(No Model.)

G. TAYLOR.

ACETYLENE GAS GENERATOR.

No. 589,799. Patented Sept. 7, 1897.

Fig. 1.

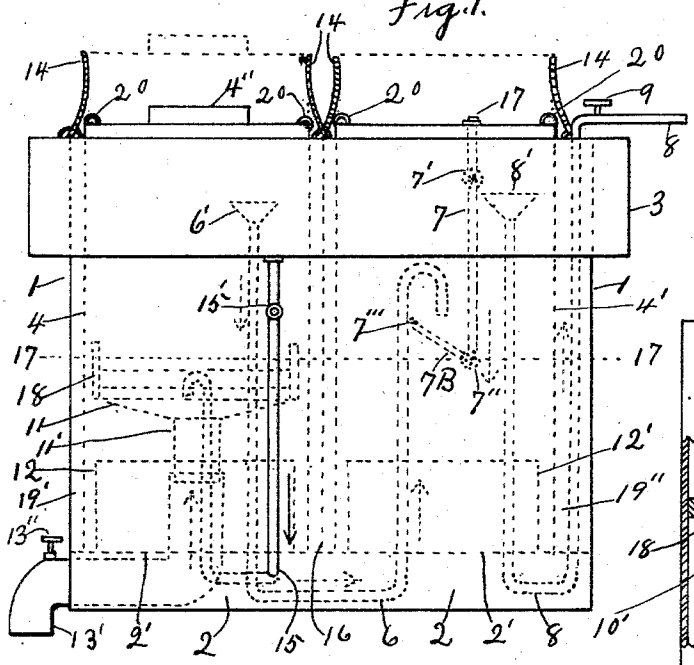


Fig. 4.

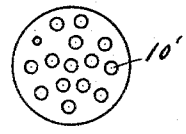


Fig. 2.

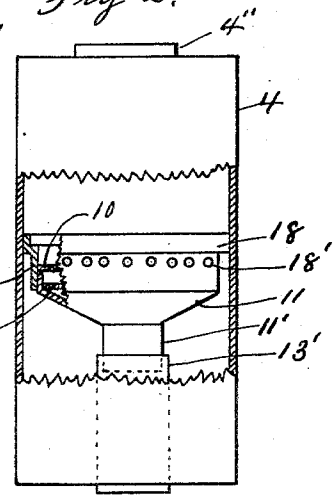
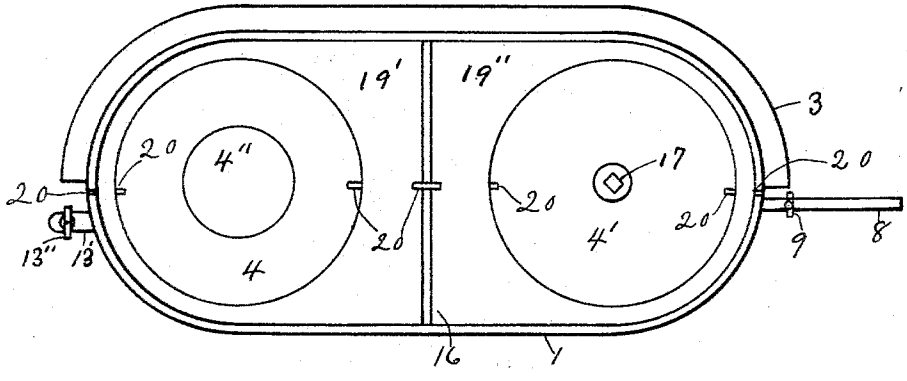


Fig. 3.



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ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 589,799, dated September 7, 1897.

Application filed April 5, 1897. Serial No. 630,671. (No model.)

To all whom it may concern:

Be it known that I, GEORGE TAYLOR, a citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented a new and Improved Gas-Generator, of which the following is a specification.

This invention relates to apparatus for generating acetylene gas, means for regulating and purifying the gas, and means for removing sediment of carbid from which the gas is generated. I accomplish these objects by the hereinafter-described apparatus.

Other objects and advantages will be fully understood from the following description and claims when read in connection with the accompanying drawings, forming a part of this specification.

Figure 1 is a side elevation of the invention, showing the various parts in dotted outline. Fig. 2 is a broken sectional view of the generating-cylinder. Fig. 3 is a plan view of Fig. 1. Fig. 4 is a detailed view of a perforated disk.

Similar characters of reference indicate the same parts throughout the several views.

The apparatus for generating the gas is mounted in a casing or shell 1. A false bottom 2′ is fastened securely to the wall of case 1, forming a space or chamber 2. The case 1 is divided into apartments 19′ and 19″ by a wall 16, which is fastened securely to false bottom 2′ and to the sides of casing 1, so that the apartments are water-tight. On top of bottom 2′ is fastened an inverted cylinder 12 in the apartment 19′, and in apartment 19″ an inverted cylinder 12′ is fastened to bottom 2′. Within apartment 19′ is mounted an inverted cylinder 4, that fits loosely around cylinder 12, and within apartment 19″ is mounted another inverted cylinder 4′, which fits loosely around cylinder 12′. Cylinder 4 is provided with a screw-cap 4″ or any other suitable device to close the cylinder air-tight after carbid has been put in the cylinder 4. At a suitable place within cylinder 4 is mounted an arrangement for holding carbid, using the partly-spent carbid or residuum and disposing of the sediment after all the gas has been generated from it.

A holder constructed in two sections, a band or upper section 18, having perforations 18′, and a funnel-shaped basket 11 securely fastened to band 18. This basket has a solid bottom with an opening for pipe 11′. Band 18 has an offset by which the band is attached to the wall of cylinder 4. By means of this offset band 18 is far enough away from the wall to permit water to run in the perforations 18′. A wire screen 10 of any convenient mesh is fastened at or near the middle part of band 18 for holding carbid. Below screen 10, about at the bottom of band 18, is mounted a perforated disk 10′. Inside of cylinder 4 is a pipe 6, having a funnel or gas-collector 6′, which passes through false bottom 2′ and projects into the inverted cylinder or purifier 4′ to any convenient location. Pipe 6 passes through screen 10, disk 10′, and through basket 11. In the head of cylinder 4″ is mounted a pitman 7, having a movable joint 7′ and fastened to another movable joint 7″, which is part of valve 7^{B}, which has a hinged support 7‴. A pipe 13′, connected to pipe 11′, passes downward and through false bottom 2′, then out of case 1, and is provided with a valve 13″. On the outside of casing 1, extending all the way around or only partly around, as may be convenient, as shown in Fig. 3, is a reserve-tank 3. A pipe 15 is inserted in tank 3 and is provided with a shut-off valve 15′. This pipe 15 passes into casing 1, then up through pipe 13′ and the carbid-holder and perforated disk 10′, and then, by means of elbows, has a short return-bend. In the purifier 4′ is located a pipe 8, provided with a funnel-shaped top or gas-collector 8′. This passes downward and through false bottom 2′, then up by the side of casing 1 to the top, and then turns at a right angle to any desirable point. This pipe is provided with a shut-off valve 9. The cylinders 12 and 12′ act as guides for cylinders 4 and 4′.

The mode of operation may be described as follows: Cap 4″ is removed and carbid is inserted and placed on screen 10. The cap is then screwed on air and gas tight. Water is put in space 19′ for the double purpose of generating gas and to prevent the escape of same. Water is put in space 19″ also to prevent escape of the gas. When water rises high enough in cylinder 4 to flow through perforations 18′, it will come in contact with the carbid and gas will be generated. As the gas

is generated the funnel 6′ will collect it. The gas will go down pipe 6, as indicated by arrows, into the receiver or purifier 4′. As this tank is surrounded by cold water, it acts as a condenser and purifier of the gas. When the gas is received into tank or cylinder 4′, it is collected by the funnel 8′ and conducted through the pipe 8, as shown by arrows, to any desirable place or mains. If the gas is generated more rapidly in cylinder 4 than is being consumed, the pressure of the gas through pipe 6 into cylinder 4′ raises this cylinder and consequently pitman 7, which presses valve 7^B against the discharge end of pipe 6 and therefore cuts off the supply from cylinder 4. No more gas can enter cylinder 4′ until the pressure is reduced. When this is done, cylinder 4′ will fall by gravity and consequently open valve 7^B and thus get a fresh supply of gas from cylinder 4. When more gas is generated in cylinder 4 from any cause than can escape through pipe 6 into cylinder 4′, pressure of gas on head of cylinder 4 will increase till it raises cylinder 4 to position indicated by dotted lines, and is prevented from rising still higher and out of apartment 19′ by chains 14, which are attached to the top part of cylinder 4 and to casing 1 and to division-wall 16 in any suitable way, as by rings 20. A similar arrangement is provided for holding cylinder 4′ down.

As the holder containing screen 10 and disk 10′ is fastened to cylinder 4 and the carbid is resting on screen 10, it follows that the carbid will be automatically raised out of the water, which comes about up to line 17. Whenever this is done, the generating of gas will cease, as gas is generated from carbid only when the carbid is in contact with water. When the gas has been consumed enough to relieve the pressure from the head of cylinder 4, this cylinder will fall by gravity and again bring the carbid into the water, and consequently the generation of gas commences again.

One great difficulty experienced in making acetylene gas has been that it is not possible to get all of the gas out of the calcium carbid. The reason of this is that when water comes in contact with the calcium carbid a portion of the carbid is immediately dissolved. In the process of disintegration a large amount of sediment is produced. The sediment surrounding the carbid disintegrates the carbid before all the gas has escaped from the carbid. The sediment absorbs the gas from the carbid, carrying it down the pipe for discharging the sediment. This causes the loss of a considerable quantity of gas that might be used for illuminating purposes. The holder above described is devised to prevent this loss. Carbid is placed on the wire screen 10. As soon as water comes in contact with the carbid through perforations 18′ a portion of the carbid is disintegrated and the residuum immediately falls through the meshes of the screen 10 onto the disk 10′, leaving the calcium carbid clear from any sediment. Consequently there is nothing to prevent the generation of gas from the carbid. Another advantage of this plan is that when the sediment is immediately separated from the carbid there is a little free gas in it, which may be utilized by catching the sediment on the perforated disk 10′. The remaining gas being extracted from the sediment, the water carries the sediment to the inclined plane of basket 11, whence it passes out pipes 11′ and 13′. The tank 3 is filled with water, and by opening valve 15′ water flows through pipe 15 and through pipe 11′.

It will be seen that the apparatus can be easily cleaned of all sediment.

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

1. In an apparatus for generating gas provided with a suitable cylinder, means mounted in said cylinder for holding material, for generating gas and removing sediment from said material said means consisting of a perforated band provided with an offset for attaching same to said cylinder, a screen mounted in said band below said perforations, a basket attached to said band, a perforated disk mounted above said basket, a suitable pipe connected to the bottom of said basket, and a suitable pipe provided with a valve for the discharge of sediment.

2. In apparatus for generating gas provided with a suitable cylinder the combination of means for holding material for generating gas and means for removing sediment from said material, said means consisting of a perforated band provided with an offset for attaching same to said cylinder, a screen mounted in said band below the perforations, a basket attached to the lower part of said band, a perforated disk mounted on the top part of said basket, suitable pipes for discharging the sediment, and a tank provided with a suitable pipe whereby water is thrown on said disk and basket.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

GEORGE TAYLOR.

Witnesses:
JOHN M. YOUNG,
A. W. DE LAND.