A. F. JENKINS.

ACETYLENE GENERATOR AND TORCH.

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956,358.

Patented Apr. 26, 1910.

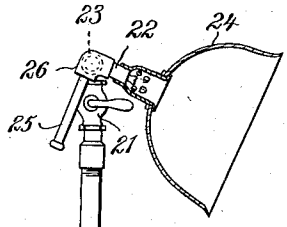


Fig. 1.

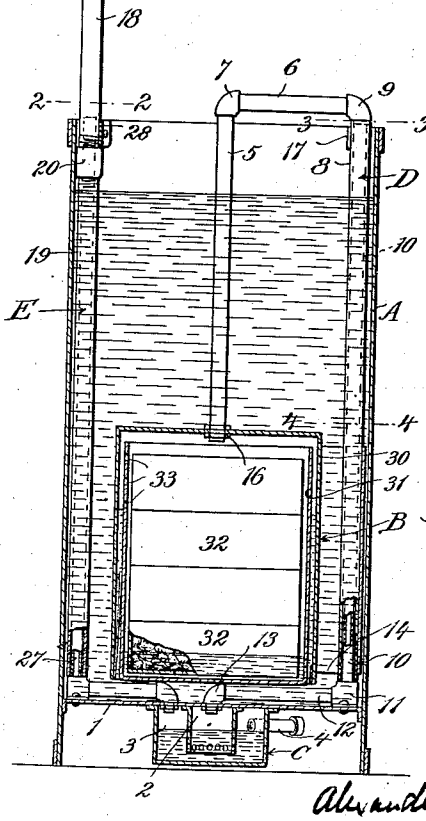


Fig. 2.

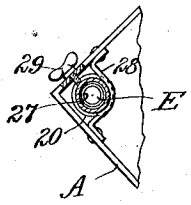


Fig. 3.

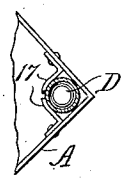
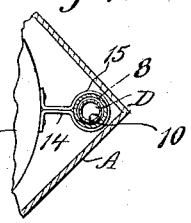


Fig. 4.



Witnesses

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ACETYLENE GENERATOR AND TORCH.

956,358. Specification of Letters Patent. **Patented Apr. 26, 1910.**

Application filed February 20, 1909. Serial No. 479,182.

To all whom it may concern:

Be it known that I, ALEXANDER FREDERICK JENKINS, a subject of the King of Great Britain, residing at Baltimore city and State of Maryland, have invented certain new and useful Improvements in Acetylene Generators and Torches, of which the following is a specification.

This invention relates to a portable generator and torch of that type intended more especially for use by contractors, builders, engineers, and the like, for carrying on operations at night or in dark places.

The invention has for its principal object to provide an apparatus of this character which is comparatively cheap and inexpensive to manufacture, readily manipulated and cared for, and of durable and substantial design so as to stand rough usage in the hands of workmen.

Another object of the invention is the provision of a generator and washer combined with a novel arrangement of gas conducting pipes in which packings, screw joints and fittings are dispensed with, while at the same time leakage of gas is effectually prevented.

With these objects in view and others, as will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawing, which illustrates one embodiment of the invention, Figure 1 is a vertical section of the apparatus. Figs. 2, 3 and 4 are sectional views taken respectively on lines 2—2, 3—3, and 4—4, of Fig. 1.

Similar reference characters are employed to designate corresponding parts throughout the several views.

Referring to the drawing, A designates a water-containing tank which may be of any desired shape and size and within which is submerged the generator designated generally by B. The bottom 1 of the tank is raised a suitable distance above the floor or ground and carries underneath the same a washer designated generally by C which serves to eliminate the impurities from the gas by being conducted through water that acts as a washing medium. The washer C comprises an inner drum or cylinder 2 that constitutes a gas inlet chamber and an outer cylinder or casing 3 that forms an outlet chamber, and the washer is supplied with water or emptied through a pipe 4 leading outwardly therefrom and through the wall of the tank, the outer end of the pipe being closed by a plug or the like during normal operation.

Arranged within the tank A is a gas conducting pipe or conduit D leading from the generator B to the chamber C of the washer. Part of this pipe is an inverted U-shaped structure secured to and carried by the generator, while the other part is fixed within the tank. The first part of the conduit consists of a vertical tube 5 rising from the top of the generator to the top of the tank, a horizontal tube 6 connected with the tube 5 by an elbow coupling 7, and a third tube 8 connected with the outer end of the tube 6 by the elbow coupling 9, the tube 8 being of such length as to extend almost to the bottom of the tank and disposed in one corner thereof. This part of the conduit D serves as a convenient handle for gripping the generator in removing or placing the same. The fixed part of the conduit consists of a vertical pipe or tube 10 which extends from the bottom of the tank to a point above the normal water level in the latter and the vertical section or pipe 8 of the movable part of the conduit telescopes over the pipe 10, the water in the tank serving as an effective seal for preventing the escape of gas. The lower end of the pipe 10 is fastened in a coupling 11 that is riveted or otherwise rigidly secured to the bottom or other suitable part of the tank, and leading from this coupling is a horizontal pipe 12 that terminates at the center of the bottom of the tank and communicates with the inlet chamber 2 of the washer by a coupling 13. On the outer cylinder or casing of the generator is a rib 14 that has a cylindrical or tubular portion 15 in which the pipe 8 snugly fits so as to serve as an anchoring means for the said pipe and thereby relieve the strain at the joint 16 between the pipe 5 and generator, should the apparatus be roughly handled by the attendant when taking out or replacing the generator for re-charging.

Arranged within the tank are L-shaped braces 17 which engage the pipe 8 at the upper end thereof for giving rigidity to the parts and the inner ends of these braces are separated so as to permit the rib 14 on the

generator to freely pass during removal or insertion of the latter.

The washed gas is conducted off through an outlet conduit E to a suitable point of consumption. In the present instance, the conduit consists of a fixed and a removable section, the latter being in the form of a burner-carrying standard or outlet pipe composed of upper and lower sections 18 and 19 connected together by a coupling 20. On the upper end of the part 18 is a valve 21 that controls the feed of gas to the burner 22 which is pivoted at 23 so as to be tilted upwardly or downwardly, and applied to the burner is a suitable reflector 24, the burner being turned by a handle piece 25 attached to the coupling 26. The removable section of the outlet conduit is mounted so as to turn on its longitudinal axis to thereby permit the light to be thrown in any direction where it is needed for the workman. The fixed section or part of the outlet conduit is substantially similar to the fixed part of the gas conducting conduit D except that the lower end thereof communicates with the outlet chamber 3 of the washer. The inner pipe 27 of this fixed part also extends above the normal water line in the tank and, if desired, a hose or other suitable connection can be attached to the upper end of the inner pipe by first removing the burner-carrying standard 18, as when it is desired to make an outlet extension to supply torches at remote points.

To prevent the burner-carrying section of the conduit from being accidentally displaced, a substantially quadrant bracket 28 is secured to the tank at one of the upper corners thereof to embrace the said section at a point immediately above the coupling 20, and by means of a screw 29, Fig. 2, the pipe can be forced laterally so that the coupling will engage under the bracket and thus prevent the pipe or removable section from being lifted out.

The generator B is of the water to carbid feed type and consists of a bell or outer cylinder 30 in which is disposed an inner cylinder 31 that is open at its top and closed at its bottom, and within the cylinder 31 are superimposed trays 32 that hold the calcium carbid, and this carbid is consumed or acted on by the water rising in the trays successively. Between the inner and outer cylinders is an annular water space from which water feeds into the inner cylinder through openings 33 arranged one above another, and the flow of water through these openings depends upon the pressure of gas within the generator which acts to depress the water when the pressure is high, so that no water can be admitted to act on the carbid, and which allows the water to rise to the height of one or more of the openings when the pressure is relatively low for admitting water to act on the carbid so that additional gas will be created to meet the demand therefor.

In practice, the gas is generated at substantially the rate of consumption, and when the burner is lighted, the gas rises from the carbid and flows from the generator through the gas-conducting conduit D to the washer C. In the washer, the gas passes through the water to reach the outlet conduit E through which the gas passes to the burner 22.

The lighting device or torch described herein constitutes the subject-matter of my co-pending application, Serial No. 468,952, filed December 23, 1908, in which application claims are made to the structural features of the burner, reflector and coöperating parts.

From the foregoing description, taken in connection with the accompanying drawing, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the device which I now consider to be the best embodiment thereof, I desire to have it understood that the device shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claims appended hereto.

Having thus described the invention, what I claim is:—

1. The combination of a water-containing tank, a generator therein including a bell, a washer, a gas-conducting conduit between the generator and washer and comprising two parts removably connected, one part being mounted on the generator and removable therewith and the other part being fixed in the tank, said first part of the conduit having its receiving end communicating with the top of the bell and rising therefrom to a point above the water level in the tank and thence turning downwardly and telescoping over the said fixed part of the conduit, and a gas outlet conduit communicating with the washer.

2. The combination of a water-containing tank, a generator submerged therein, a pipe connected with the top of the generator and rising therefrom out of the water in the tank and turning toward one side of the latter and thence extending downwardly into the water between the wall of the tank and generator, a fixed pipe within the tank between the wall of the latter and generator with its upper end above the water level in the tank and over which the downwardly-extending portion of the first-mentioned pipe telescopes, and means for receiving gas from the fixed pipe.

3. The combination of a water-containing tank, a generator therein, a gas-conducting

conduit consisting of two sections, one section consisting of an inverted U-shaped pipe having a short leg connected with the generator and a long leg extending along the side thereof, the connected upper portions of the legs being disposed above the water level in the tank, said section being carried by the generator and located wholly exterior thereto and housed within the tank, the other section being fixed in the tank and arranged in telescoping relation with the long leg of the first part, and means receiving gas from the said fixed part.

4. The combination of a water-containing tank, a generator submerged therein consisting of a carbid containing cylinder open at its top and a closed-top bell assembled over the top of the bell and having an outlet in its upper portion, a pipe carried wholly by the bell with the receiving end communicating with the latter through the said outlet and having one portion rising from the bell out of the water in the tank and another portion extending downwardly in the water, a second pipe fitting within the downwardly-extending portion and terminating at a point above the water level of the tank, means for rigidly supporting the second pipe in place, and means for receiving gas from the second pipe.

5. The combination of a water-containing tank, a washer arranged in the bottom thereof, an upright pipe extending from the bottom of the tank to a point above the normal water level therein, a coupling fastened to the tank and to which the pipe is secured, a pipe attached to the coupling and secured to the bottom of the tank and leading into the washer, a generator in the tank, and a conduit conveying gas from the generator to the first-mentioned pipe.

6. The combination of a water-containing tank, a generator submerged therein, a gas-conducting conduit consisting of a part fixed within the tank and exterior to the generator and a part carried by the generator and telescopically connected with the first part and arranged to constitute a handle accessible at the top of the tank for removing the generator, and means receiving gas from said conduit.

7. The combination of a tank, a generator submerged therein, a gas-conducting pipe consisting of an inverted U-shaped part removable with the generator and a part fixed within the tank and extending above the water level therein, means for receiving gas from the said fixed part, said first-mentioned part having its ends fastened to the outside of the generator at different points and its intermediate portion rising above the water level in the tank.

8. The combination of a generator, a gas-conducting pipe located outside the generator, means for connecting one end of the pipe to the generator, and a vertical rib on the outside of the generator to which is secured the other end of the said pipe.

9. The combination of a generator consisting of a bell and a carbid holding means therein, a gas-conducting pipe comprising a section connected with the bell and rising therefrom, a second section connected with the top of the first section, a third depending section connected with the second section and extending along the outside of the bell, and means for fastening the third section to the generator for bracing the entire pipe.

10. The combination of a generator, a gas-conducting pipe comprising a section connected with the generator and rising therefrom, a second section connected with the top of the first section, a third depending section connected with the second section and extending along the outside of the generator, means for fastening the third section to the generator for bracing the entire pipe, and a device on the tank for engaging the pipe to steady the generator within the tank.

11. The combination of a water-containing tank, a washer mounted under the same, pipes in the tank secured to the bottom thereof, an upwardly-extending tube fixed to and communicating with each pipe, a generator removably mounted in the tank and disposed over the pipes, a tube communicating with and carried by the generator and removably connected with one of the said tubes, and means for receiving gas from the washer through the other upwardly-extending tube.

12. The combination of a tank, a generator therein, a fixed pipe within the tank and extending above the normal water level therein, means for conveying gas from the generator to the pipe, a second pipe telescopically fitted over the fixed pipe and projecting out of the tank, a shoulder on the second pipe, a member arranged on the tank to embrace the second pipe, and a device for holding the shoulder engaged with the member.

13. The combination of a water-containing tank, a removable generator therein, separate pipes arranged in upright position and separately secured only at their lower portions to the tank, means connecting the pipes together for conducting gas from one to the other, a gas-conducting pipe carried by and leading out of the top of the generator and having a downwardly extending portion open at its lower end to telescope over one of the upright pipes, and an outlet pipe open at its lower end to telescope over the other upright pipe and removable vertically therefrom and independent of the generator to permit the latter to be removed while the outlet pipe remains in position.

14. The combination of a water-contain-

ing tank, a generator mounted therein, separate pipes carried by the tank independently of the generator, the lower portions of the pipes being rigidly secured to the tank and the upper portions being free therefrom, a washer in the tank divided into separate communicating chambers with which the pipes respectively connect for gas to pass from one pipe to the other through the washer, said pipes being located exterior to the generator, a gas conducting pipe carried wholly by the generator and leading from the top thereof and provided with a downwardly extending portion open at its lower end to assemble over the upper portion of one of the said pipes, and an outlet pipe disposed in upright position independently of the generator and having its lower end telescopically connected with the upper portion of the other of the said pipes.

15. The combination of a tank, a washer in the bottom thereof, a removable generator in the tank, separate upright pipes having their lower portions extending under the generator and connected with the washer, means for securing the lower portions of the pipes to the tank while the upper portions are free therefrom, a gas conducting pipe carried by the generator and having a vertically disposed portion arranged to slip over the free portion of one of the said pipes, and an outlet pipe having its lower portion loosely assembled over the free portion of the other of the said pipes.

16. The combination of a tank, a washer under the bottom of the tank divided into a gas inlet and an outlet chamber, a generator in the tank, a pipe arranged in upright position in the tank with its lower end connected with the inlet chamber of the washer, a pipe arranged in upright position with its lower portion rigidly secured to the tank and in communication with the outlet chamber of the washer, a pipe communicating with the top of the generator and leading upwardly therefrom to the top of the tank and thence downwardly to the side of the generator to fit over the first-mentioned pipe, and an outlet pipe slipped longitudinally over the second-mentioned pipe.

In testimony whereof I affix my signature in presence of two witnesses.

ALEXANDER FREDERICK JENKINS.

Witnesses:

A. THOMPSON,

B. BLAINE.