder. The brace 16 is bolted rigidly to the two bells; but this brace may be omitted in case it is found that the pipe 15 affords sufficient strength to operatively connect the movable elements of the gas-generator and the gas-holder. In the apparatus shown by Fig. 1 I design to arrange the generator and the holder side by side in close proximity one to the other; but the holder may be situated some distance away from the generator and be operatively connected therewith in any suitable way. The pipe 15 besides serving to rigidly connect the movable bells of the holder and generator affords an outlet from the generator to the holder, and thus the gas as it is evolved by the action of the carbid and water is conducted from the generator to and stored in the holder. This connecting-pipe 15 is provided with a suitable cock or valve 17, by which the pipe may be closed to cut off the passage of the gas from the generator to the holder, and the bell 6 of said generator is provided with a valved vent 18, by which the gas may escape from the generator into the outer air when the pipe 15 is closed by the

valve 17 to prevent the entrance of any more gas into the holder 2. This gas-holder 2 is also provided with the outlet-pipe 19, having a suitable valve 19^a. When this valve 19^a is open, the gas may pass from the holder to the pipe system of a dwelling or other building.

I will now proceed to describe the apparatus shown by Figs. 2, 3, and 4 of the drawings, in which the parts are arranged for service in a portable form to provide an acetylene-gas lamp adapted to be moved from one place to another, as occasion may require. In this embodiment of the invention the gas-generator 1 and the gas-holder 2 are constructed in a compact form to be inclosed within a suitable exterior casing 21, forming the bowl or body of the lamp-like apparatus. In this embodiment of the portable apparatus the tank 2^a is extended above the bell 2^b, so as to form a medium for inclosing the bell and the generator 1, and the upper end of the holder-tank 2^a and the external shell or casing 21 are coupled or united together by the coupling-ring or annulus 22. This coupling-ring 22 is flanged interiorly to form a seat for the upper edge of the tank of the gasometer, and said interior flange of the coupling-ring is arranged in the path of the vertically-movable bells of the gas-generator and the gas-holder, as shown, to provide the means whereby the upward movement of said bells 6 and 2^b of the generator and holder are limited. The coupling-ring and the open upper end of the inclosing casing 21 are constructed for attachment directly together by one or more turns of the rings into the inclosing casing—as, for instance, by providing the parts with screw-threads. If desired, the thread may be arranged to render necessary only a part turn of the ring 22 to connect it to the inclosing casing. The vertically-movable bell 2^a of the gas-holder is closed at its upper side, and it lies wholly within the extended upper part of the tank, as shown. The gas-generator is situated or arranged wholly within the tank 2^a of the gas-holder at or near one side thereof. The water-tank 5 of the gas-generator is provided with a doubled or bent flange 23 at its upper end, and within this flanged end of the tank of said generator is fitted the bell of the generator in a manner to prevent splashing of the water from the tank of said generator or from the tank of the holder when the apparatus is moved from one place to another. The bell of the generator slides freely, but it fits snugly within the flanged end 23 of the generator-tank. I may provide the lower end of the movable bell of the generator with a closed head and provide inlet-openings in the flange 23 of the generator-tank for the passage of water through the flanged end of the tank to the carbid-receptacle. The carbid-receptacle for the generator, forming part of the apparatus shown by Fig. 2, is of the form shown by Fig. 4, from an inspection of which it will appear that the receptacle or holder has the

removable head at its lower end, the grate, the inlet-openings between the head and the grate, and with a handle or bail 25, which is loosely or pivotally attached to the upper open end of the receptacle. This bail is provided with lateral lugs 26, adapted to rest upon the interior seat-flange of the vertically-movable bell, and said bell thus serves as the means for suspending the carbid-receptacle within the bell of the generator and as a means for conveniently removing the carbid-receptacle from the generator. In the portable apparatus having the gas-generator arranged wholly within and to one side of the holder I find it necessary to construct the bell of the gas-holder in a manner to enable it to clear the generator, and to this end I provide the bell 2^b of the holder with the vertical groove or channel 2^c, (shown by Fig. 3,) in which groove or channel is arranged the gas-generator. The bell 6 of the generator is coupled with the bell 2^b of the holder by the pipe or tube 15 to insure simultaneous movement to the bells of the generator and the holder. This connecting-pipe 15 in the portable apparatus has a valve 27, arranged to cut off communication between the bells of the generator and the holder, said valve having a protruding stem for its convenient operation. The coupling-ring 22 of the portable apparatus carries a head 28, which is pivoted to the ring, as at 29, and has its other edge confined by a suitable catch 30. This head or cover 28 sustains the burner 31, which is suitably attached to the head or cover, and this burner is inclosed by a globe 32, sustained by the shade-holder 33. The burner is operatively connected with the movable bell of the gas-holder by the flexible pipe or tube 34.

In the practical embodiment of my invention I prefer to use in the construction of the generator and the holder a material which is impervious to the action of the acetylene gas. One material suitable for this purpose consists of the metal known as "granite-iron," in which the metal is protected by a composition which renders it impervious to the action of the gas. I may, however, use porcelain or other earthenware material in the manufacture of the apparatus.

In Figs. 6 and 7 of the drawings I have shown another embodiment of my generator in the form of a portable gas-lamp, and in the type of the invention I have provided means for permitting the excess gas to escape from the storage-compartment of the generator or holder and be conducted to the flame at the burner, whereby the excessive supply of gas is permitted to escape automatically and to be consumed at the burner, thus obviating the presence of the obnoxious gas in the room or apartment and the liability of an explosion due to the gas escaping into the room adjacent to a flame from the lamp-burner. In this embodiment of my invention I provide the gas-holder or gasometer

with an automatic vent or escape-valve 35, and with this vent or valve is connected a flexible tubing or pipe, which is arranged to discharge the gas escaping through the vent or safety-valve at the tip of the gas-burner. This tube or pipe 36 is flexible to compensate for the vertical play of the bell of the gas-holder or gasometer, and it leads through the head or top of the stationary tank or casing of the apparatus. The upper extremity of this pipe or tube 36 terminates adjacent to the gas-burner in order that said pipe may discharge the excessive supply of gas at the burner to be consumed thereby, thus preventing the escape of gas into the room and reducing to a minimum the liability of explosions. The vent or safety-valve 35 may be of the construction shown by Fig. 7 of the drawings, in which I have illustrated a ball-valve within a suitable casing and adapted to seat itself by gravity over the vent-port in the head of the gasometer-bell; but this particular type of safety-valve is not at all important, because I am aware that other styles of safety-vent valves may be used in the practical embodiment of the invention.

It is thought that the operation and the advantages of my invention will be readily understood from the foregoing description, taken in connection with the drawings.

I would here remark that the pipes or tubes 34 and 36 may be made of any material not subject to deterioration by the action of the acetylene gas. It is well known that the chemical action of this kind of gas on rubber or rubber fabric soon causes deterioration of such substances as rubber, and to overcome this objection I prefer to use pipes or tubing of other material than rubber. I may use metal in the manufacture of these flexible pipes or tubes, in which case the tubes are made in sections jointed flexibly together to allow the tubes, or either of them, to lengthen and shorten, and thus accommodate themselves to the vertical play of the gasometer-bell.

I am aware that changes in the form and proportion of parts and in the details of construction of the devices herein shown and described as the preferred embodiment of my invention may be made without departing from the spirit or sacrificing the advantages of my invention. I therefore reserve the right to make such alterations and modifications as fairly fall within the scope of the invention.

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

1. In an acetylene-gas apparatus, the combination with a gasometer, and a generator having a vertically-movable bell slidably fitted within the tank of said generator, of a carbide vessel removably suspended at its upper end within said generator-bell and provided with a closed bottom, a crate and the water-inlet ports between the crate and the closed bottom to form a chamber for the re-

ception of spent carbide, and a rigid valved pipe fastened to the gasometer-bell and attached to the generator-bell at a point above the suspension of the carbide vessel therein, whereby the pipe connects the bells of the generator and gasometer to insure simultaneous movement thereto and the carbide vessel may be removed at will from the generator, substantially as described.

2. In an acetylene-gas generator, a water-tank provided at or near the water-line with an internal guide-sleeve, a vertically-movable bell slidably within said guide-sleeve, and a carbide vessel suspended within the generator-bell to travel therewith, in combination with a gasometer-bell, and a rigid coupling-pipe attached to the gasometer-bell and fastened to the generator-bell above the point of suspension of the carbide vessel therein, substantially as described.

3. In an acetylene-gas generator, a casing having a water-tank for the gasometer, and a vertically-movable bell provided with a vertical recess in one side thereof, combined with a generator-tank situated in the recess in said gasometer-bell, a generator-bell situated in the recess of the gasometer-bell to play in the generator-tank and carrying a carbide vessel, and a rigid coupling-pipe between the bells of said gasometer and generator, substantially as described.

4. The combination of a casing having a gasometer-tank and a removable head, a generator-bell with a vertical recess in one side thereof, a generator situated within the casing for its bell to lie within the recess of the gasometer-bell, a rigid pipe united to the bells of the generator and the gasometer to insure simultaneous movement thereto within said casing, a burner supported on the head of said casing, and a flexible connection between the burner and the gasometer-bell, substantially as described.

5. In a gas-generating apparatus, the combination with a gas-holder, and a gas-generator having its bell provided with a carbide-receptacle, means for connecting the bells of said generator and holder, an inclosing casing, a coupling-ring attached to the casing, a head fitted to the coupling-ring, and a burner carried by the head and having a flexible connection with the movable bell of the holder, as and for the purposes described.

6. In a gas-generating apparatus, the combination with a gas-holder, of a gas-generator having its bell operatively connected with the holder-bell to travel therewith, a fixed burner having a flexible connection with the holder-bell to supply gas to the burner under all fluctuations of said bell, an automatic safety-valve carried by the holder-bell, and a flexible connection leading from the safety-valve to the burner, substantially as described.

7. In a gas-generating apparatus, the combination with a casing, and a gas-holder, of a generator situated within the holder within the casing and having the bells of said holder

and generator operatively coupled together, a stationary burner supported by the casing and having a flexible connection with said holder-bell, a vent-valve casing carried by
5 the holder-bell and containing an automatic valve, and a vent-pipe discharging adjacent to the burner, and having a flexible connection with the vent-valve casing, substantially as described.

10 8. In a gas-generating lamp, the combination with a casing, a generator, a gasometer, and a burner mounted on the casing and having a flexible connection with said gasometer,

of a safety-valve connected with the gasometer, and a flexible vent-pipe connected with
15 the safety-valve and having a discharge adjacent to the burner-tip, as and for the purposes described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in
20 the presence of two witnesses.

THOMAS E. SCANTLIN.

Witnesses:

MAUD L. McCORKLE.

WILLIAM WILGUS.