No. 839,428. PATENTED DEC. 25, 1906.

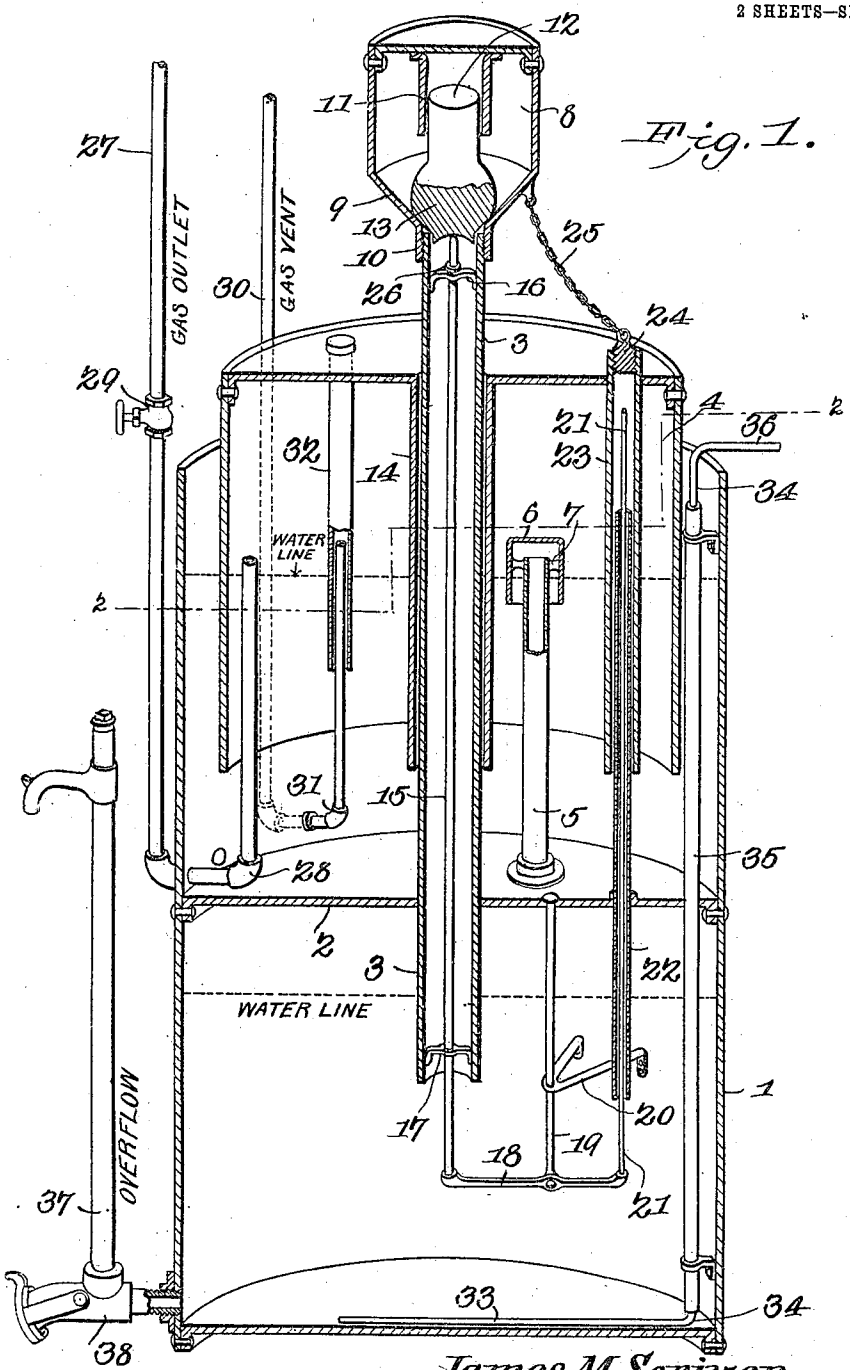
J. M. SCRIVEN & C. F. BARR.

ACETYLENE GAS GENERATOR.

APPLICATION FILED JAN. 30, 1906.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

E. F. Stewart

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2 SHEETS—SHEET 2.

Fig. 2.

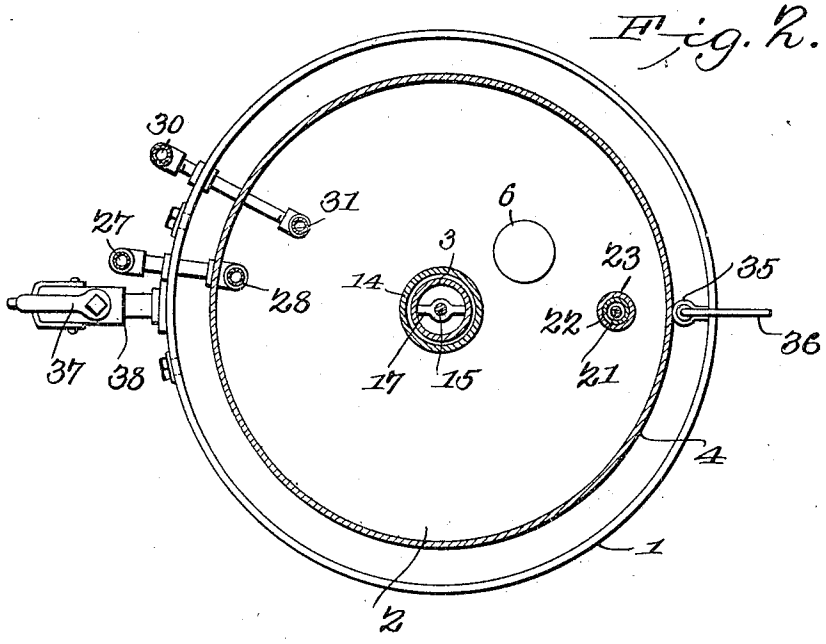
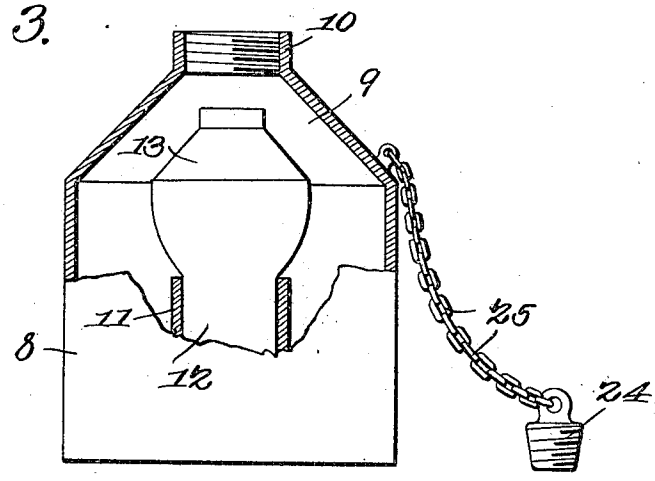


Fig. 3.



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UNITED STATES PATENT OFFICE.

JAMES M. SCRIVEN AND CHESTER F. BARR, OF LUCAS, KANSAS.

ACETYLENE-GAS GENERATOR.

No. 839,428. Specification of Letters Patent. Patented Dec. 25, 1906.

Application filed January 30, 1906. Serial No. 298,709.

To all whom it may concern:

Be it known that we, JAMES M. SCRIVEN and CHESTER F. BARR, citizens of the United States, residing at Lucas, in the county of Russell and State of Kansas, have invented a new and useful Acetylene-Gas Generator, of which the following is a specification.

This invention relates to acetylene-gas generators, and has for its object to provide certain new and useful improvements whereby the gas-generating capacity is materially increased, the parts of the apparatus decreased, simplified, and entirely housed within the case or shell of the apparatus, so as to effectually avoid interference therewith by unauthorized and inexperienced parties.

A further object of the invention is to enable the convenient removal of the carbid-holder without requiring that the apparatus be put out of operation and to enable the ready replacing of the carbid-chamber without requiring any adjustment of the parts of the apparatus.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a sectional perspective view of an acetylene-gas generator embodying the features of the present invention. Fig. 2 is a cross-sectional view on the line 2 2 of Fig. 1. Fig. 3 is a view of the carbid-chamber removed and inverted for filling, a portion of the chamber being broken away to show the valve.

Similar numerals of reference designate corresponding parts in all of the figures of the drawings.

The present apparatus includes an upright cylindrical tank or case 1, which is closed at its bottom and open at its top, there being a transverse horizontal partition 2 located substantially midway between the ends of the tank and dividing the same into upper and lower chambers. The partition 2 is pierced centrally by a pipe 3, which is fixed to and carried by the partition, with its lower open end extending a suitable distance into the lower compartment of the tank and its upper open end rising above the open top of the tank and externally threaded. This pipe serves for feeding carbid to the generating chamber or compartment at the bottom of the tank and also serves as a feed-pipe through which water is introduced into the generating-chamber, whereby the tube or pipe is effectually cleansed of all particles of carbid which may collect therein.

The upper or gas chamber or compartment of the tank 1 contains a suitable quantity of water to fill the pipes therein, the gas which is generated in the generating-chamber being conveyed to the interior of the bell by means of a pipe 5, which rises above the surface of the water within the bell. A hood 6, which has a closed top and an open bottom, embraces the upper end of the pipe 5 and is supported thereon by means of braces 7, which extend between the pipe and the hood, the lower open end of the hood being submerged, whereby the gas is compelled to first rise in the hood, thence down into the water in the tank, and thence upward through the water into the space within the tank above the surface of the water. By this arrangement there is a water-sealed gas communication between the generating-chamber and the storage-chamber formed by the floating bell 4.

For containing the necessary supply of carbid there is a carbid-chamber 8, which has a closed top and an inverted conical or downwardly-tapered bottom 9, terminating in an internally-threaded nipple 10, constituting the outlet of the chamber and designed for engagement with the threaded upper end of the pipe 3. Within the chamber and hung from the top thereof is a tubular guideway 11, which is open at its inner end and receives a cylindrical valve-stem 12, carrying at its lower end a plug-valve 13, which normally closes the outlet of the chamber as it gravitates to its seat when the carbid-chamber is supported upon the feed-pipe 3.

By reason of the fact that the lower end of the feed tube or pipe 3 is submerged in the generating-chamber the carbid-holder 8 may be removed without any liability of escape of gas, wherefore the said chamber may be taken out of doors and elsewhere to fill the same. It will here be explained that a depending sheath or sleeve 14 is carried by the top of the floating bell 4 and telescopes upon the feed-pipe 3, thereby constituting a

guide for the bell in its up and down movements, the lower open end of the sheath or guide being submerged, and thereby sealed against the escape of gas upwardly through the sheath.

For the purpose of automatically controlling the feed of the carbid from the carbid-chamber 8 to the gas-generating chamber there is provided a valve-tripping mechanism consisting of an endwise-movable rod 15, working through the feed-pipe 3 in suitable guides 16 and 17 provided in the pipe, the upper end of the rod being in operative relation to the bottom of the valve 13, so as to lift the same when the rod 15 is elevated. Within the gas-generating chamber there is a substantially horizontal lever 18, mounted to swing vertically and fulcrumed intermediate of its ends upon a hanger 19, depending from the partition 2 and braced by a suitable brace 20, extending from the adjacent side of the tank 1. The inner end of the lever is suitably connected to the lower end of the rod 15, and a trip-rod 21 rises from the other end of the lever through the partition 2 into close proximity to the top of the bell. By preference the rod 21 is sheathed in an open-ended tube 22, which pierces and is carried by the partition 2, the lower end of the sheath being submerged in the gas-generating chamber, while the upper end rises above the level of the water in the bell. A tube 23 pierces and is carried by the top of the bell and telescopes upon the sheath 22, the lower open end of the tube being submerged in the water in the upper portion of the tank. A removable closure 24 has a threaded engagement with the upper end of the tube 23 and is connected to the carbid-chamber 2 by means of a suitable flexible connection 25. Besides forming a closure for the upper end of the tube 23 the plug 24 constitutes a trip to strike the top of the trip-rod 21 when the bell 4 sinks to a predetermined low level, whereby the inner end of the lever 18 will be swung upward and the valve-operating rod 15 will lift the valve 13 and permit a quantity of carbid to gravitate through the feed-tube 3 into the generating-tank. As the supply of gas from the generating-chamber through the pipe 5 into the bell causes the latter to rise the plug 24 will be elevated out of engagement with the rod 21, whereupon the valve-tripping mechanism will gravitate to its original position and permit the valve 13 to close, this operation continuing automatically with the fall and rise of the bell, so as to maintain a predetermined supply of gas within the bell.

It will here be explained that the rod 15 is heavier than the rod 21, and therefore drops by gravitation when the pressure of the bell is removed from the rod 21, the downward movement of the rod 15 being limited by a shoulder or collar 26, secured to the upper end portion of the rod 15 above the guide 16 for engagement with the latter when the rod drops.

The service-pipe 27 has an elbowed portion 28, which pierces the wall of the upper gas-compartment of the tank 1 below the open bottom of the bell and rises into the latter above the water-level, so as to always be in communication with the gas-supply. A suitable valve 29 is included in the service-pipe for controlling the outlet of gas.

A vent-pipe 30 leads out of doors and has an elbowed portion 31 piercing the gas-compartment of the tank 1 and rising above the level of the water therein, there being a tube 32 hung from the top of the bell and telescopically embracing the inner portion of the vent-pipe with its lower open end dipped into the water so as to be sealed thereby. When the bell is elevated by an oversupply of gas to bring the open bottom of the tube 32 above the level of the water in the bell, gas will pass through the open lower end of the tube into the vent-pipe, and thereby be carried off.

For the purpose of scraping the bottom of the generating-chamber, so as to remove accumulations of carbid therefrom, there is a suitable scraper-arm 33, working over the bottom of the tank and carried by an upright rod 34, rotatable within a tube or sheath 35, the upper end of the rod being provided with a crank-arm 36, extending from the top of the tank into position for convenient manipulation for swinging the scraper-arm 33 back and forth across the bottom of the tank. An upright overflow-pipe 37 pierces the bottom portion of the tank 1 and is provided at its lower end with a valved drain branch 38.

In practice the carbid-chamber 8 is removed and then inverted, as shown in Fig. 3 of the drawings, in order that the valve 13 may gravitate to an open position, and thereby permit the filling of the chamber with a charge of carbid. Water is supplied to the generating-compartment through the pipe 3, and a suitable quantity of water is supplied to the upper compartment of the tank 1, so as to float the bell 4. The carbid-chamber is then turned into its normal upright position, the valve 13 gravitating to its closed position, so as to prevent the escape of carbid, whereupon the chamber may be fitted to the upper end of the feed-pipe 3 without any liability of the carbid escaping during this operation. To start the apparatus, the bell being at its low limit with the closure 24 removed and the rod 21 projecting through the open top of the pipe 23, said rod 21 is manually forced downward until it lifts the rod 15 to open the valve 13 and feed a suitable supply of carbid through the pipe 3 into the generating-chamber below the partition 2. The gas generated by contact of the carbid with the water passes upwardly through the pipe

5 and thence through the hood or trap 6 into the bell, where it is stored for use and is carried off through the service-pipe 27 to various points of consumption. When the bell rises to bring the pipe 23 above the top of the rod 21, the closure 24 is applied to the pipe. As gas accumulates in the bell the latter of course rises out of engagement with the rod 21 and the valve 13 closes, remaining closed until a sufficient quantity of gas has been consumed to permit the bell to again descend and bring the closure 24 into engagement with the trip-rod 21, whereupon the carbid is again fed to the generating-chamber, this operation continuing automatically so long as any carbid remains in the chamber 8.

In connection with the assemblage of the carbid-chamber with the carbid-feed pipe it will be noted that the removable plug plays a very important part in that should the bell be at a low level the trip-rod 21 may project through the top of the bell, and thereby permit the rod 15 to remain at its lowermost position, and thereby out of contact with the gravity-valve 13 when the carbid-chamber is being fitted to the carbid-feed pipe. By this arrangement of parts the valve 13 remains closed during the connecting of the carbid-chamber with the feed-pipe, so as to prevent accidental dropping of carbid into the generating-chamber during the mounting of the carbid-chamber.

Having thus described the invention, what is claimed is—

1. In an acetylene-gas-generating apparatus, a carbid-feed pipe, a carbid-feed chamber detachably secured to the upper end of the pipe to permit its removal, the top of said feed-chamber being permanently closed, a valve located within said chamber and movable by gravity to closed position, said valve being movable by gravity to open position to permit the replenishing of the supply of carbid through the feed-opening when the chamber is inverted for filling purposes.

2. In an acetylene-gas generator, the combination of a tank divided into a lower generating-chamber and an upper gas-chamber, a bell floating in the gas-chamber, a water-sealed carbid-feed pipe carried by the top of the generating-chamber and loosely piercing the top of the bell, a carbid-chamber provided with a single opening located in its bottom and removably connected to the top of the feed-pipe above the top of the bell, the single opening of the carbid-chamber constituting a filling-opening and a discharging-opening, a valve normally closing the opening and capable of moving away therefrom when the chamber is removed and inverted to permit the filling of the chamber, an endwise-movable valve-operating rod working in the feed-pipe, a trip-rod working through the top of the generating-chamber and entering the bell, means connecting the two rods for moving the same simultaneously in opposite directions, a removable plug carried by the top of the bell in position for engagement with the trip-rod, and means connecting the plug and the carbid-chamber to compel the removal of the plug when the carbid-chamber is removed.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

JAMES M. SCRIVEN.
CHESTER F. BARR.

Witnesses:
C. W. DEEBLE,
R. T. FOWLER.