No. 747,502. PATENTED DEC. 22, 1903.

H. SYMONDS.

ACETYLENE GAS GENERATOR.

APPLICATION FILED MAY 23, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1

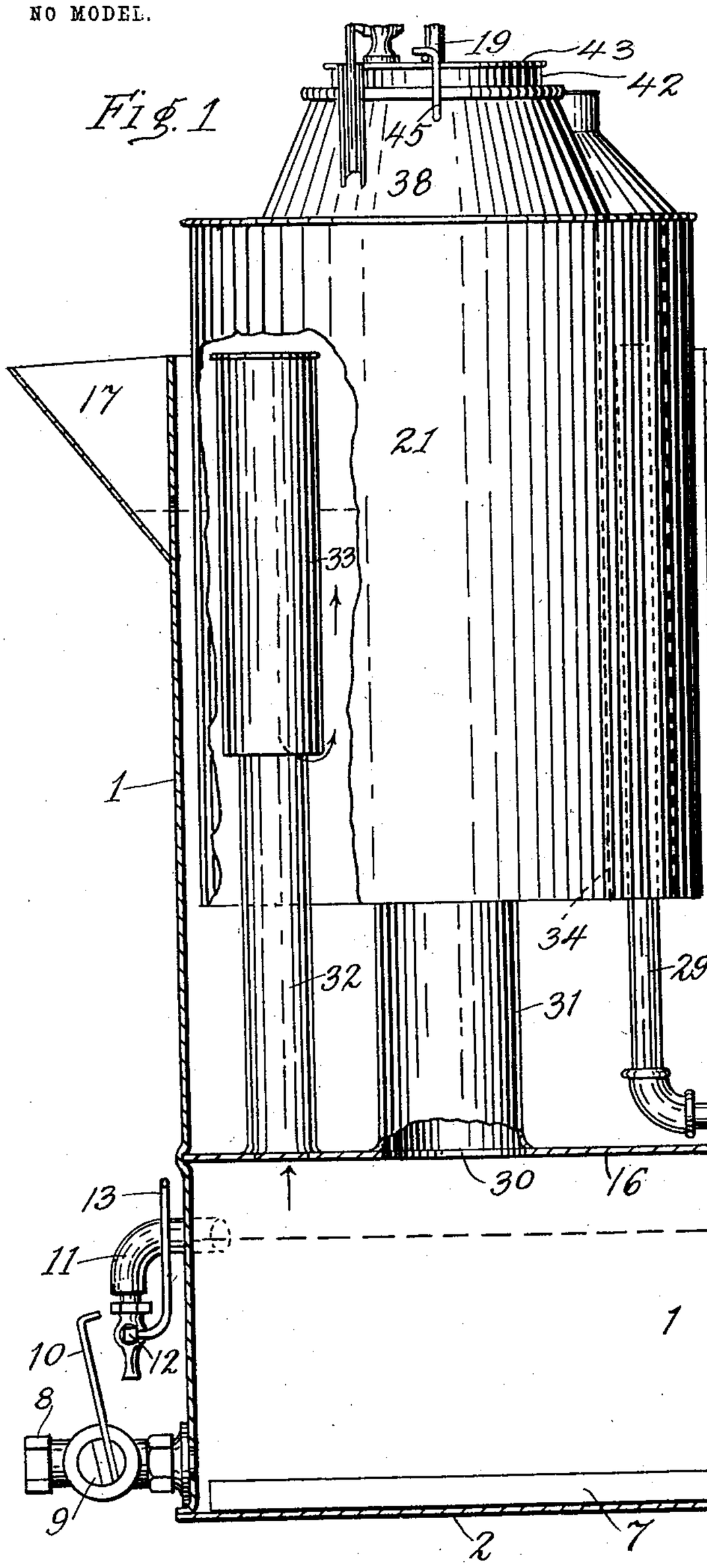
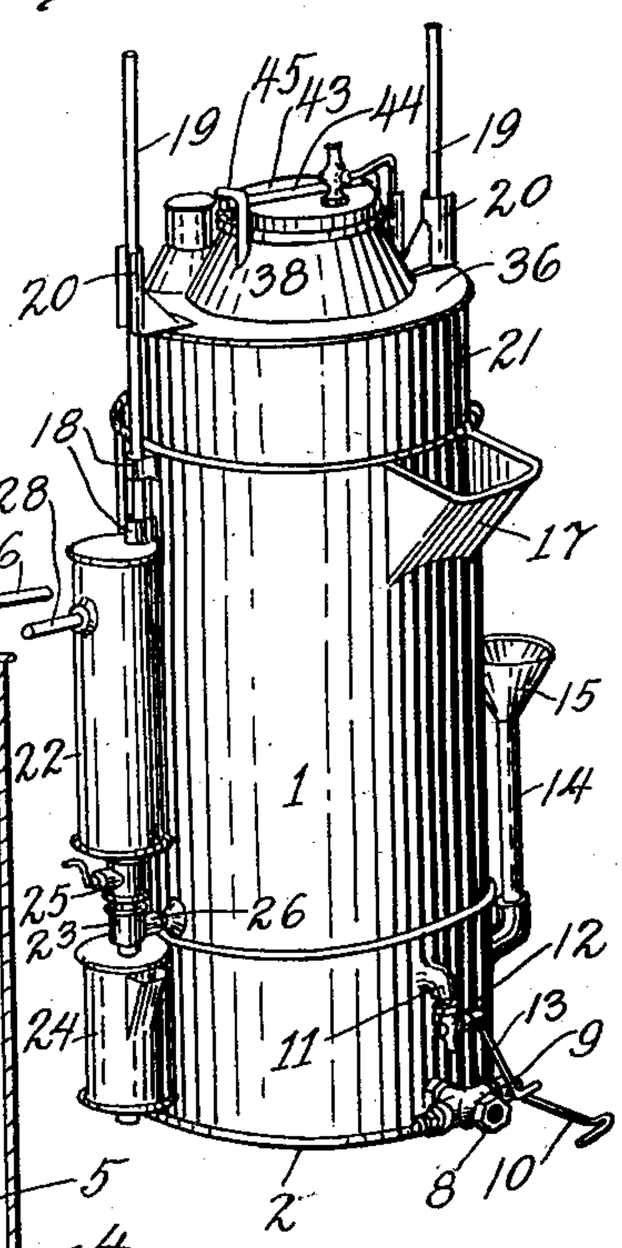


Fig. 2



Witnesses
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NO MODEL. 2 SHEETS—SHEET 2.

Fig 3

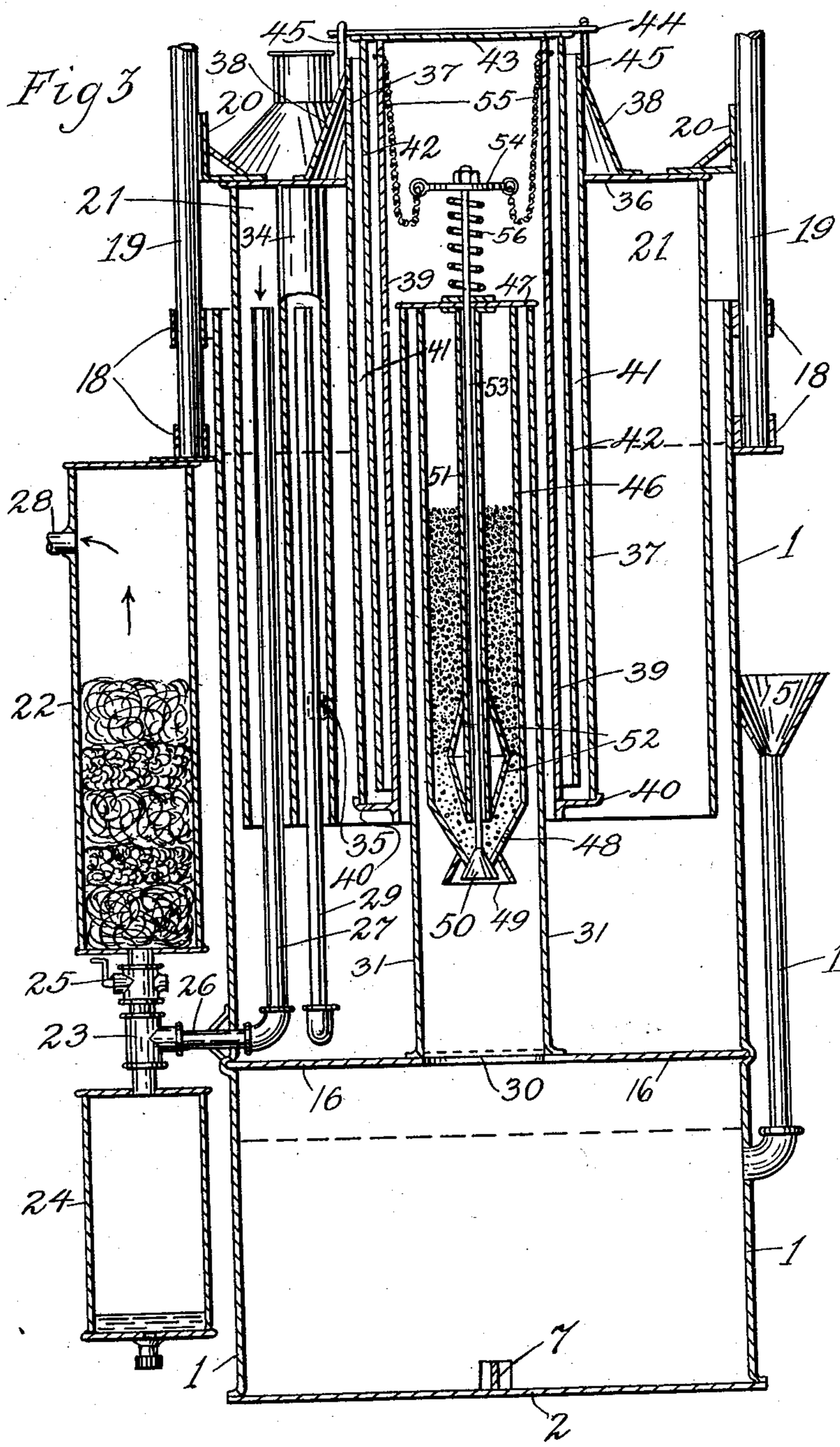
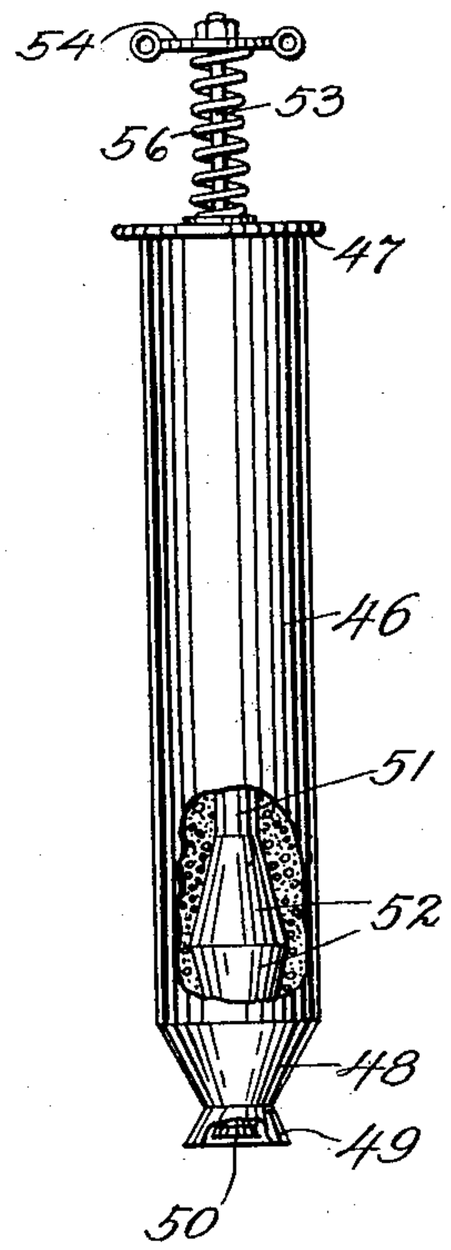


Fig. 4



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UNITED STATES PATENT OFFICE.

HENRY SYMONDS, OF LONGBEACH, CALIFORNIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO LIBBIE F. KISTLER, OF LOS ANGELES, CALIFORNIA.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 747,502, dated December 22, 1903.

Application filed May 23, 1902. Serial No. 108,697. (No model.)

To all whom it may concern:

Be it known that I, HENRY SYMONDS, a citizen of the United States, residing at Longbeach, in the county of Los Angeles and State of California, have invented a new and useful Acetylene-Generator, of which the following is a specification.

This invention relates to apparatus for generating acetylene gas; and some of the objects of the invention are to produce an apparatus of this character which will be simple and cheap in construction and at the same time positive and effective in operation.

Another object of this invention is to provide for the production of the acetylene gas in a cool or comparatively cool state or condition.

It is also an object of this invention to provide an apparatus wherein the carbid cartridge or receptacle is readily removable and accessible and to provide a water seal for said cartridge or receptacle.

Furthermore, it is an object of this invention to produce a carbid cartridge or receptacle so constructed as to prevent the entire weight of the carbid from resting upon the valve and to so construct the valve and valve-seat that particles of carbid becoming caught therebetween will be forced into the receptacle.

With these and other objects in view the invention consists, essentially, in the construction, combination, and arrangement of parts, substantially as more fully described in the following specification and illustrated in the accompanying drawings, forming part of this application, in which—

Figure 1 is an elevational view, partly broken away and partly in section. Fig. 2 is a perspective view of the apparatus on a reduced scale. Fig. 3 is a longitudinal central sectional view of the apparatus, minor parts being shown in elevation; and Fig. 4 is an enlarged detail view, partly broken away, of the carbid cartridge or receptacle.

Similar characters of reference designate corresponding parts throughout the several views.

Referring to the drawings, the reference character 1 designates cylindrical casing closed at one end, as at 2, and provided with lateral hollow extension 3, with which communicates a vertical sleeve or guide 4, wherein is mounted an actuating-rod 5, having an angular extremity 6, by means of which the same is operated, and formed on or connected with the other end of said rod is an agitating blade or scraper 7, Figs. 1 and 3 of the drawings, the function whereof is to agitate or scrape up the lime which settles upon the bottom 2 when it is desired to clean out the casing, as will be readily understood.

The casing 1 is preferably provided near the bottom thereof with a connection 8, wherein is mounted a valve 9, carrying an arm 10, and it is with this connection 8 that a pipe or tubing is adapted to be connected when it is desired to flush or wash out the casing, and an air-inlet 11 is preferably connected with the casing above the connection 8 and is provided with a valve 12, carrying an arm 13, constructed to so operate with the arm 10 of the valve 9 so that the latter valve cannot be opened until the arm 13 is raised and the valve 12 opened, thereby admitting air into the casing.

The water for flushing the casing is admitted through a vertical pipe 14, Fig. 3, preferably terminating in a funnel 15, and the water and impurities are drawn off through the connection 8, as before stated, and the casing is preferably provided with a diaphragm or false bottom 16, Figs. 1 and 3, and with a spout 17, by means of which water is introduced into the upper portion of the casing above the diaphragm 16, and it will be understood that water is introduced into the lower portion of the casing below the diaphragm 16 through the vertical pipe 14 to act on the carbid, as will be readily understood.

The casing 1 is preferably provided with brackets 18 to receive and support guide-rods 19, against which operate guides 20, formed on or connected with the dome or cover 21 to regulate the movement thereof during the operation of the apparatus, as hereinafter more fully explained.

Formed on or connected with the casing 1 is a drying chamber or receptacle 22, Fig. 3, having connection 23 with condensing-chamber 24, and the connection 23 is preferably provided with a valve 25 and with a pipe 26,

communicating with the vertical outlet-pipe 27 within the casing above the diaphragm 16, and the drying-chamber is preferably provided with an outlet 28, with which is connected the pipe communicating with the service-pipes, and within the drying-chamber 22 is preferably deposited alternate layers of excelsior and cotton or similar material.

Connected with one side of the casing 1 and passing therethrough is an excess-gas-escape pipe 29, which preferably extends from above the diaphragm to the top of the casing within the same, Fig. 1 of the drawings, and formed on or connected with the diaphragm 16, around the central opening 30 therein, is a stand-pipe 31, preferably terminating in the same plane with the open end of the casing 1, and connected with the diaphragm 16 is a vertical pipe 32, preferably of the same height of the stand-pipe 31 and provided with a removable cover 33, Fig. 1, which is elevated by the accumulation of the gas in the vertical pipe 32, which elevates the cover 33 and permits the gas to pass between the same and the vertical pipe 32 out under the edge of the cover, as indicated by an arrow in Fig. 1 of the drawings, and it will be understood that water is introduced into the casing 1 above the diaphragm 16 until the same stands substantially on a level with the openings therein communicating with the spout 17, Fig. 1, so that the gas passing out from under the cover 33 will also pass upwardly through the water, and be cooled thereby, into the upper portion of the dome 21, thence down through the outlet-pipe 27, through the connection 26, into the drier 22, and out to the service-pipes.

Formed on or connected with the dome 21 is a cylindrical closure 34, provided with a lateral outlet 35, and the closure is constructed to inclose or cover the upper end of the exhaust-pipe 29, so that when a superabundance of gas accumulates in the dome and raises the latter until the outlet 35 in the closure 34 is elevated above the water-level in the casing 1 the gas will enter the closure through said outlet and pass thence into the exhaust or escape pipe 29 to the open air, Figs. 1 and 3, thereby relieving the excessive accumulation of gas in the dome 21, as will be readily understood.

Mounted within the central opening in the top 36 of the dome 21 is a cylinder 37, the upper end of which cylinder is supported by a frusto-conical brace 38, Fig. 3, and within the cylinder 37 is an interior cylinder 39, connected with the exterior cylinder 37 by an annular ring or band 40, substantially as illustrated, and water is introduced between the interior and exterior cylinders 39 and 37, respectively, until the annular chamber 41, formed thereby, is substantially filled, whereupon the cover or closure 42 is introduced into the annular chamber 41 until the top 43 of the closure rests upon the rim of the interior cylinder 39, substantially as illustrated in Fig. 3 of the drawings, and the closure 42 is rotated until the locking-bar 44 upon the top 43 engages the fastening devices 45 upon the exterior cylinder 37 and prevents the accidental disengagement of the closure 42 during the operation of the apparatus.

Referring now particularly to Figs. 3 and 4 of the drawings, there is illustrated an improved cartridge or carbid receptacle 46, preferably cylindrical in form and provided with a closed end having an annular rim or flange 47 constructed to rest upon the end of the stand-pipe 31, Fig. 3, to support the cartridge in operative position within the apparatus, and the other end of the cartridge or receptacle is preferably contracted or pointed, substantially as shown at 48, and around the end 48 is secured a frusto-conical ring 49, constructed to receive and discharge the condensation occuring during the operation of the apparatus and prevent the same from entering the end of the cartridge around the valve 50, as will be readily understood.

Depending from the top of the cartridge or receptacle is a sleeve 51, provided at the free end thereof with a double inclined portion 52, adapted to receive the pressure of the superimposed carbid, and thereby relieve some of the pressure upon the valve 50 to facilitate the operation of the valve. The valve 50 is provided with a stem 53, passing through the depending sleeve 51 and carrying a cross-head 54, connected by chains 55 with the interior cylinder 39, allowing a limited amount of free relative movement between the cylinder and the carbid-receptacle, and a spring 56 may be mounted upon the stem 53 between the cross-head 54 and the top of the cartridge to normally seat the valve 50. By means of this construction of the cartridge or carbid-receptacle the pressure of the carbid is largely removed from the valve and the efficiency of the same is greatly increased thereby, and particles of carbid caught between the valve and the valve-seat will be forced into the cartridge or receptacle by the construction of the valve-seat and valve and by the action of the spring operating the latter. Furthermore, the contents of the cartridge or receptacle will not become injured by the condensation or moisture entering around the valve during the operation of the apparatus.

The operation of the invention will be readily understood from the foregoing description when taken in connection with the accompanying drawings and the following explanation thereof.

When it is desired to start the operation of the apparatus, water is introduced into the lower portion of the casing through the pipe 14 until the water stands at the proper level. Then water is introduced into the upper portion of the casing by means of the spout 17 and the annular chamber 41 is substantially filled with water, whereupon the dome is secured in position, and the cover 42 is introduced into the annular chamber 41 after the

carbid cartridge or receptacle shall have been first filled with carbid and introduced into the stand-pipe 31. With the parts in this position it will be understood that the upper part of the dome is filled with air, which is drawn off through the outlet-pipe 27 and the drier 22 by opening the valve 25, whereupon the dome descends until the top 43 of the cover 42 rests upon and depresses the valve-stem 53, thereby opening the valve 50 and discharging the carbid into the water in the lower portion of the casing, whereupon gas is generated, which passes up through the pipe 32, Fig. 1, down under the closure or cover 33, and up through the water in the upper portion of the casing, thereby cooling the gas in its passage to the upper portion to the dome, from whence it passes down through the outlet-pipe 37 and connection 26 into the drier 22, where it is dried by passing through the excelsior and cotton therein, and the dried gas finally passes out through the pipe 28 to the service-pipe.

It is not desired to confine this invention to the specific construction, combination, and arrangement of parts herein shown and described, for it is obvious that the carbid-receptacle is capable of use with apparatus of slightly different construction. Therefore the right is reserved to make all such changes in and modifications of the said construction as come within the spirit and scope of the invention.

I claim—

1. In an acetylene-generator, the combination of a lower chamber, an upper chamber, a diaphragm between said chambers, a stand-pipe extending from the lower chamber into the upper chamber, a carbid-receptacle adapted to rest freely on said stand-pipe and to extend downwardly within same, a dome in the upper water-chamber aforesaid, a closure removably placed in said dome, and a connection between said closure and the carbid-receptacle, permitting a limited amount of relative vertical movement.

2. In an acetylene-generator the combination of a lower chamber, an upper chamber, a diaphragm between said chambers, a stand-pipe extending from the lower chamber into the upper chamber, a carbid-receptacle adapted to rest freely on said stand-pipe and to extend downwardly within same, a dome in the upper water-chamber aforesaid, a closure removably placed in said dome, and a chain connection between said closure and the carbid-receptacle, permitting a limited amount of relative vertical movement.

3. In an acetylene-generator, a carbid-receptacle, comprising an outer cylinder, an inner sleeve secured in central fixed position in said outer cylinder, a double-conical enlargement on the said sleeve to partially support the carbid, a valve and valve-seat at the lower end of the receptacle, and a valve-rod extending from said valve upwardly through the central sleeve.

4. An acetylene-generator provided with a cylindrical casing closed at one end and extending substantially to the top of the apparatus, a diaphragm extending entirely across the casing near said end and having a central opening, a stand-pipe secured to the upper side of said diaphragm around said opening, a dome above said diaphragm and having a partial top constructed with an open center, a cylinder in said top around said stand-pipe, a closure for the end of said cylinder and means for supplying carbid.

5. An acetylene-generator provided with a cylindrical casing closed at one end, a diaphragm extending entirely across said casing near said end and having a central opening, a stand-pipe secured to said diaphragm around said opening, a dome above said diaphragm and having a partial top constructed with an open center, an inner cylinder secured in said top around said stand-pipe, an interior cylinder within said exterior cylinder and connected therewith to form a separate liquid-chamber, a closure for said chamber and means for supplying carbid.

6. An acetylene-generator provided with a cylindrical casing, a diaphragm near the closed end of the casing having a central opening, stand-pipe secured to said diaphragm around said opening, a dome above the diaphragm and having a partial top constructed with an open center, an exterior cylinder secured in the central portion of said top, an interior cylinder within said exterior cylinder, a ring connecting the inner end of said cylinders to form a separate liquid-chamber open at the outer end thereof, a closure depending within said chamber and having a top supported upon said inner cylinder and means for supplying carbid.

7. An acetylene-generator provided with a cylindrical casing, a diaphragm near the closed end of the casing having a central opening, stand-pipe secured to said diaphragm around said opening, a dome above the diaphragm and having a partial top constructed with an open center, an exterior cylinder secured in the central portion of said top, an interior cylinder within said exterior cylinder, a ring connecting the inner end of said cylinders to form a separate liquid-chamber upon and at the outer end thereof, a closure depending within said chamber and having a top supported upon said inner cylinder and a carbid-cartridge within said stand-pipe.

8. An acetylene-generator provided with a casing having a closed end and guide-rods near the open end thereof, a dome having a partial end constructed with guides to engage said rods to permit the movement of the dome within said casing, an exterior cylinder within said open end of said dome, an interior cylinder within the said exterior cylinder, and depending within said chamber and means for supplying carbid.

9. An acetylene-generator provided with a casing having a closed end and guide-rods

near the open end thereof, a dome having a partial end constructed with guides to engage said rods to permit the movement of the dome within said casing, an exterior cylinder within said open end of said dome, an interior cylinder within the said exterior cylinder, and a closure depending within said chamber and a carbid-cartridge within said cylinder.

10. An acetylene-generator provided with a casing having a closed end and guide-rods near the open end thereof, a diaphragm in said casing having an opening, a stand-pipe around said opening above said diaphragm, a carbid-cartridge depending from the free end of said stand-pipe, a dome having a partial end and constructed with guides to movably engage said rods, an exterior cylinder within said open end of said dome, an interior cylinder within said exterior cylinder, a ring connecting the inner end of said cylinder to form a liquid-chamber, and a closure resting on the upper end of said interior cylinder and depending within the liquid in said chamber.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY SYMONDS.

Witnesses:
G. M. GIFFEN,
L. B. ALDERETE.