

No. 625,827.

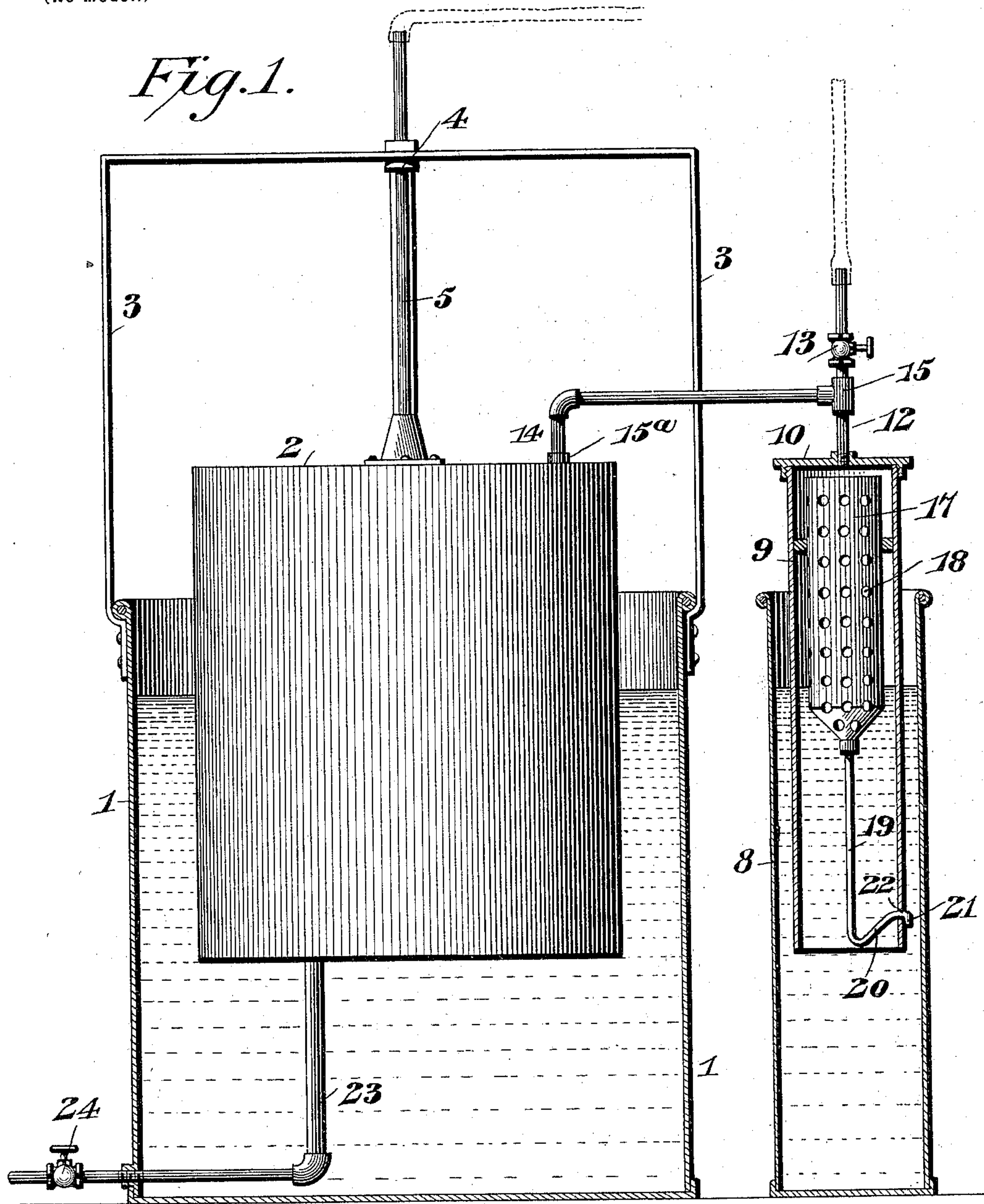
Patented May 30, 1899.

C. M. CAMP.
ACETYLENE GAS GENERATOR.

(Application filed Aug. 6, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses
James L. McClathran
W. J. Beubach

Charles M. Camp, Inventor
By *His* Attorneys,

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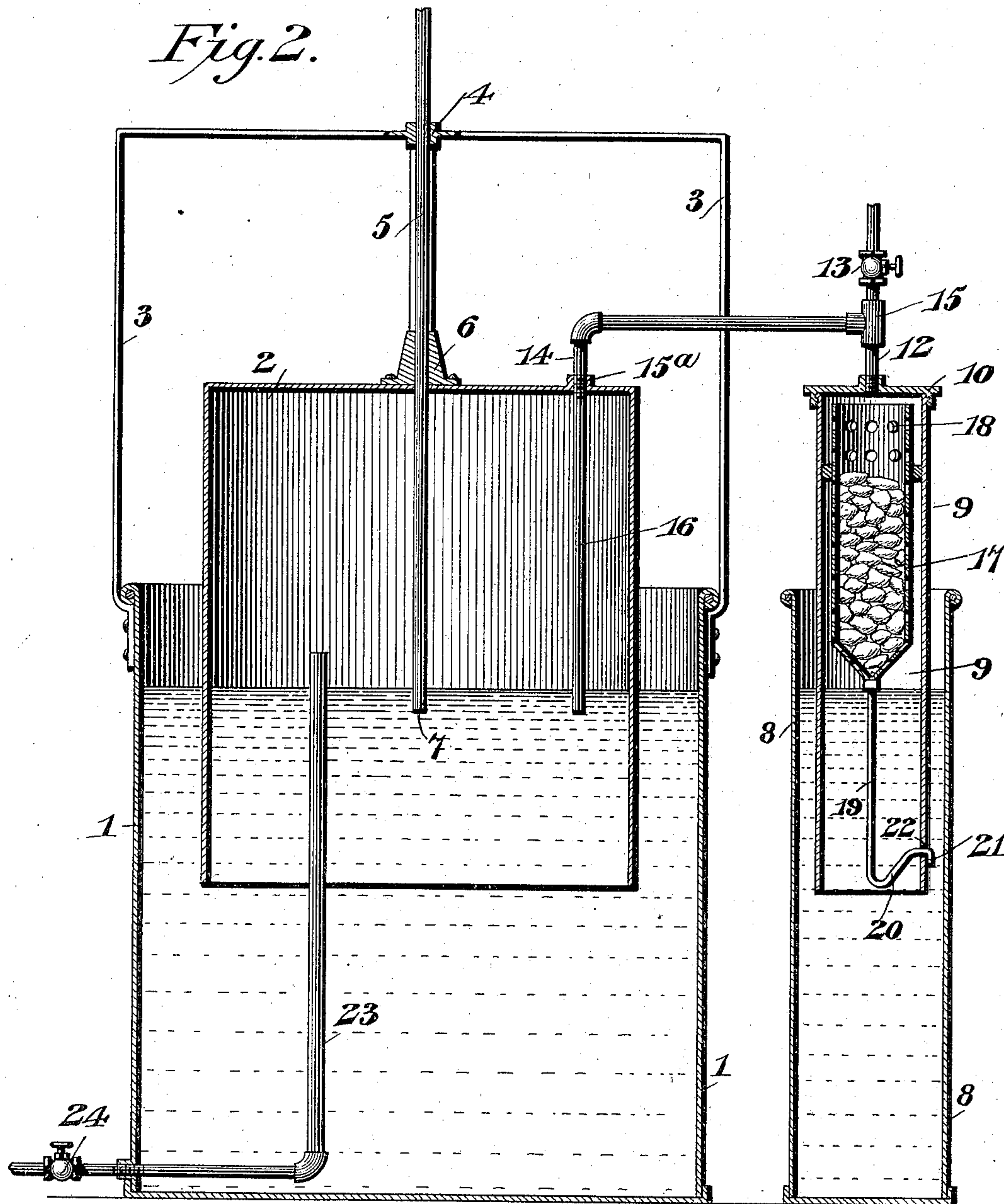
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UNITED STATES PATENT OFFICE.

CHARLES M. CAMP, OF NAVASOTA, TEXAS.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 625,827, dated May 30, 1899.

Application filed August 6, 1898. Serial No. 687,969. (No model.)

To all whom it may concern:

Be it known that I, CHARLES M. CAMP, a citizen of the United States, residing at Navasota, in the county of Grimes and State of Texas, have invented a new and useful Acetylene-Gas Generator, of which the following is a specification.

My invention relates to improvements in acetylene-gas generators; and the prime object is to construct and arrange the several elements to secure the automatic operation of the machine and promote the simplicity and durability of the construction.

A further object of the invention is to provide means by which the gas is cooled as it passes into the gasometer and the escape of gas from the gasometer back to the generator is prevented when the latter is opened for recharging the carbid vessel.

Further objects of the invention are to support the carbid vessel within the generator in a novel manner and permit of its ready introduction and removal, to provide for the escape of gas from the generator previous to recharging the carbid vessel therein and also permit the escape of air prior to the resumption of gas generation, and to provide for the automatic venting of the gasometer should the pressure therein exceed the desired limit.

With these ends in view the invention consists in the novel combination of elements and in the construction and arrangement of parts, which will be hereinafter fully described and claimed.

To enable others to understand the invention, I have illustrated the same in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is an elevation of the apparatus partly in section and showing the generator in its lowered position to bring the active layer of carbid in contact with the water for the generation of acetylene gas. Fig. 2 is also a vertical transverse section of the apparatus, illustrating the bells of the generator and gasometer in their raised positions and adapted to raise the carbid vessel from contact with the liquid.

Like numerals denote like parts in both figures of the drawings.

1 designates the tank of the gasometer, and 2 is the gasometer-bell. This bell is closed at

its upper end and is immersed within the water contained within the tank 1, which thus forms the seal against the escape of gas from the gasometer. Secured rigidly to the outside of the water-tank is a vertical guide-bail 3, which straddles said tank and lies over the bell 2 at a line above the limit of the upward movement of said bell, and this fixed bail 3 is provided at its center with a vertical guide-eye 4.

5 designates the tubular guide-stem, which is secured to the head of a gasometer-bell and depends therein a suitable distance. This tubular stem is secured rigidly to the head of the bell 2 by a boss 6, that is attached to the bell and surrounds the guide-stem, and this boss serves to reinforce and strengthen the joint between the bell and the tubular stem. The tubular stem passes freely through the guide-eye 4 on the fixed bail, and within the bell this stem is extended, as at 7 in Fig. 2, to have its lower end normally immersed in the water contained within the gasometer-tank.

8 designates the tank of the generator, adapted to contain water up to the level in the gasometer-tank, and within this tank 8 is loosely fitted the generator-bell 9, which is adapted to play freely in the tank and is immersed at its lower open end in the water, which forms a seal against the escape of gas from the generator to the outside atmosphere. I preferably construct the generator-bell with a movable head 10, herein shown as attached securely to the bell by a threaded joint; but it is obvious that other means for clamping the head 10 removably to the bell 9 may be adopted.

12 designates a vent-pipe which is secured rigidly to the removable head of the generator-bell, and this vent-pipe is provided with a cock or valve 13, which may be opened to permit of the escape of gas from the generator previous to detaching the head 10 from the generator-bell, so as to obtain access to the carbid vessel, and said valve may also be opened prior to the resumption of gas generation for the free egress of the air which may accumulate in the generator when it is opened for recharging the carbid vessel.

The bells of the generator and gasometer are joined together for simultaneous vertical

play by a connecting gas-pipe 14, which serves a double purpose in that it insures equal travel to the two bells 2 and 9 and provides for the passage of gas from the generator to the gasometer. One end of this connecting-pipe 14 is coupled to the vent-pipe 12 by a T-coupling 15, which is fastened to the pipe 12 at a point between its cock 13 and the attachment of the pipe 12 to the generator-bell, and this pipe 14 is rigidly fastened, as at 15^a, to the head of the gasometer-bell. The end of the pipe 14 is extended through the bell, as at 16 in Fig. 2, to have its lower extremity terminate substantially in the horizontal plane of the terminal of the guide-stem 5, and this extended end of the connecting-pipe is thus adapted to be immersed normally in the tank 1.

17 designates the carbid vessel, which is perforated, as at 18, to provide for the free passage of gas therein. This carbid vessel is herein shown as a cylinder having an inverted conical lower head and an open upper end, and said vessel is adapted to be charged with calcium carbid, which may be easily placed therein through the open upper end. The carbid vessel extends a suitable distance through the generator-bell, and it is removably supported therein by a vertical stem 19. This stem is a rod or bar of metal secured rigidly to the apex of the inverted head forming a part of the carbid vessel, and at its lower end said stem is bent to form a foot 20, which terminates in a hook 21, adapted to be thrust into an opening 22, which is provided in the wall of the gasometer-bell, near the open lower end thereof.

The gas to be supplied to the distributing-pipe system of a dwelling or other structure is conveyed from the gasometer through an outlet-pipe 23, suitably attached to the gasometer-tank, near the lower end thereof, and having a vertical branch which extends upwardly through the water in the tank 1 and into the gas-chamber of the bell 2. This outlet-pipe may be connected to the distributing-pipe in any suitable way, and it is provided with a cock 24, which may be closed to cut off the passage of gas from the gasometer.

To obtain access to the carbid vessel, the generator-bell is disconnected from the head and lowered into the tank 8 sufficiently for the operator to reach the carbid vessel 17. This vessel may be manipulated to detach the hook-shaped foot from the bell 9 and enable the vessel 17 to be withdrawn from the apparatus. The vessel may be charged with fresh calcium carbid, and it should then be replaced within the generator-shell to have the hook-shaped foot enter the aperture in the bell 9, after which the bell itself should be connected with the head. The cock 13 in the vent-pipe 12 may now be opened for the air contained within the generator to escape through the pipe 12 and allow the bell 9 to settle within the tank 8 for the carbid to be attacked by the water. The chemical decom-

position of the water and carbid at once results in the generation of acetylene gas, which is free to pass through the perforated vessel 17 and the bell 9 to and through the pipe 14 and its branch 16. As the gas emerges from the pipe branch 16 it is discharged into the liquid contained within the gasometer-tank, through which the gas passes and accumulates in the chamber of the bell 2, until the quantity and pressure of gas within the bell is sufficient to raise the bell 2, the pipe 14, and the bell 9 far enough to withdraw the carbid vessel from the water of the tank 8, thereby arresting the generation of gas. It should be understood that the cock 13 in the vent-pipe 12 is closed immediately after the gas generation begins, and the gas is thus caused to pass from the generator through the pipe 14 16 into the gasometer. By immersing the lower end of the pipe 16 in the water of the gasometer the gas is caused to pass through the water seal, and is thereby cooled before it is permitted to accumulate in the gasometer-bell, and this arrangement of the pipe 16 is also advantageous because it prevents the gas from passing from the gasometer back to the generator when the latter is opened in taking out or replacing the carbid vessel, the water in which the pipe 16 is immersed serving as a seal to the pipe 14 and obviating the employment of a separate cock or valve to cut off communication between the generator and gasometer.

The tubular guide-stem 5 serves to direct the bell 2 in its vertical travel, because this stem plays freely in the eye of the bail 3, and the lower end of this tubular stem 5 is normally immersed in the water of the tank 1, thus preventing the passage of gas through the tubular stem 5 when normal conditions prevail. In the event that the gas accumulates in the bell 2 above the desired limit the bell will be raised sufficiently to withdraw the lower end of the tubular stem 5 from the water-tank 1, and the gas will thus be free to escape through the tubular stem until the quantity or pressure is reduced and the bell 2 settles back into the water of the tank 1 sufficiently to again immerse the lower extremity of the stem 5, thereby sealing the latter.

It will be observed that the guide-stem 5 serves a twofold purpose in that it directs the gasometer-bell in its vertical travel and serves as a safety appliance to reduce the quantity or pressure of the gas which accumulates within the bell 2. In like manner the pipe 14 16 serves a twofold purpose, because it couples the bells 2 9 together to insure simultaneous movement thereof, and it is sealed to prevent the gas from passing from the gasometer to the generator, and by immersing the pipe branch 16 in the water of the gasometer the gas is subjected to the action of the cool water, and it is thereby cooled before it accumulates in the bell 2.

The action of the apparatus is wholly au-

5 tomatic and depends upon the quantity or
pressure of gas which may be stored in the
gasometer. The parts are simple in construc-
tion and they are efficient and reliable in op-
eration. The generator and gasometer may
be manufactured economically from sheet
metal. Suitable conducting tubes or pipes
may be attached to the vent-pipe 12 and the
tubular guide-stem 5 to convey the gas or air
10 to the outside of a building. If desired, the
bells of the gasometer and generator may be
counterbalanced by devices well known to
those skilled in the art.

15 Changes may be made in the form of some
of the parts while their essential features
are retained and the spirit of the invention
embodied. Hence I do not desire to be lim-
ited to the precise form of all the parts as
shown, reserving the right to vary therefrom.

20 The employment of the depending stem
with the foot at its lower end as a part of the
carbid vessel is an important feature in my
apparatus, because in replacing the vessel
after charging the same with fresh carbid
25 within the generator-bell the stem is adapted
to pass through the water containing the gen-
erator-bell, and thus allow the carbid vessel
to be attached to the generator-bell when the
latter is lowered without, however, permit-
30 ting the liquid to attack the carbid in the ves-
sel during the attachment of the vessel to the
bell and the replacement of the bell on the
head, to which are connected the pipes 12 14.

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

1. In an acetylene-gas generator, the com-
bination with a gasometer and a generator, of
a connecting-pipe coupled to the bells of the
gasometer and generator to insure simulta-
40 neous movement of both bells and having a

branch which extends through the bell of the
gasometer and is immersed in the water seal
of said gasometer, substantially as described.

2. In an acetylene-gas apparatus, the com-
bination with a gasometer having a vertically-
movable bell, of a generator constructed with
a movable bell, a carbid vessel supported
within the generator-bell and movable there-
with, a vent-pipe leading from the generator-
bell and provided with a valve or cock, and a
connecting-pipe attached to the vent-pipe be-
low the cock therein and having a branch
which extends into the gasometer-bell for im-
mersion in the water seal of the gasometer,
substantially as described.

3. In an acetylene-gas apparatus, a genera-
tor comprising a tank, a bell provided with a
removable head, a valved vent-pipe secured
to the head of said bell, a perforated carbid
vessel, and a supporting-stem attached to the
bottom of the carbid vessel and provided with
a foot which is detachably engaged with the
bell, substantially as described.

4. In an acetylene-gas apparatus, a gasome-
ter comprising a tank, a guide-bail secured
rigidly thereto, a bell having the reinforcing-
boss, and a tubular guide-stem secured rigidly
to the head of said bell and passing freely
through an eye of the guide-bail, said tubular
stem extending into the bell for its lower ex-
tremity to be immersed normally in the liquid
seal of the tank, substantially as described.

In testimony that I claim the foregoing as
my own I have hereto affixed my signature in
the presence of two witnesses.

CHARLES M. CAMP.

Witnesses:

SAM MADELEY,

C. S. TALIAFERRO.