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G. G. SMITH.
MEANS FOR STORING AND DISTRIBUTING GAS.

(Application filed Dec. 12, 1901.)

(No Model.)

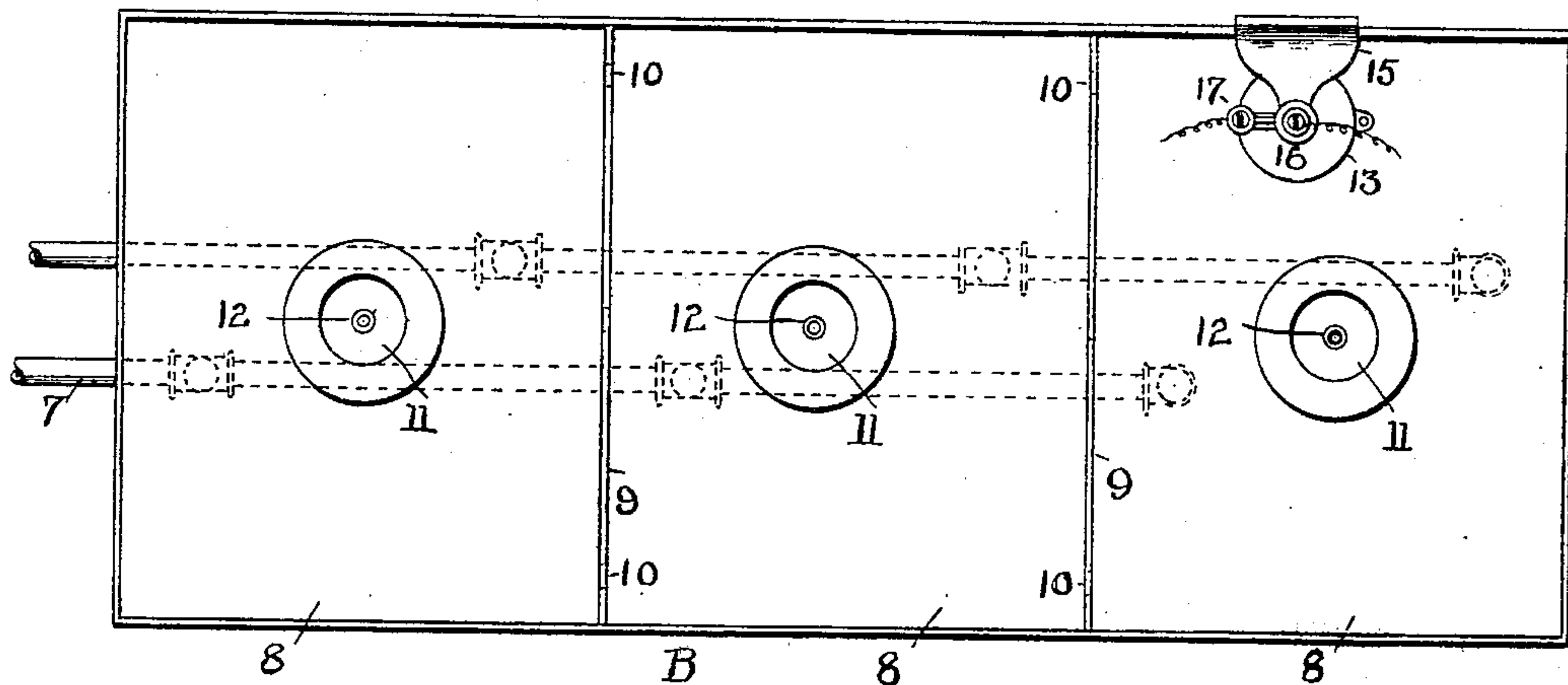


Fig. 1

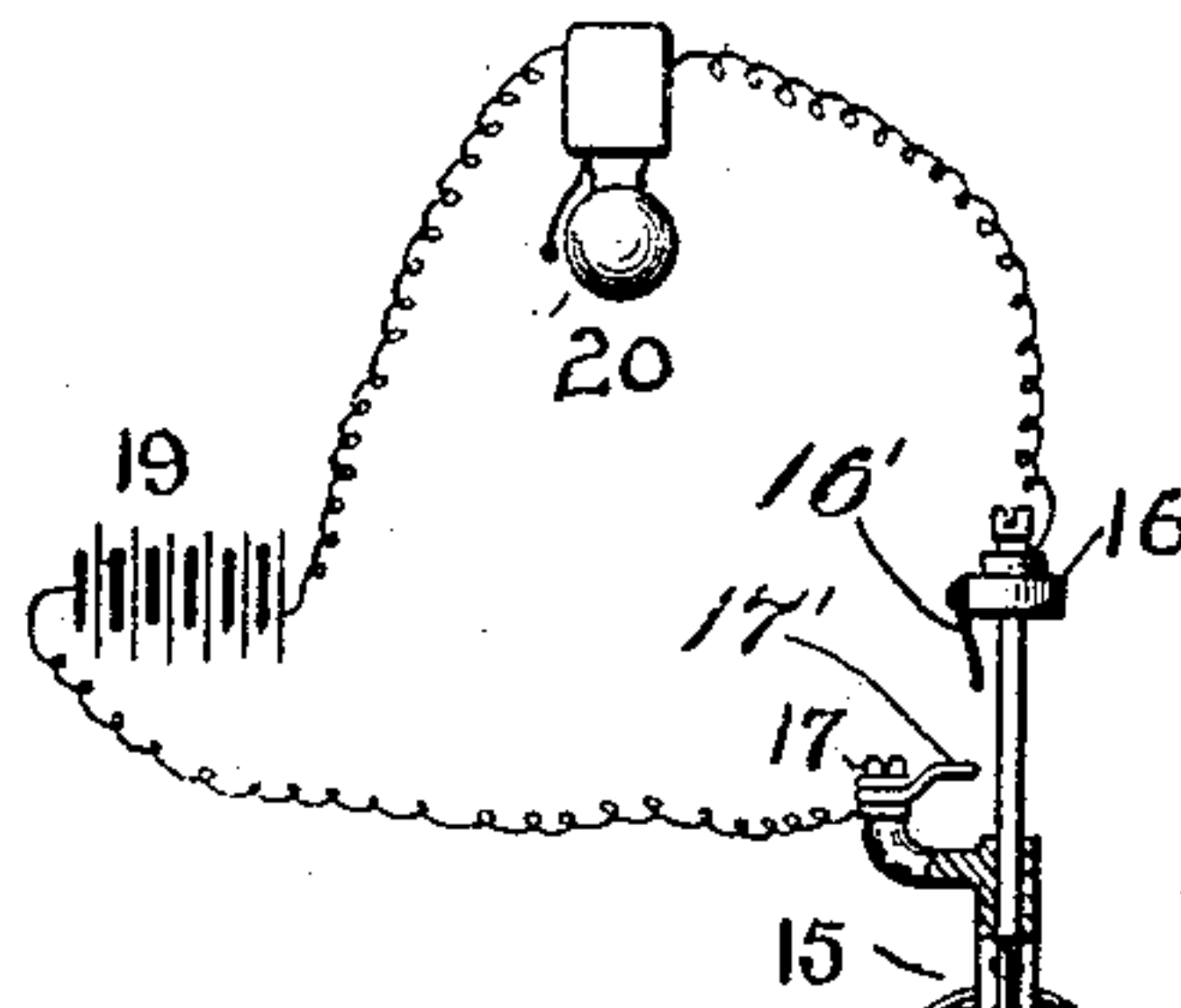
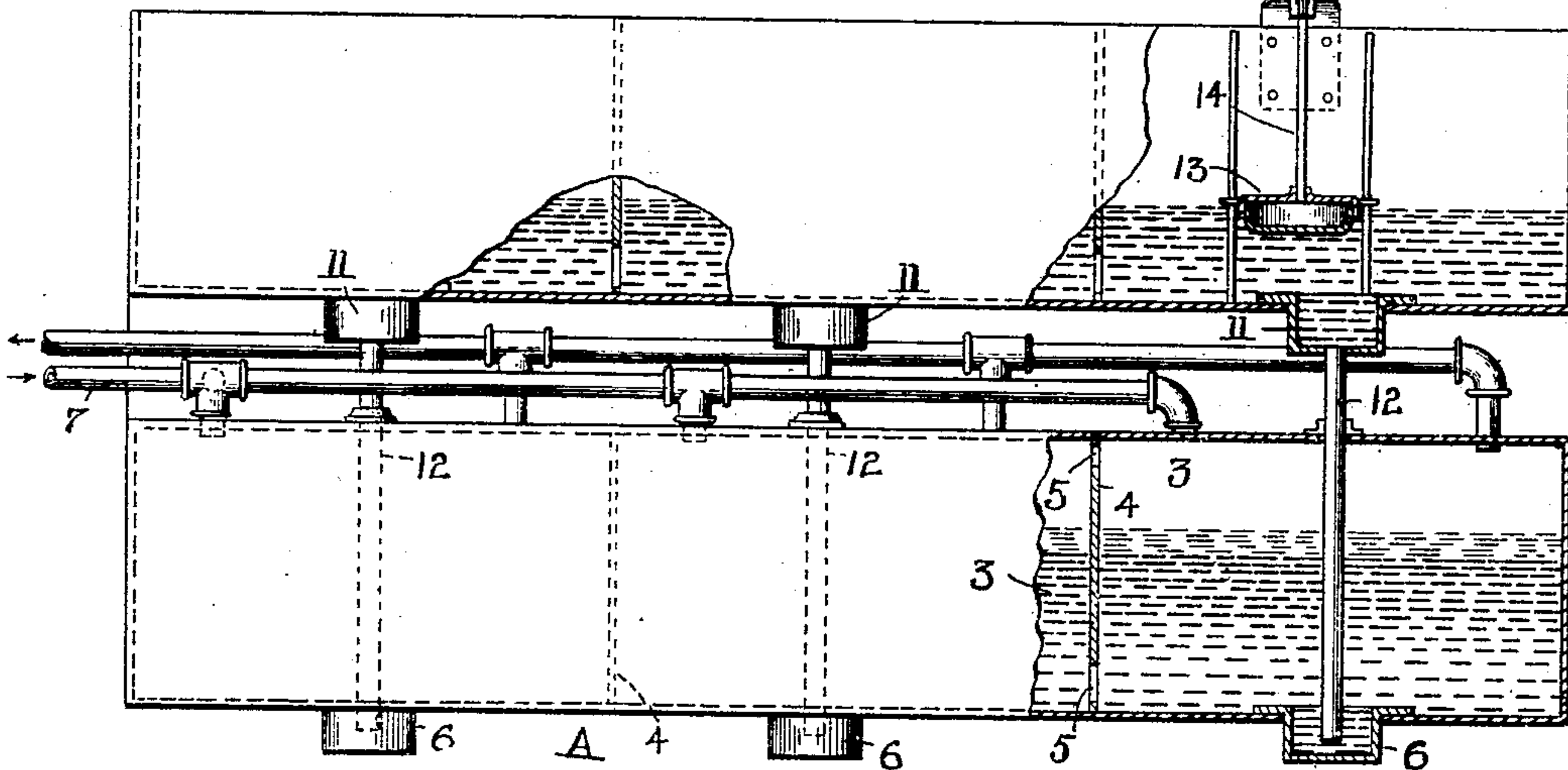


Fig. 2 B



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UNITED STATES PATENT OFFICE.

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MEANS FOR STORING AND DISTRIBUTING GAS.

SPECIFICATION forming part of Letters Patent No. 713,354, dated November 11, 1902.

Application filed December 12, 1901. Serial No. 85,548. (No model.)

To all whom it may concern:

Be it known that I, GEORGE GREGORY SMITH, a citizen of the United States, residing in Villa Bel Riposo, San Domenico, Florence, Italy, have invented certain new and useful Improvements in the Art of Storing and Distributing Gas, of which the following is a specification.

This invention relates to the art of storing gas, and has for its object the storage of gas without the use of a movable bell, and is to provide a holder in which the space for gas is provided for by displacement of a body of liquid by gas and in which the pressure on the gas is accelerated by hydrostatic pressure.

Another object of the invention is to provide for the storage under pressure of small supplies of gas.

Another object of the invention is to provide for the storage of gas in moving vehicles.

In carrying out my invention I employ a tank which the gas received from the generator or source of supply may enter and a second tank having its major portion on a plane above the plane of the top of the tank in which the gas is received, with a communication between the lower parts of the tanks. For saving space and piping of course the most desirable organization would be to have the tanks superposed. Sufficient water will be supplied to fill the lower tank and the pipes communicating between the two tanks. Upon the admission of gas the water from the lower tank will be forced up into the upper tank. Upon the shutting off of the supply the water will remain where the gas has forced it, and upon the withdrawal of the gas the water will gradually find its way into the lower tank, thus constantly keeping the gas under pressure.

Some suitable means may be employed for indicating when the water has been exhausted from the upper tank, which will also indicate the exhaustion of gas.

In the drawings accompanying and forming a part of this specification, Figure 1 is a plan view of a form of my invention, and Fig. 2 is

a side view thereof with portions broken away.

Two tanks are shown. The lower tank is designated in a general way by A and is shown as comprising compartments 3, separated by partitions 4, provided with openings 5 at or near the top and bottom thereof, respectively. Each tank or compartment is provided with a well 6, located below the level of the bottom. A pipe 7 is shown leading from the source of supply or generator and communicating with the respective compartments. The upper tank (designated in a general way by B) is shown as comprising compartments 8, separated from each other by partitions 9, having communicating openings 10 at the lower parts thereof with each other. In the bottom of each compartment 8 is a well 11, from each of which wells depends a pipe 12, passing into the well of one of the compartments of the other tank. Leading from the holder is a delivery-pipe in communication with each of the compartments 3. The pressure upon the gas will be exerted by filling the upper tank with water, which upper tank may be open on top. The water from the upper tank will run into the lower tank and fill the same, the amount of water used regulating the initial pressure exerted upon the gas. Upon the gas entering the chambers 3 it will force the water up the pipes 12 into the upper chambers, and upon cutting off the supply or upon delivery of gas in excess of the supply the water will find its way down into the lower tank and exert pressure upon the gas until the entire body of gas is expelled from the lower tank. A surface of vaseline or other oil may be floated on top of the water in the lower compartment to keep the gas dry.

For the purpose of indicating the reduction of water in the upper tank, which will indicate the reduction of gas-pressure in the lower tank, an indicator may be provided comprising a float 13, provided with a stem 14, freely sliding in a guide 15. At the upper end of the stem may be provided a binding-post and a wiping electrical contact 16', and to the

guide may be applied a binding-post 17 and an electric contact 17', which contacts and posts are in communication with an electric battery 19 and bell 20, properly connected in circuit. Upon the float sinking a predetermined distance the two contacts 16 and 17 will be brought into engagement and the electrical circuit closed, whereupon the bell will ring, indicating to the attendant the condition existing in the holder.

Although the water-tank and gas-receiver are shown as provided with partitions, yet it will be obvious that such condition is not essential, the partitions being efficient to prevent an endwise movement of the water contained therein, which might occur under certain disturbance of pressure and change of liquid from one tank to another.

Many details of construction may be modified without departing from the spirit or scope of my invention.

Having described my invention, I claim—

1. A gas-holder comprising a plurality of communicating compartments adapted to hold water; a tank superposed thereupon, comprising a plurality of communicating compartments adapted to hold water, each compartment of each tank being provided with a well at its bottom; pipes leading from the wells of the upper compartments to the wells in the lower compartments and means for admitting gas to the lower compartments.

2. In the storage and distribution of gas; a reservoir adapted to receive gas and capable of containing a fluid below the gas; a fluid-reservoir; means of intercommunication between the fluid-reservoir and a point below the normal surface-level of the gas in the gas-reservoir, the organization being such that the fluid will be forced from the gas-reservoir into the fluid-reservoir upon storage of the gas and upon reduction of volume of gas the fluid will flow into the gas-reservoir; standards located within the fluid-reservoir; a float guided by the standards; and a signaling device actuated by the float upon a predetermined change of the volume of gas within the gas-reservoir.

3. In the storage and distribution of gas, a reservoir adapted to contain gas and a fluid below the gas; a fluid-reservoir; means for intercommunication between the fluid-reservoir and the gas-reservoir at a point below the normal surface-level of the gas in the gas-reservoir; standards in the fluid-reservoir; a float guided thereby; an electrical contact actuated by the float; an electrical contact in position to engage with the former contact; and an annunciator in electrical circuit with the contacts.

4. In the storage and distribution of gas, the combination of a gas-holding reservoir comprising a plurality of communicating compartments adapted to hold water and gas; a reservoir comprising a plurality of compartments in proximity thereto, the compartments

of one reservoir being in communication with the compartments of the other reservoir, respectively; and a gas-inlet to, and a gas-outlet from, each compartment of the gas-holding reservoir.

5. In the storage and distribution of gas, a gas-holder comprising a plurality of communicating compartments adapted to hold gas and water; a tank in proximity thereto comprising a plurality of communicating compartments adapted to hold water; each compartment being provided with a well at its bottom; pipes leading from the wells of the tank to the wells in the gas-holder; a gas-receiving conduit having an inlet into each compartment of the gas-holder; and a gas-distributing conduit having a communication with each compartment of the gas-holder.

6. In the storage and distribution of gas, a gas-holder comprising a plurality of communicating compartments adapted to hold gas and water; a tank in proximity thereto comprising a plurality of communicating compartments adapted to hold water; each compartment being provided with a well at its bottom; pipes leading from the wells of the tank to the wells in the gas-holder; a gas-supplying conduit having an inlet into each compartment of the gas-holder; a gas-distributing conduit having a communication with each compartment of the gas-holder; standards in one of the compartments of the tank; a stem upon the float carrying one member of an electrical contact; a bracket upon the tank embodying a sleeve for embracing the stem, and an arm; the other member of the electrical contact carried by the arm; and an annunciator in electrical circuit with the contacts.

7. In the storage and distribution of gas, a gas-holder comprising a plurality of compartments communicating with each other at the top and bottom thereof, respectively; a tank open to atmospheric pressure in proximity thereto comprising a plurality of communicating compartments adapted to hold water; each compartment being provided with a well at its bottom; pipes leading from the wells in the tank to the wells in the holder; a gas-receiving conduit having an inlet into each compartment of the gas-holder; and a gas-distributing conduit having a communication with each compartment of the gas-holder at a point above the normal surface-level of the water therein.

8. In the storage and distribution of gas, a gas-holder comprising a plurality of compartments communicating with each other at the lower portion thereof adapted to hold gas and water; a tank in proximity thereto comprising a plurality of communicating compartments adapted to hold water; each compartment being provided with a well at its bottom and pipes leading from the wells of the tank to the wells in the gas-holder; a gas-sup-

plying conduit having an inlet into each compartment of the gas-holder; and a gas-distributing conduit having a communication with each compartment of the gas-holder at a point above the normal surface-level of the water therein.

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9. In the storage and distribution of gas; a gas-holder comprising a compartment having a well in the bottom thereof, and a gas-out-

let from and a gas-inlet into the upper portion thereof; a fluid-tank located adjacent thereto; a well in the bottom of the fluid-tank; and a pipe leading from the well in the tank to the well in the gas-holder.

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Witnesses:

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