No. 624,203.

Patented May 2, 1899.

J. D. FORSYTH.

ACETYLENE GAS GENERATOR.

(Application filed Sept. 17, 1898.)

(No Model.)

3 Sheets—Sheet 1.

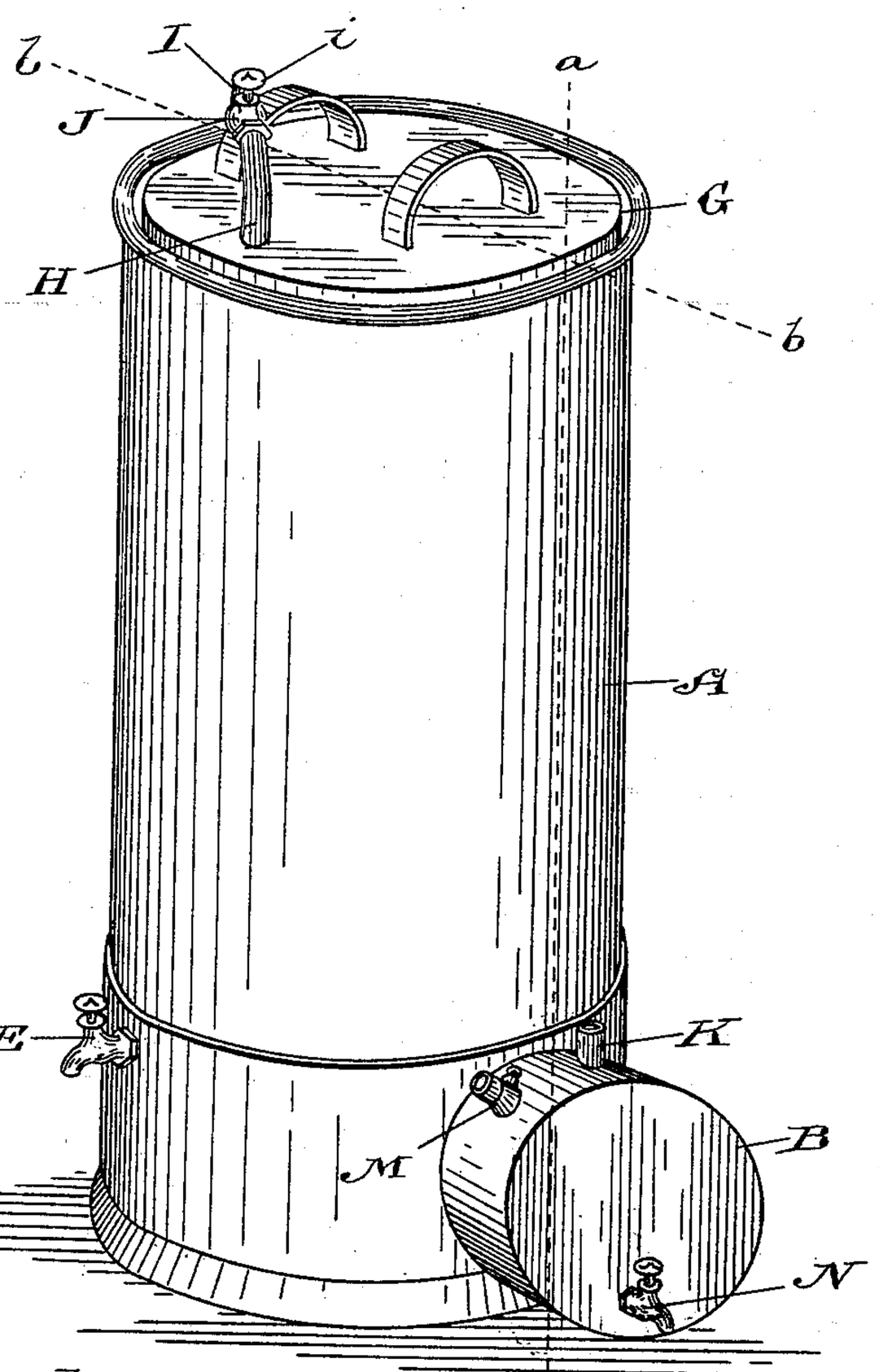

Fig. 1

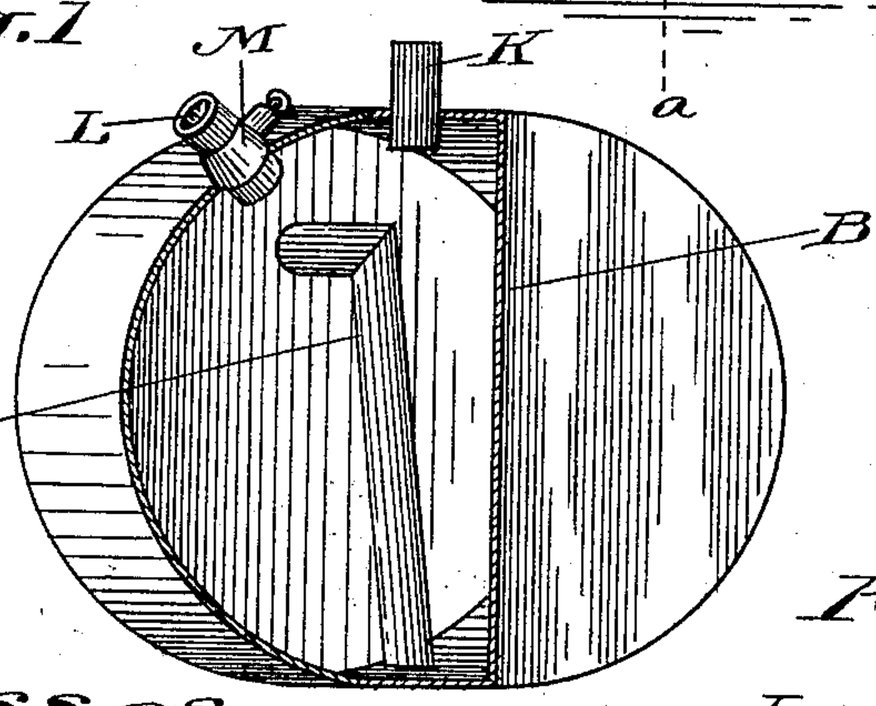

Fig. 3

Witnesses
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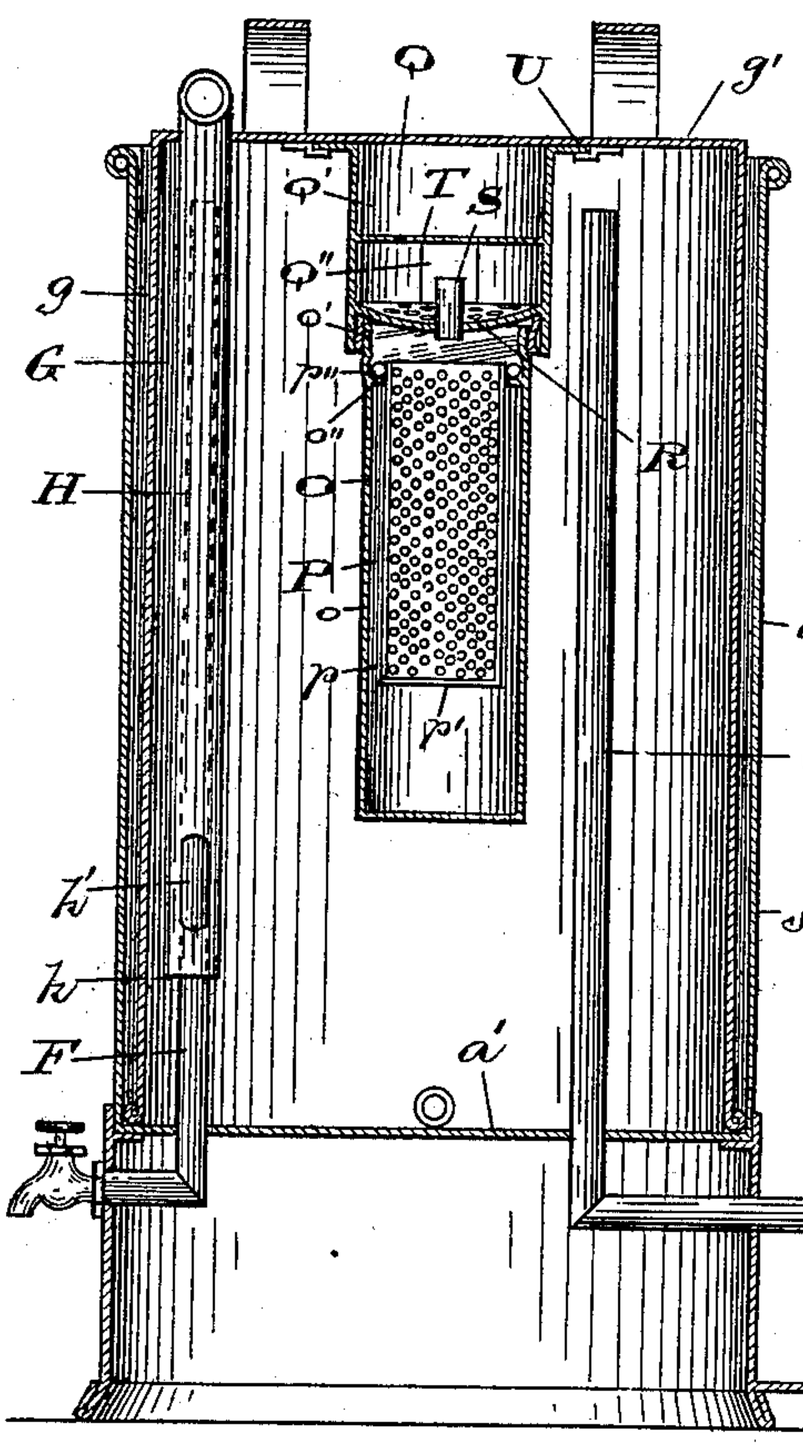

Fig. 2

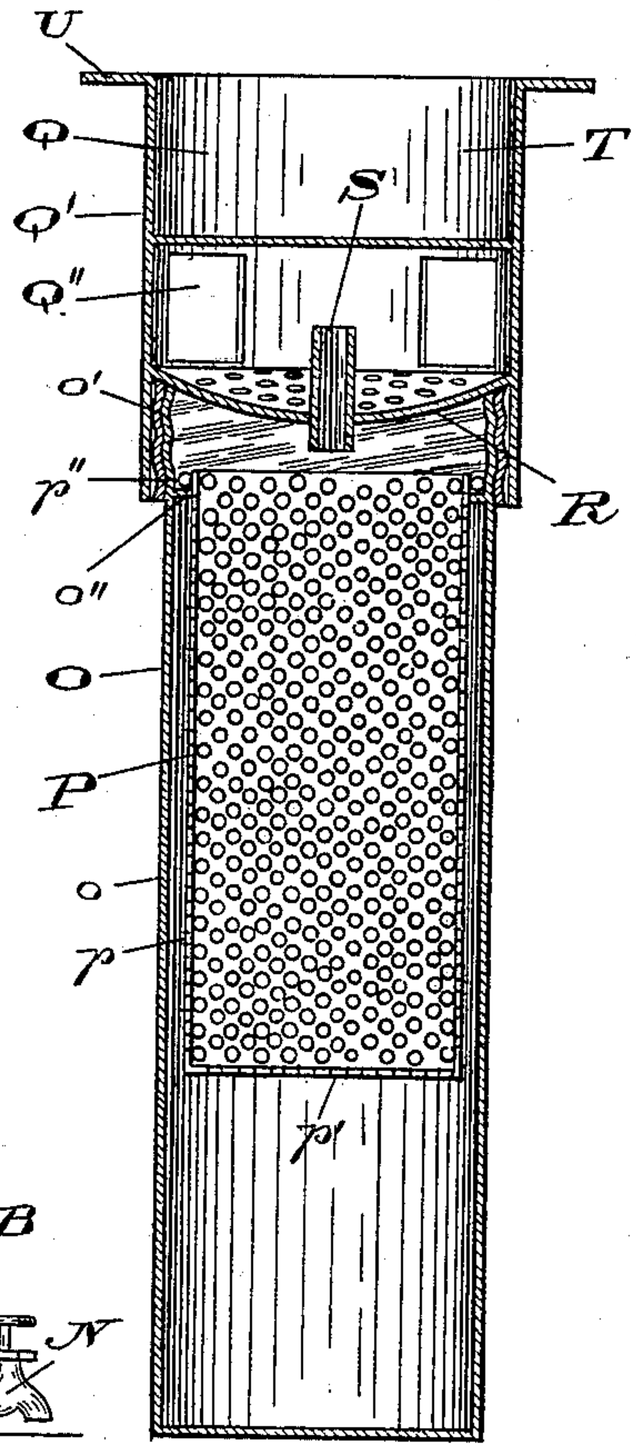

Fig. 3

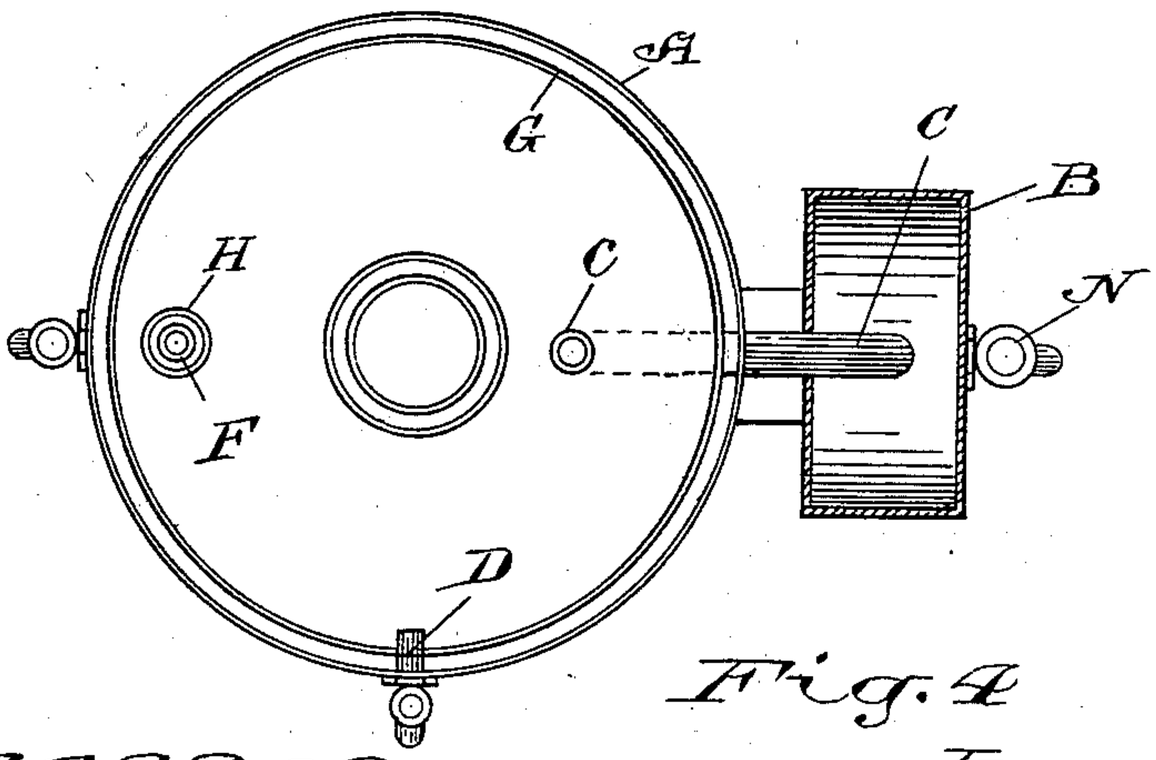

Fig. 4

Witnesses

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No. 624,203. Patented May 2, 1899.

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ACETYLENE GAS GENERATOR.

(Application filed Sept. 17, 1898.)

(No Model.) 3 Sheets—Sheet 3.

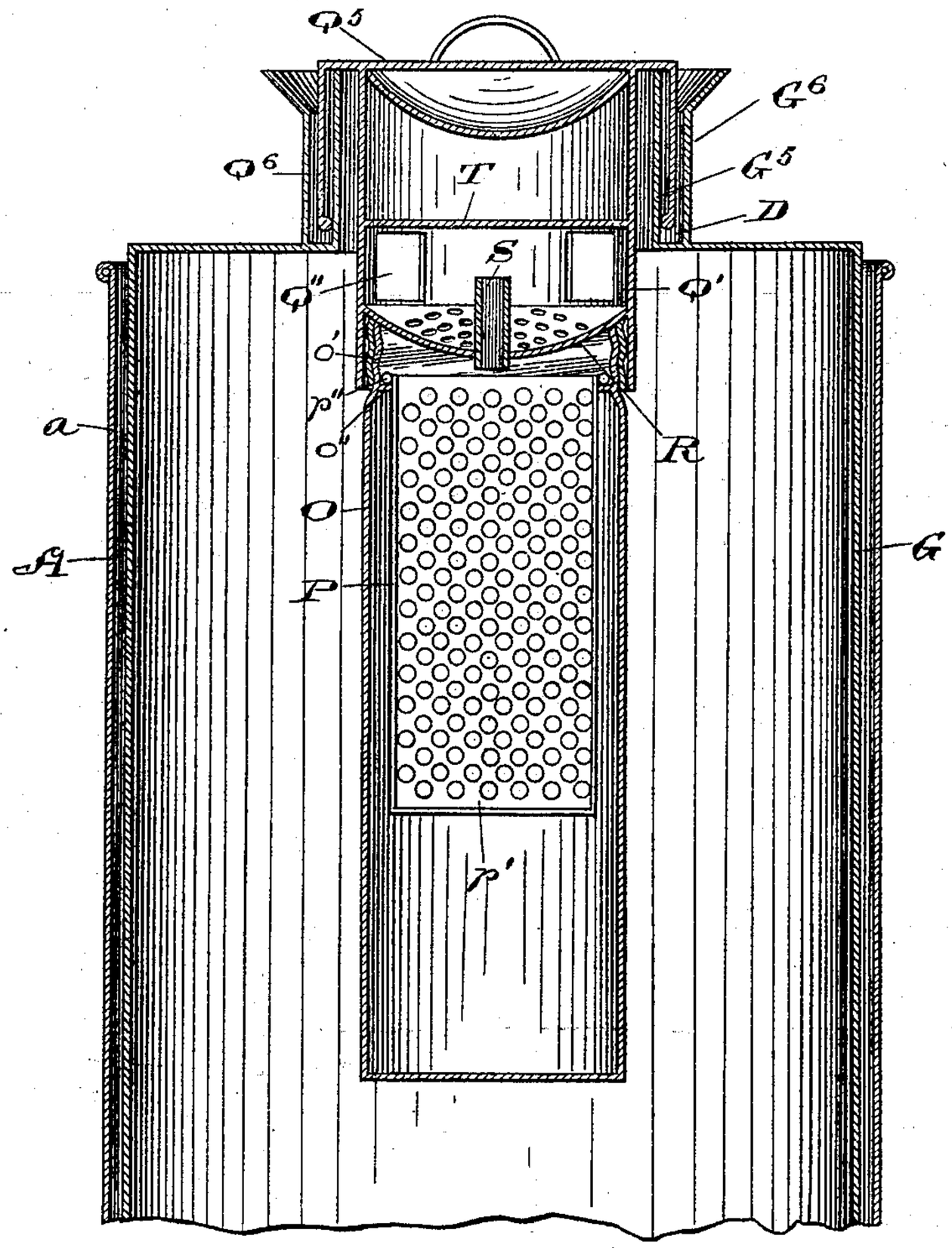

Fig. 6.

Witnesses
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UNITED STATES PATENT OFFICE.

JOHN D. FORSYTH, OF CLAREMONT, CANADA, ASSIGNOR OF ONE-HALF TO GEORGE MILNE BRODIE, OF SAME PLACE.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 624,203, dated May 2, 1899.

Application filed September 17, 1898. Serial No. 691,259. (No model.)

To all whom it may concern:

Be it known that I, JOHN D. FORSYTH, of Claremont, in the county of Ontario and Province of Ontario, Canada, have invented certain new and useful Improvements in Acetylene-Gas Apparatus; and I hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to certain new and useful improvements in acetylene-gas apparatus, and relates more particularly to the arrangement and construction of the carbid-holder and the manner in which it is lowered into and raised out of the water by the fall and rise, respectively, of the floating part of the gasometer, and it also relates to the manner in which the gas is purified as it passes from the gasometer to the mains; and the object of the invention is to so arrange the carbid-holder that when the floating part of the gasometer is in its lowered position it will admit of the contact of a small quantity of water to the carbid and atomize the water as it passes to the carbid, and when the floating part of the gasometer is in its raised position it will hold the carbid entirely free from contact with the water in the gasometer.

It is also part of the object of the invention to so arrange the carbid-holder that it can be weighted to facilitate the lowering of the floating part of the gasometer and create a pressure on the gas; and the invention consists, essentially, of a gasometer embracing in its construction a gas-well having an open top, and a gas-outlet pipe extending approximately from the top of the gas-well through the bottom to a purifier connected to the outer side of the bottom of the well, and a safety escape-pipe extending approximately from the top of the well through the bottom and to which is adapted to be connected a pipe leading to the outlet from the building, and a floating part for the gasometer having a pipe adapted to fit the safety escape-pipe of the gas-well and fitted in close proximity to its lower end with an opening which, rising above the top of the safety escape-pipe of the gas-well, forms an outlet from the gasometer through the safety escape-pipe, and an air inlet and outlet for the gasometer consisting of a valve-controlled tube extending through the top of the floating part of the gasometer and connected with the safety escape-pipe, which when the valve is open allows the gaseous contents of the gasometer to pass out through the safety escape-pipe during the descent of the floating part or to enter the gasometer through the safety escape-pipe and tube while the floating part is being raised to be removed, and a generator consisting of a tubular socket screw-threaded at its upper end and containing a removable perforated carbid-holder extending from approximately the top of the socket midway to the bottom, and a top having a screw-threaded collar fitting the screw-threaded top of the socket, a perforated disk above the collar, a central pipe extending slightly below and above the perforated disk, establishing an outlet for the gas from the carbid-holder, openings through the top of the collar, and a weighted pocket within the top above the openings, as hereinafter more fully set forth, and more particularly pointed out in the claims.

In the drawings, Figure 1 represents a perspective view of the complete apparatus. Fig. 2 is a sectional view of the same on the lines *a a*, Fig. 1. Fig. 3 is an enlarged sectional view of the generator. Fig. 4 is a sectional view on the lines *b b*, Fig. 1. Fig. 5 is a perspective view, partly in section, of the purifier. Fig. 6 is a sectional view of a modification of the carbid-holder and top of the floating part of the gasometer.

Like letters of reference refer to like parts throughout the specification and drawings.

A represents the gas-well, which is of any suitable size and shape, consisting, as shown in the drawings, of a cylindrical wall *a* and a bottom *a'*, tightly connected to the lower end of the wall *a*.

B represents the purifier, located at the bottom of the outer side of the gas-well A.

C represents an outlet-pipe extending approximately from the top of the gas-well A through the bottom *a'* to the purifier B. It is advisable to have the top of the pipe C slightly below the top of the gas-well A, although it is not necessary to do so.

D represents a drain-pipe fitted to the gas-well A in close proximity to the bottom *a'* and provided with a valve E, the purpose of

the drain-pipe D being to draw off the water within the gasometer when it is required to do so.

F represents a safety escape-pipe extending from approximately the top of the gas-well A through the bottom a' and fitted to receive a pipe connection to the outlet from the building. The top of the safety escape-pipe F is on the same level as the top of the outlet-pipe C.

G represents the floating part of the gasometer, which moves vertically within the gas-well A. The floating part G consists of a cylindrical wall g and a top g', tightly connected to the wall g.

H represents a safety escape-pipe extending through the top g' to near the bottom of the wall g. The bottom of the pipe H is open, and formed through the side of the pipe H, above the bottom h, is an opening h'. When the parts are assembled in position, the pipe F telescopes with the pipe H, and when the floating part G has been raised to its most elevated position the opening h' is above the top of the pipe F, while the lower end of the pipe F is still within the pipe H. When the opening h' is above the top of the pipe F, the gas passes from the gasometer through the opening h' and pipe F to the outlet from the building. By this means the danger of accident through overcharging the gasometer is avoided.

I represents a pipe fitted through the top g' and provided with a valve i to open or close the passage through the pipe.

J represents a coupling forming a connection between the pipes H and I.

When the parts are being assembled before the manufacture of gas is commenced, the valve i is open to allow of the air passing from the gasometer through the pipe I, coupling J, to the escape-pipes H and F, to the outlet to the building, and when the air within the gasometer is exhausted the valve i is closed to close the outlet to prevent the escape of gas while being manufactured.

The purifier, as shown in the drawings, is substantially drum-shaped; but I do not confine myself to any particular shape or size for the purifier, as I may build it of any other shape suitable for the purpose. The outlet-pipe C enters the purifier above the water-level and extends nearly to the bottom, so that the gas when passing through the purifier must necessarily pass through the purifying liquid contained within it.

K represents the outlet-pipe from the purifier B. The pipe K is fitted to the purifier above the level of the purifying liquid and is adapted to be connected to the gas-mains of the building.

L represents an inlet for the purifying liquid fitted with a valve M, and N represents the drain-pipe fitted to the bottom of the purifier for the purpose of draining off its liquid contents when found necessary to do so.

O represents the generator, which consists of a cylindrical socket o, screw-threaded at its upper end o'. The socket o is provided with an annular flange or shoulder o'' below the screw-threaded part of the end o'.

P represents the carbid-holder, which corresponds in shape with and is slightly less in measurement than the interior of the socket o. The holder P consists of a cylindrical wall p and bottom p'. The upper end of the wall p is provided with a circular flange p'', which is adapted to rest upon the shoulder o'' and sustain the holder in position. The holder P is of a less depth than the depth of the socket o in order that a pit may be formed in the socket to receive the ashes or residue from the holder. The wall and bottom of the holder P are perforated to allow of the ashes passing to the pit or bottom of the socket. Although I have shown in the drawings the holder to consist of a perforated metal, I may, if I find it so desirable, make the holder of wire-netting or of any other material suitable for the purpose.

Q represents the top of the generator, which consists of an elongated collar Q', having an internal screw-thread at its lower end corresponding in all respects to the screw-threaded end o' of the socket O. Formed through the sides of the collar Q', above the screw-threaded part, are a series of openings Q'', and connected to the interior of the collar Q', between the top of the screw-threaded part and the openings Q'', is a perforated disk R.

S represents a pipe passing centrally through the disk R and extending slightly above and below the same, the pipe S forming the means of escape for the gas from the carbid-holder through the openings Q'' to the gasometer.

T represents a pocket formed in the collar Q' above the openings Q'' to receive lead or other weighty substances.

The top of the collar Q' is provided with a flange U, by means of which it is permanently attached to the under side of the top g'.

When it is required to charge the generator, the socket is unscrewed from the collar Q' and the carbid is placed in the holder P. The socket is then screwed to the collar and the floating part G is placed in the gas-well A. The air in the gas-well A would naturally sustain the floating part in an elevated position, and to overcome this difficulty the valve i is opened to allow of the air passing through the pipe I and coupling J to the escape-pipes F and H and outlet to the building. The air will naturally pass to the outlet by means of these pipes, and during its passage the floating part will gradually fall. When the air has been exhausted in this manner from the gasometer, the valve i is closed and the apparatus is ready to commence the manufacture of gas. Before the floating part G is placed in position in the gas-well A the gas-well is partly filled with water to form a seal for the bottom of the floating part. When the floating part has descended to its lowermost position, the generator is brought into

contact with the water, and the water, passing through the openings Q″, enters the collar Q′ and passes through the perforated disk R to the carbid in the holder P, the perforated disk atomizing the water as it descends into the holder and practically spraying it upon the carbid. The gas generated by the union of the water and carbid passes through the pipe S and openings Q″ to the gasometer and causes the floating part G to rise and continue to rise until the gasometer is fully charged. In the event of the manufacture of gas continuing after the floating part has reached its limit of safety the opening *h′* in the escape-pipe H will rise above the top of the escape-pipe F and allow the overgeneration of gas to pass from the gasometer, through the escape-pipe F, to the outlet from the building, and when the overgenerated gas has escaped the floating part of the gasometer will descend to bring the opening *h′* below the top of the safety escape-pipe F and close the passage from the gasometer through the escape-pipe. The gas passes from the gasometer to the mains through the outlet-pipe C and through the purifier B and outlet-pipe K. During the exhaustion of the gas from the gasometer the floating part G will descend and bring the generator again into contact with the water in the well A, allowing the water to pass through the openings Q″ and perforated disk R to the holder P and generate a fresh supply of gas, this being continued until the carbid or water or both have been completely used up.

When charging the carbid-holder, (shown in Figs. 2 and 3,) it is necessary to remove the floating part of the gasometer. To obviate the necessity of this removal, the top of the floating part G is provided with a central opening surrounded by an elongated collar G^5, which collar is surrounded by a sleeve G^6, arranged to form, with the top of the floating part, a compartment to contain water to form a water seal. The collar Q′ is extended above the top of the water seal and is closed by a cover Q^5, having a downwardly-extending flange Q^6 to enter between the sleeve G^6 and collar G^5. By means of this construction the carbid-holder can be removed without removing the floating part of the gasometer.

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

1. In a gasometer, a generator embracing in its construction a collar fitted to the under side of the top of the floating part of the gasometer, a socket detachably connected to the collar, a carbid-holder sustained within the socket, a perforated disk within the collar above the carbid-holder, and openings through the collar to the disk, substantially as specified.

2. In an acetylene-gas apparatus, a generator embracing in its construction a screw-threaded collar fitted to the under side of the top of the gasometer, a perforated disk within the collar intermediate the top and bottom, a pipe passing centrally through the disk, openings through the collar above the disk, a socket detachably fitted to the collar, and a carbid-holder sustained within the socket, substantially as specified.

3. In an acetylene-gas apparatus, a generator embracing in its construction a screw-threaded collar fitted to the under side of the top of the gasometer, a perforated disk within the collar intermediate the top and bottom, a pipe passing centrally through the disk, openings through the collar above the disk, a socket detachably fitted to the collar, an internal shoulder for the socket, a carbid-holder within the socket, and a flange for the carbid-holder to rest upon the internal shoulder, substantially as specified.

4. An acetylene-gas apparatus embracing in its construction a gas-well, an outlet-pipe extending from substantially the top of the gas-well through the bottom to a purifier, to which is adapted to be connected the gas-mains, a bell for the gas-well, a safety escape-pipe within the gasometer, embracing in its construction a gas-pipe, extending from substantially the top of the gas-well through the bottom, and adapted to be connected to the outlet from the building, a pipe connected to the outlet and having an opening through its side in close proximity to its lower end, and adapted to telescope within the pipe of the well, an air-pipe fitted to the bell provided with a valve, a coupling between the air-pipe and safety escape-pipe, and a generator embracing in its construction a screw-threaded collar fitted to the under side of the top of the bell, a perforated disk for the collar intermediate the top and bottom, a pipe passing centrally through the disk-openings through the collar above the disk, a socket adapted to be detachably fitted to the collar, a shoulder for the socket, a carbid-holder within the socket, and a flange for the carbid-holder to rest upon the shoulder of the socket, substantially as specified.

Toronto, August 27, 1898.

JNO. D. FORSYTH.

In presence of—
M. A. WESTWOOD,
C. H. RICHES.