E. DIETZE, JR.

ACETYLENE GAS GENERATOR.

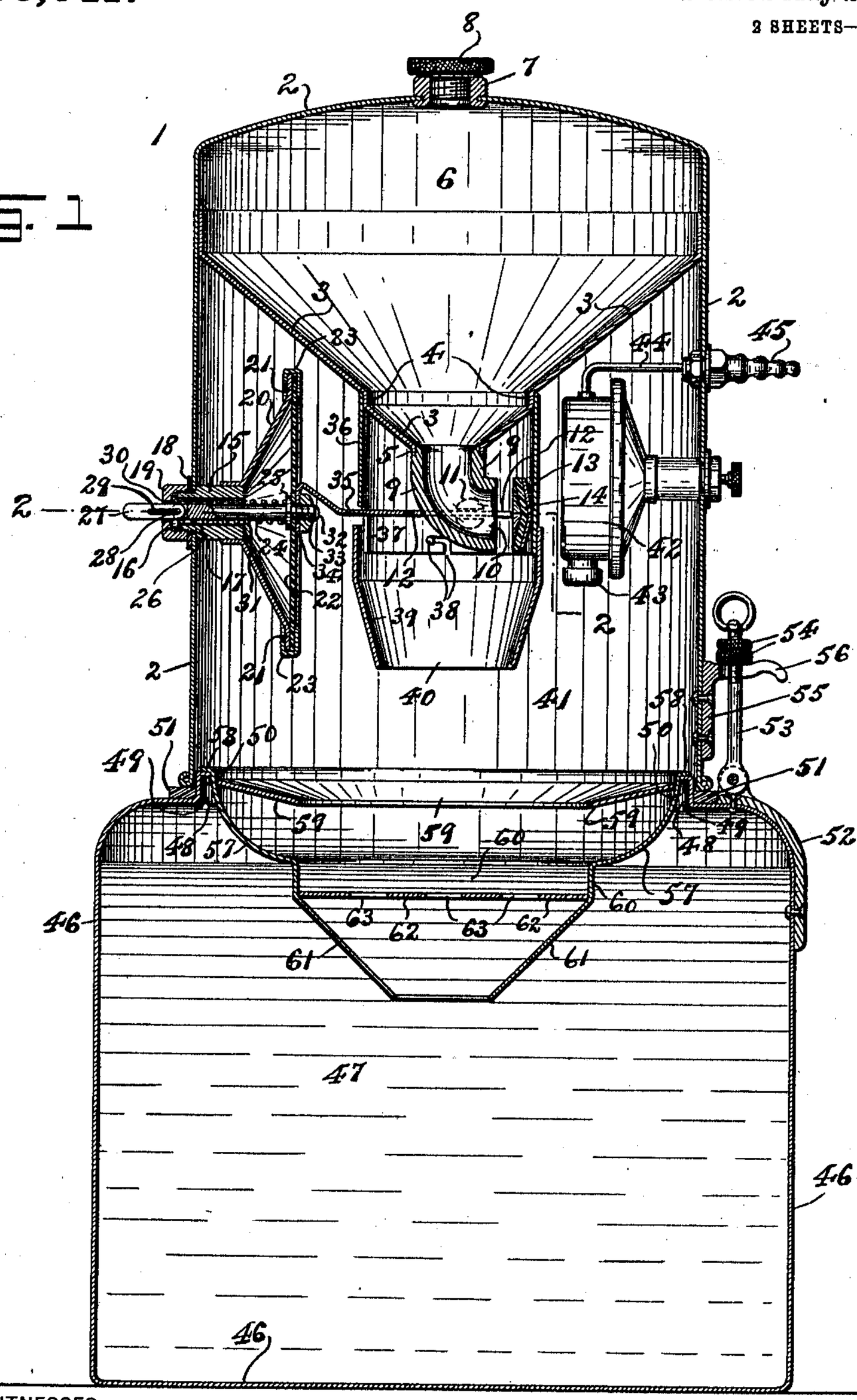
APPLICATION FILED NOV. 26, 1910.

993,041.

Patented May 23, 1911.

2 SHEETS—SHEET 1.

Fig. 1



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2 SHEETS—SHEET 2.

Fig. 2

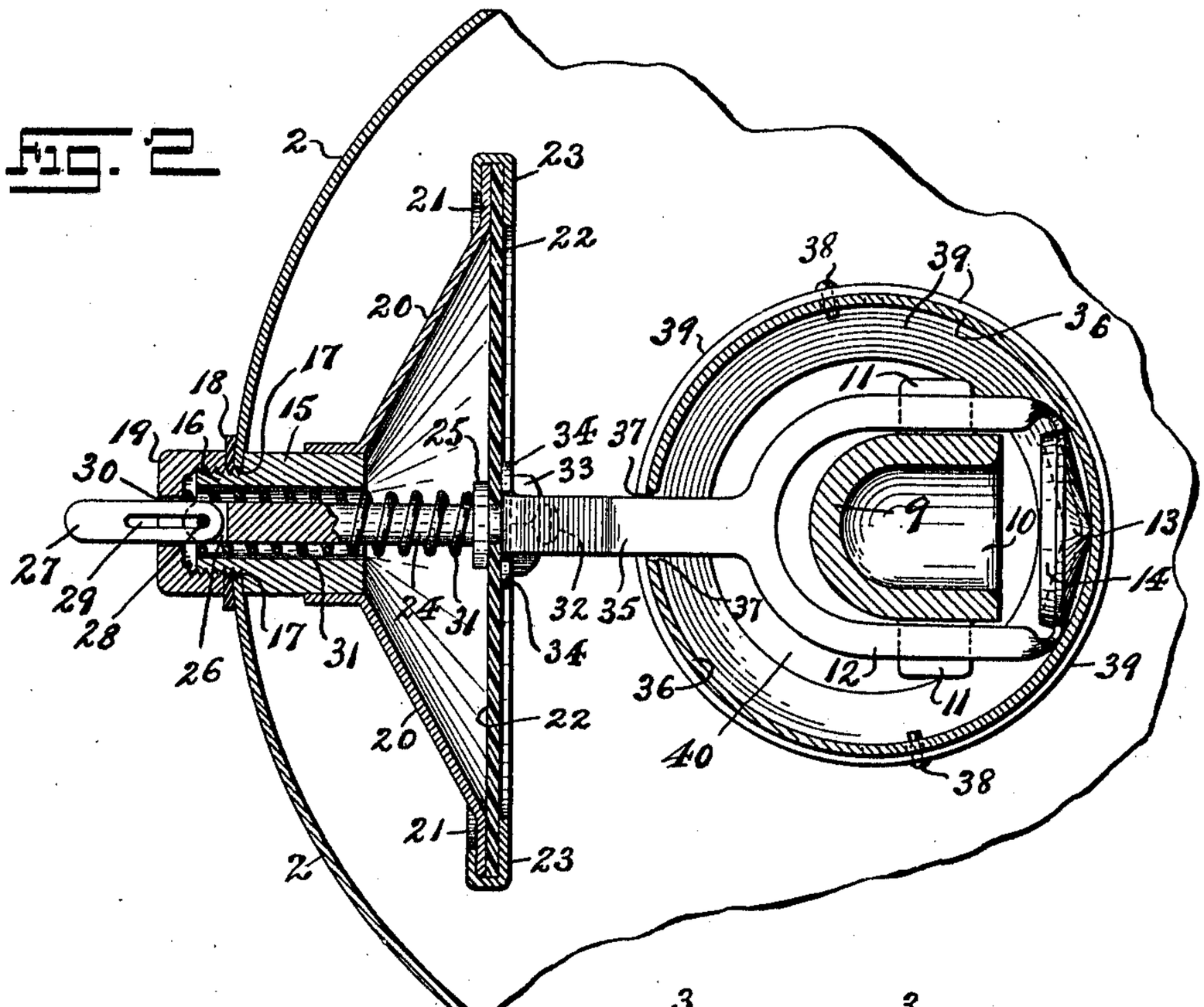

Fig. 3

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UNITED STATES PATENT OFFICE.

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ACETYLENE-GAS GENERATOR.

993,041. Specification of Letters Patent. Patented May 23, 1911.

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To all whom it may concern:

Be it known that I, EMIL DIETZE, Jr., a citizen of the United States, residing at East New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Acetylene-Gas Generators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

The present invention relates, generally, to improvements in acetylene gas generators; and, the present invention refers, more particularly, to that class of acetylene gas generators in which the carbid is fed, in required amounts, into a water-chamber as distinguished from the class of generators in which water is dropped upon the carbid.

The present invention has for its principal object to provide an acetylene gas generator of great simplicity of construction and of operation, the generating function of which is automatically controlled with a maximum of efficiency. Said generator being capable of use for many classes of work, such as portable lamps or indoor lighting systems, and the same being particularly adapted for use upon automobiles, launches and all classes of moving vehicles, as well as for many other uses, wherein a portable acetylene gas generator may be desired for the purpose of supplying gas for illuminating.

A further object of the present invention is to provide a novel arrangement of carbid feeding mechanism which is automatically controlled by the pressure of the gas generated, so that the amount of gas generated is controlled and regulated by the amount of gas consumed; and, another object of the present invention is to provide a means for arresting or preventing the water in the water chamber from splashing into the gas collecting chamber, or upon the carbid feeding devices, should said generator be subjected to vibration or agitation, such as it would be liable to if placed upon a moving vehicle of any type; thus guarding against moisture coming in contact with the carbid in the storage chamber, which would prevent the proper operation of the feed mechanism, and, furthermore, which might entail danger through uncontrolled generation of gas.

Other objects of the present invention not at this time more particularly enumerated will be clearly understood from the following detailed description of my present invention.

With these various objects of my present invention in view, the said invention consists, primarily, in the novel construction of acetylene gas generator hereinafter set forth; and, furthermore, this invention consists in the several novel arrangements and combinations of the various devices and parts, as well as in the details of the construction thereof, all of which will be hereinafter more fully described in the following specification, and then finally embodied in the clauses of the claim which are appended to and which form an essential part of this specification.

The invention is clearly illustrated in the accompanying drawings in which:—

Figure 1 is a longitudinal vertical section of an acetylene gas generator made according to and embodying the principles of my present invention. Fig. 2 is a detail horizontal section taken on line 2—2 in said Fig. 1 looking downwardly, said view being drawn upon an enlarged scale. Fig. 3 is a detail longitudinal vertical section of my novel carbid feeding mechanism and the means for controlling the same, said view illustrating a means for locking, in its closed position, said carbid-feeding mechanism where it is desired to discontinue the generation of gas.

Similar characters of reference are employed in all of the said hereinabove described views, to indicate corresponding parts.

Referring now to the several figures of the said drawings, the reference-character 1 indicates the complete acetylene gas generator made according to and embodying the principles of the present invention, the same comprising a shell or casing 2, of any desired shape, the same being open at the bottom. Secured within the upper portion of said shell or casing 2 is a funnel-shaped partition 3, the same being formed with a shoulder 4, and a centrally disposed opening, surrounded by a flange or shoulder 5. Said funnel-shaped partition 3, in connec-

tion with the upper part of said shell or casing 2, provides a storage reservoir or carbid chamber 6. Secured in the top wall of said shell or casing is a neck-piece 7, forming an opening for the introduction of carbid into said storage reservoir or carbid chamber 6. Said neck-piece is normally closed by a cap or closure 8, which screws, or is otherwise secured, into said neck-piece. Secured to said shoulder or flange 5 of said funnel-shaped partition 3 is an elbow 9, providing a carbid outlet 10. Extending outwardly on opposite sides of said elbow 9 are slotted lugs 11, providing guide-members for slidably supporting a yoke 12, which carries a seat-member 13, provided with a resilient valve-disk 14. Said seat member and valve-disk are perferably of concave or saucer-shaped conformation. Said yoke 12, seat-member 13 and valve-disk 14 provide a cut-off valve, adapted at proper times to be moved into a closing relation with said carbid outlet 10 of said elbow 9. Secured to the wall of said shell or casing 2 is a tubular member 15, provided with a screw-threaded extension 16 of reduced diameter, which passes through a suitably located opening or hole 17 in said shell or casing 2. A washer 18 and a cap-piece 19, arranged upon the outer end of said extension 16, retains said tubular member 15 in place, and provides a gas tight connection thereof with said shell or casing 2. Secured in any suitable manner upon the inner end of said tubular member 15 is a diaphragm casing 20, provided at its marginal edge with a diaphragm seat 21. Arranged upon said diaphragm seat 21, and extending across the open end of said diaphragm casing 20, is a diaphragm member 22, the same being secured in its operative position by means of a retainer or binder ring 23. Secured to said diaphragm member 22 is a diaphragm stem 24, provided with a shoulder or flange 25 adapted to abut against the inner side of said diaphragm member. Said diaphragm stem extends rearwardly through said diaphragm casing 20 and said tubular member 15, and is provided at its free end with a forked end 26, to which is pivotally secured a link-member 27, by means of a pintle or pin 28 adapted to pass through an elongated slot or opening 29 with which the body of said link-member 27 is provided. Said cap-piece 19 is provided with a suitable hole or opening 30, which permits the passage of said link-member 27 and said diaphragm stem 24 therethrough. A coil-spring 31, arranged about said diaphragm stem 24 between said cap-piece 19 and said shoulder or flange 25, tends to normally maintain said diaphragm member 22 in its operable position. Said diaphragm stem 24 is provided further with a forwardly extending screw-threaded shank 32, which passes through and projects beyond the outer side of said diaphragm member 22. Arranged upon said screw-threaded shank 32, so as to abut against the outer side of said diaphragm member 22, and retained in such position by a nut 33, is the end-piece 34 of the tail-piece 35 of said yoke 12, whereby said cut-off valve mechanism hereinabove described is operably connected with said diaphragm member 22. Secured upon said shoulder 4 of said funnel-shaped partition 3 is an apron 36, adapted to surround said elbow 9 and said cut-off valve-mechanism. Said apron 36 is provided with a slot or opening 37, adapted to permit the free passage of said tail-piece 35 of said yoke 12 therethrough. Removably secured to said apron 36, by suitable retaining means 38, is an extension apron 39 provided with an outlet or bottom opening 40 of reduced diameter, the same tending to direct the fall or drop of said carbid, after passing through said carbid outlet 10, in a proper manner to the water chamber to be subsequently described. Secured in a suitable location to said shell or casing 2, and within the space 41 in the lower part thereof, which provides a gas collecting chamber, is an automatic pressure regulating valve 42 of any desirable construction, the same being provided with a filter inlet 43, and an outlet pipe 44 which properly connects the said pressure regulating valve 42 with a gas outlet nozzle 45 secured in the wall of said shell or casing 2.

The reference-character 46 indicates a casing or shell providing a water chamber 47. Said casing or shell 46 is provided with a suitable opening or mouth 48, surrounded by a rim 49 from the marginal edge of which projects a flange 50. Arranged exteriorly upon the upper wall of said casing or shell 46 is a gasket 51, upon which is seated the open end of said shell or casing 2. Said shell or casing 46 is provided with a suitable number of clamp-brackets 52, which pivotally support clamp-links 53, the latter being provided with screw-threads upon which are arranged lock-nuts 54. Said shell or casing 2 is provided, correspondingly, with a suitable number of brackets 55, provided with outwardly extending slotted lugs 56, adapted to receive said clamp-links 53, and to be engaged by said lock-nuts 54, substantially in the manner shown, to bind together, in gas tight relation, said shell or casing 2 and said shell or casing 46. Removably supported in the mouth of said shell or casing 46 is a splash-basin 57, the same being provided with a marginal flange 58 for suspending the same upon said flange 50. Arranged in said splash-basin is an annular flange 59, providing a splash arrester. Said splash-basin 57 is provided in its lower portion with a cir-

cular water chamber 60, from which extends an open cone-shaped bottom 61, within the upper portion of which is arranged a break-water disk 62, provided with perforations 63 to permit the upward passage of water into the circular water-chamber 60, as well as the precipitation of the spent carbid or lime to the bottom of said water-chamber.

Having thus described the construction of the novel acetylene gas generator, it remains to set forth its operation.

The carbid chamber 6 is filled with granulated carbid, and the water chamber 47 is filled with water to a level sufficient to fill said circular water chamber 60 of said splash basin 57. When the generator is not in use the link member 27 is pulled outward and rotated upon said pin 28, then pushed downward on said pin until it lies across the cap-piece 19 (see Fig. 3). This action causes the diaphragm stem 24 and diaphragm member 22 to be pulled inward, and they in turn pulling upon said tail-piece 35 and yoke 12, seat said valve-disk 14 on said carbid outlet 10 of said elbow 9, shutting off the flow of carbid, and tightly sealing said carbid outlet 10, a small padlock may be inserted through said slot 29 of said link-member 27, if desired, so as to prevent any starting or tampering with the generator by other than the proper person. When it is desired to start the operation of the generator the link-member 27 is released from its locking position, as above described, so as to cause the diaphragm-member to assume its normal operative position, whereby said cut-off valve mechanism is opened. Upon the opening of said cut-off valve mechanism the carbid flows downwardly from said carbid-chamber 6, through said elbow 9, and out of said carbid outlet 10, being guided in its fall by means of said apron 39, so that it is directed into the water contained in said circular water chamber 60 of said splash-basin 57. Gas is thereupon generated, said gas rising into said gas collecting chamber 41. The gas thus collected passes through said pressure regulating valve 42 to said nozzle 45, whereupon the same may be conducted to the burners of suitable lamps. As the gas collects in said gas collecting chamber 41 the pressure thereof operates upon said diaphragm-member 22, causing the same to bulge inwardly. This inward bulging of said diaphragm-member operates to pull upon said tail-piece 35 and yoke 12, to seat said valve-disk 14 on said carbid outlet 10, tightly closing and sealing the same, so that the feeding of carbid is stopped. The generation of gas thereupon ceases until the burning off of the gas collected reduces the pressure in said gas collecting chamber 41, thus allowing said diaphragm-member 22 to resume its normal position, and thereby operate said cut-off valve mechanism, to again open said carbid outlet 10, and the feeding of carbid to the water to be again resumed. This action of said diaphragm-member and cut off valve mechanism is automatic and continuous, thus rendering a perfect automatic control of the generating function of said generator. Said splash-basin 57, with its various subsidiary parts, prevents water from splashing upwardly into said gas collecting chamber 41, or upon said carbid feed mechanism, the latter being further protected by means of said surrounding aprons 36 and 39. It will thus be apparent that the generator is adapted admirably for use upon moving vehicles of all types, since the vibration and agitation thereof, consequent to such use, cannot interfere or prevent the proper working of said generator, nor with the perfect safety with which it may be used.

I am aware that changes may be made in the various arrangements and combinations of the several devices and parts and in the features of my present invention without departing from the scope thereof, described in the foregoing specification, and as defined in the claims appended thereto. Hence, I do not limit my invention to the exact arrangements and combinations of the various devices and parts as herein set forth, and as illustrated in the accompanying drawings, nor do I confine myself to the exact details of the construction of the said parts.

I claim:—

1. In an acetylene generator, the combination of a shell or casing, a funnel-shaped partition in said shell or casing providing a carbid chamber above said partition and a gas collecting chamber beneath the same, a shell or casing providing a main water chamber beneath said gas collecting chamber, an elbow provided with a carbid outlet connected with said funnel-shaped partition, a cut-off valve-mechanism connected with said elbow, said cut-off valve mechanism comprising a yoke, a seat connected therewith and a valve-disk adapted to close said carbid outlet of said elbow, means connected with said yoke located within said gas collecting chamber operated by gas pressure for opening and closing said cut-off valve mechanism.

2. In an acetylene generator, the combination of a shell or casing, a funnel-shaped partition in said shell or casing providing a carbid chamber above said partition and a gas collecting chamber beneath the same, a shell or casing providing a main water chamber beneath said gas collecting chamber, an elbow provided with a carbid outlet connected with said funnel-shaped partition, a cut-off valve-mechanism connected with said elbow, said cut-off valve mechanism comprising a yoke, a seat connected there-

with and a valve-disk adapted to close said carbid outlet of said elbow, means connected with said yoke located within said gas collecting chamber operated by gas pressure for opening and closing said cut-off valve mechanism, and means for manually closing said cut-off valve-mechanism.

3. In an acetylene generator, the combination of a shell or casing, a funnel-shaped partition in said shell or casing providing a carbid chamber above said partition and a gas collecting chamber beneath the same, a shell or casing providing a main water chamber beneath said gas collecting chamber, an elbow provided with a carbid outlet connected with said funnel-shaped partition, guide-members exteriorly disposed on said elbow, a yoke slidably arranged in said guide-members, a seat connected with said yoke, a resilient valve disk supported upon said seat and adapted to close said carbid outlet, a tail piece connected with said yoke, and means located within said gas collecting chamber operated by gas pressure for moving said yoke to carry said valve-disk into opening and closing relation with said carbid outlet.

4. In an acetylene generator, the combination of a shell or casing, a funnel-shaped partition in said shell or casing providing a carbid chamber above said partition and a gas collecting chamber beneath the same, a shell or casing providing a main water chamber beneath said gas collecting chamber, an elbow provided with a carbid outlet connected with said funnel-shaped partition, guide-members exteriorly disposed on said elbow, a yoke slidably arranged in said guide-members, a seat connected with said yoke, a resilient valve disk supported upon said seat and adapted to close said carbid outlet, a tail piece connected with said yoke, a diaphragm casing supported within said gas collecting chamber, a diaphragm member connected with said diaphragm casing, and means for connecting said tail-piece of said yoke with said diaphragm member.

5. In an acetylene generator, the combination of a shell or casing, a funnel-shaped partition in said shell or casing providing a carbid chamber above said partition and a gas collecting chamber beneath the same, a shell or casing providing a main water chamber beneath said gas collecting chamber, an elbow provided with a carbid outlet connected with said funnel-shaped partition, guide-members exteriorly disposed on said elbow, a yoke slidably arranged in said guide-members, a seat connected with said yoke, a resilient valve disk supported upon said seat and adapted to close said carbid outlet, a tail piece connected with said yoke, a diaphragm casing supported within said gas collecting chamber, a diaphragm member connected with said diaphragm casing, means for connecting said tail-piece of said yoke with said diaphragm member, and means for positively maintaining said valve-disk in its closing relation with said carbid outlet.

6. In an acetylene generator, the combination of a shell or casing, a funnel-shaped partition in said shell or casing providing a carbid chamber above said partition and a gas collecting chamber beneath the same, a shell or casing providing a main water chamber beneath said gas collecting chamber, an elbow provided with a carbid outlet connected with said funnel-shaped partition, guide-members exteriorly disposed on said elbow, a yoke slidably arranged in said guide-members, a seat connected with said yoke, a resilient valve disk supported upon said seat and adapted to close said carbid outlet, a tail piece connected with said yoke, a tubular member provided with a perforated cap-piece supported in the wall of said gas collecting chamber, a diaphragm casing supported upon said tubular member within said gas collecting chamber, a diaphragm member connected with said diaphragm casing, a diaphragm-stem connected with said diaphragm-member and extending rearwardly through said tubular member, a coil spring around said diaphragm stem for maintaining the same in its normal position, and means for connecting said tail-piece of said yoke with said diaphragm-member.

7. In an acetylene generator, the combination of a shell or casing, a funnel-shaped partition in said shell or casing providing a carbid chamber above said partition and a gas collecting chamber beneath the same, a shell or casing providing a main water chamber beneath said gas collecting chamber, an elbow provided with a carbid outlet connected with said funnel-shaped partition, guide-members exteriorly disposed on said elbow, a yoke slidably arranged in said guide-members, a seat connected with said yoke, a resilient valve disk supported upon said seat and adapted to close said carbid outlet, a tail piece connected with said yoke, a tubular member provided with a perforated cap-piece supported in the wall of said gas collecting chamber, a diagram casing supported upon said tubular member within said gas collecting chamber, a diaphragm member connected with said diaphragm casing, a diaphragm-stem connected with said diaphragm-member and extending rearwardly through said tubular member, a coil spring around said diaphragm stem for maintaining the same in its normal position, and means for connecting said tail-piece of said yoke with said diaphragm-member, comprising a slotted link member pivotally connected with the free end of said diaphragm stem, said slotted link-member being adapted to be brought in holding engage-

ment with said cap-piece to maintain a pull upon said diaphragm-member and yoke to seat said valve-disk positively on said carbid outlet.

8. In an acetylene generator, the combination of a shell or casing, a funnel-shaped partition in said shell or casing providing a carbid chamber above said partition and a gas collecting chamber beneath the same, a shell or casing providing a main water chamber beneath said gas collecting chamber, an elbow provided with a carbid outlet connected with said funnel-shaped partition, a cut-off valve mechanism connected with said elbow, an apron connected with said funnel-shaped partition so as to surround said elbow and cut-off valve mechanism, a removable apron connected with the lower end of said first-mentioned apron located beneath said carbid outlet, means located within said gas collecting chamber operated by gas pressure for opening and closing said cut-off valve mechanism.

9. In an acetylene generator, the combination of a shell or casing, a funnel-shaped partition in said shell or casing providing a carbid chamber above said partition and a gas collecting chamber beneath the same, a shell or casing providing a main water chamber beneath said gas collecting chamber, an elbow provided with a carbid outlet connected with said funnel-shaped partition, guide-members exteriorly disposed on said elbow, a yoke slidably arranged in said guide-members, a seat connected with said yoke, a resilient valve disk supported upon said seat and adapted to close said carbid outlet, a tail piece connected with said yoke, an apron connected with said funnel-shaped partition so as to surround said elbow and adjacent parts, said apron being provided with a slot for the passage of said tail piece, a removable apron connected with the lower ends of said first-mentioned apron located beneath said carbid outlet, and means located within said gas collecting chamber operated by gas pressure for moving said yoke to carry said valve-disk into opening and closing relation with said carbid outlet.

10. In an acetylene generator, the combination of a shell or casing, a funnel-shaped partition in said shell or casing providing a carbid chamber above said partition and a gas collecting chamber beneath the same, a shell or casing providing a main water chamber beneath said gas collecting chamber, an elbow provided with a carbid outlet connected with said funnel-shaped partition, guide-members exteriorly disposed on said elbow, a yoke slidably arranged in said guide-members, a seat connected with said yoke, a resilient valve disk supported upon said seat and adapted to close said carbid outlet, a tail piece connected with said yoke, an apron connected with said funnel-shaped partition so as to surround said elbow and adjacent parts, said apron being provided with a slot for the passage of said tail-piece, a removable apron connected with the lower ends of said first-mentioned apron located beneath said carbid outlet, a tubular member provided with a perforated cap-piece supported in the wall of said gas collecting chamber, a diaphragm casing supported upon said tubular member within said gas collecting chamber, a diaphragm member connected with said diaphragm casing, a diaphragm-stem connected with said diaphragm member and extending rearwardly through said tubular member, a coil spring around said diaphragm stem for maintaining the same in its normal position, means for connecting said tail-piece of said yoke with said diaphragm-member, means for positively closing said valve-disk upon said carbid-outlet comprising a slotted link-member pivotally connected with the free end of said diaphragm-stem, said slotted link member being adapted to be brought in holding engagement with said cap-piece to maintain a pull upon said diaphragm-member and yoke to seat said valve-disk positively on said carbid outlet.

In testimony, that I claim the invention set forth above I have hereunto set my hand this 23rd day of November, 1910.

EMIL DIETZE, JR.

Witnesses:

MAYBELLE MCADOO,

GEORGE D. RICHARDS.